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Community, diversity and division: the cross organisational networks of practice in web production in UK Higher Education

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Community, diversity and division: The cross organisational networks of practice in web production in UK Higher Education

by

Andrew Cox

VOL I

A Doctoral Thesis submitted in partial fulfilment
of the requirements for the award of

Doctor of Philosophy of Loughborough University

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Abstract

This thesis examines factors governing the shape of Networks of Practice among fellow professionals in different organisations through a study of web production in UK Higher Education. It explores the character of two cross organisational spaces, an online community and a conference series, and then at the individual level examines the pattern and causes of participation within these spaces. There has been little research into web production as a professional activity, so capturing something of its rich culture of work expands our understanding of these information professions.

Subject and genre analysis supported by observation, interview and questionnaire are the primary methods used to study the cross organisational spaces. The individual level is explored through qualitative interview data treated for analysis as discursive resources, as well as containing "factual" data. The thesis uses community of practice theory as a starting point to provide a set of dimensions, terminology and predicted character of Networks of Practice, but also draws on themes from the theory of the professions.

Although valued sources of information and support, both the online community and conference series have a strong technical slant and seem to exclude some important relevant professional perspectives, particularly that of marketing. At the individual level common information and support needs are pursued through cross organisational contacts, but the creation of a community is limited by the diversity of individuals' roles, aspirations and organisational location as well as differing involvement in technical innovation and different degrees of organisational liminality and divergent organisational cultures. Gender is also an emergent factor, revealing that the freedom opened up by lack of professionalisation also creates forms of vulnerability. The research suggests that the degree and pattern of participation in collective professional spaces, such as online communities, is governed by aspects of individuals' local contexts.

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I would also like to thank all the interviewees and respondents who participated in the study: their generous cooperation was essential to the research.

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Glossary/acronyms used

Term	
ANT	Actor Network Theory
BCS	British Computing Society
cgi	Common gateway interface (handles input from HTML forms)
CILIP	Chartered Institute of Library and Information Professionals
CMC	Computer Mediated Communication
CMS	Content Management System
CPD	Continuing Professional Development
COPT	Communities Of Practice Theory
CSCW	Computer Supported Cooperative Work
CSS	Cascading Style Sheets
DPA	Data Protection Act
FE	Further Education
FOAF	Friend of a friend
FOI	Freedom of Information Act
HE	Higher Education
HEI	Higher Education Institution
Heist	A specialist marketing services agency, focusing on Higher and Further Education
HTML	Hypertext Markup Language
IE	(Microsoft's) Internet Explorer
IIS	Institute of Information Scientists
IT	Information Technology
IWM	Institutional Web manager, person in central administrative department with a primary responsibility for the overall university web site
IWMW	Institutional Web Management Workshop (individual events are referenced as IWMW with the year as a suffix, as IWMW2004)
JISC	Joint Information Systems Committee
LMS	Library Management System
MIS	Management Information Systems
MS	Microsoft
NOP	Network Of Practice
OS	Open Source
PNG	Portable Network Graphics (a web image format)
Portal	A dynamic integration of data sources and services into a single, personalised service for end-users
Q/A	Question / answer
RDF	Resource Description Framework
SCT	Term used in this thesis to refer to Social Capital Theory
SENDA	Special Educational Needs and Disability Act
SIG	Special Interest Group
SNA	Social Network Analysis
SSI	Server Side Includes
UCISA	University Colleges and Information Systems Association
URL	Uniform Resource Locator
VLE	Virtual Learning Environment, eg Blackboard, WebCT
W3C	The World Wide Web Consortium
Web author	Term used here to refer to the many individuals around a university who are responsible for maintaining information on the web, including those in academic and administrative departments. In practice usage of this term is various.
Web production	Term used in this thesis to refer to the process of maintaining an information and

Term	
	communication orientated web site as distinct from a teaching orientated web.
Web team	Functional unit dedicated to supporting web production in a university, based in a central department of a university, such as computing services or marketing
WS	The web-support jiscmail list
XML	Extensible Markup Language
XHTML	HTML conformant to XML standard

Referencing

Appendices

References to tables or charts in the Appendices are referred to as Table A3.2 etc.

Interviews

The shorter interviews conducted for Chapter 4 are simply referred to as I1, I2 etc. Among these, the electronic interviews are indicated with an e suffix, eg I9e.

Longer in-depth interviews, discussed primarily in Chapter 6, are cited with the initials of the interviewee and a number referring to the paragraph in the transcript, eg EM34. Where the full text is quoted in Appendix 12 the reference is in bold, eg **GM34**. This also applies to interviews with BK.

Email

Emails from the WS archive are referenced by their date (month/year) and number in chronological order of occurrence within the month. Thus the reference June 2000 #80 refers to the 80th message posted in June 2000.

1. Introduction

1.1. Background

Creating web sites is a challenging practice because it requires a wide and fluid range of skills (van der Walt and van Brakel 2000, Kotamraju 2002, pp.6-9). The knowledge needed cuts across what are often thought of as natural limits of individual expertise, for example, in requiring ability both with the visual and with words. It also cuts across boundaries between different professions.

> Generally, we view webmasters as the group of people including, but certainly not limited to, business strategists, marketers, programmers, writers, salespeople, librarians, graphic designers and software developers responsible for the ultimate success of a particular web site. (Software futures 1997, quoted Kotamraju 2002, p.8)

> All web managers often find themselves in the uncanny situation of providing a one-stop shop - editor, designer, technical specialist, user support person, trainer, marketing officer, development officer, and even minute secretary! It quickly becomes a balancing act of deciding which skills to develop, and choosing a direction in which to branch, while the workload increases daily with user expectations and rapid technological growth. (Linford 1999)

In larger institutions this could be partly resolved by employing specialists, perhaps organised in a team (a "web team"), but this requires a certain level of resources. Armstrong et al.'s (2001) study of UK universities showed that at that time such resourcing did not always exist, and many people were performing a wide range of roles, even doing "everything." Later chapters of this thesis will show that although there was some use of a concept of institutional web manager (IWM) who was in charge of a web team and had a certain status, in practice there were diverse arrangements at different institutions. There was continuing diversity of roles and job titles indeed it was unclear what sort of person should lead a university's web presence. There were still complaints about whether senior management really understood the web and consequently also about resourcing. Thus the early uncertainties expressed by one individual interviewed for this thesis seemed to continue to pertain:

> [...] there's really a new post, there's a new profession, the web manager profession who's suddenly starting to emerge in universities but they haven't got the history, there isn't a culture, senior managers don't know what to make of such a beast – is this just – is this a lowly techie or is it a senior information type web strategist blah blah blah and as I said at that time there were lots of wars going on about who will control the institutional web, is it the computing service, the library, PR and marketing department, the academics – you know – whatever. (BKI25)

As this quotation also suggests, the web continued to be difficult to encompass within pre-existing organisational structures. There has been a continuing pull to and fro between the possibility of a location somewhere in computing/information services and somewhere in marketing or press & publications. Although how the web can be used by institutions has

come to be much better understood, it continues to be performed in a context - some at least would argue - of rapidly changing technology, strategic uncertainty and often radically limited resources. Universities are themselves diverse in their culture (McNay 1995), size and history, so do not necessarily form a neat sector with common needs. Yet there is little literature on the professional producers of web sites as an occupational group, certainly in the university context.

A key dilemma in computing is always between centralisation and decentralisation (Wellman and Hiltz 2004, p.92, Heeks 1999). This is true also of the web, certainly in the Higher Education (HE) context. In the early days it was what one respondent called the "wild west" (QM27), but there were increasing forces for centralisation, such as: the legal liability of the university for information it serves and the need to make a site usable through common navigation, further reinforced by legislation requiring information to be made accessible. Another centralising force are the marketing opportunities presented to those who can construct a coherent message, while technological tools such as content management systems make it practical to build fine grained central controls into web publishing. On the other hand, the ethic of the web was always to enable publishing by all, and there is an affinity between this value and with the notion of academic freedom and the loose power structures that typify many universities. The sheer scale of information that a university produces is an obstacle to easy central control, and the quality of information, such as its currency will tend to be higher if those who own and produce it can be persuaded and enabled to also publish it online. Resourcing of central teams and, for a long time, technical tools to control everything that is published were lacking. As a result a key dynamic in university web production is the relationship between central web teams and web authors distributed around the organisation (McConnell and Middleton 2001).

One feature of the web in all industrial sectors seems to be informal, pseudo-professional organization of web professionals, combined with intra-professional struggle. Kotamraju (2002) finds "substitution" of informal virtual communities dedicated to "keeping up to date" for formal professionalisation. Such online communities are a familiar feature of the landscape of computing, even if there has not been that much research on how they work, with the exception of Wasko and Faraj's (2000) work. However, Kotamraju's (2004) abbottonian analysis of professional jurisdiction (Abbott 1988) in web work also found the devaluation of female skill in "graphics" in favour of more socially valued, male, "code." In the academic sector debates about whether the web should be in computing, marketing or even the library seem to suggest that there are more layers of contest than those identified by

Kotamraju, but confirm that gendered, workplace jurisdictional struggle is likely to be a key process.

Perhaps a lack of neat formal professionalisation is not surprising given:

- The web's changeability and malleability
- The diversity of institutional needs and so usage of the web
- The multi-professional character of skills and the web's inherently anti-professional aspiration to enable publishing for all
- The weak character of professionalisation in computing (Abbott 1988, Danner 1998)

A pattern of multi-professionality combined with lack of formal professionalisation would seem to be both a problem and an opportunity, both for the individual and for the organisation.

In so far as they are relevant because the web is something computing would have an involvement in, there are not many analyses of computing staff in universities. One piece of research, however, that does seem to be immediately relevant is Zabusky's (1997) study of IT "support specialists." In essence she reworks the classic theme in the theory of the professions of the tension between the benefits and costs of employing professionals in the organisation. The professional is dedicated and knowledgeable, but has values and loyalties other than those of the organisation. In fact, Zabusky emphasises the negative outcomes of such a strain of loyalty, without finding many advantages to the organization (unlike the subtle points made by Scarbrough 1993) or the individual. Nor does she spell out the precise nature of the link to the expert community. While it will emerge that Zabusky's analysis does not seem to fit the case of the web - it clearly contrasts with Kotamraju's (2002) unqualified positive view of online communities as external communities of expertise - it is a relevant starting place for thinking about the structural position of web specialists working in the university context and the particular logic and role of an external community of expertise.

One specific force in play has been the emergence and appropriation of Internet technologies, as capable of invigorating and reconfiguring cross organisational groups (including professional special interest groups) as networks and of information sharing communities of many types (Wasko and Faraj 2000, Preece 1999, 2000, Baym 2000). Within the "virtual community" debate a technologically deterministic view has been displaced by a stress on technical possibilities in essentially socio-technical systems. Exaggerated fears and hopes

about the impact of the virtual on real world community have been displaced by an appreciation of the diverse impact of the Internet as a communication space. Charting the exact nature of relations mediated by technology in this case will be a central preoccupation of the thesis.

Such a background of lack of formal professionalisation combined with the potential for workplace struggle for jurisdiction, combined with new means of communication, frames a host of questions about the web in the university sector:

- What actually is the level of formal professionalisation?
- What more informal links and clusters of pre-professional cross organisational activity exist? It would be expected that those working in the web do have easy access to the Net for cross organisational collaboration: so what is the role of informal groups, such as online communities? How do these work? Who participates and why? How do these activities interact with more familiar forms of activity such as practitioner organised events?
- What are the connections between local practice and cross organisational community (or communities) of expertise?
- What is the independent effect of the particular cultures of the Internet, such as the culture of knowledge sharing (Uimonen 2003b)?
- Equally, what is the impact on cross organisational ties of universities, which are all, on the one hand, public sector institutions in the educational field but which, on the other hand, are in competition with each other?
- Which professional skills are most salient to web management, and how does this change over time?
- How is the impact of non professionalisation and workplace struggle for jurisdiction played out for individuals through increasing variety and freedom, as well as vulnerabilities and costs?
- How do individuals build, maintain and credentialise skills in such a context?
- For the organisation, how are ends often performed by professionalisation, such as validating professional knowledge and benchmarking work, accomplished in such a context?

Further, at a theoretical level, what conceptual tools do we have to make sense of cross organisational loyalties and contacts? The paradigm of the organisation and the profession as social containers of work knowledge are familiar ways of thinking. Yet both have been reconfigured in the last thirty years. Structural changes in the economy -especially the decline of the organisational career - and theoretical and social attacks on the liberal professions have made their special position less unproblematic, so that the same logics (Abbott 1988) are seen as applying to areas of work like that of technicians (Barley 1996) and to other occupational communities (van Maanen and Barley 1984) or reinvented as personal discursive strategies around "professionalism."

Closely linked to these changes has been a wave of interest in forms of direct collaboration such as communities of practice (Lave and Wenger 1991, Brown and Duguid 1991, Wenger 1998) and also weak linked ties in social networks (Wellman and Guilia 1999, Wellman et al. 2003) and Networks of Practice (NOPs) (Brown and Duguid 2000, 2002). These concepts address the problem of how knowledge is maintained and circulated in work contexts within social groups of different scales and intensity. They interweave with this concern issues of identity and of belonging. The community of practice concept has attracted much use and theoretical debate. However it is best understood as representing an idealisation of direct human relations, and the relationships that develop through sustained mutual engagement on an appropriated, valued enterprise. In fact, for the groups explored in this thesis, of the available concepts, NOP seems to be at the right level for rather large groups which engage through low intensity mediated and intermittent face to face encounters. They are bound together as much by exposure to similar media ("imagined community" (Anderson 1991)) and parallel occupational practices, with their in-built values, such as writing HTML (occupational socialisation) as any shared history of interaction. Yet because the concept of a NOP has not been very well developed theoretically, and because NOPs do contain direct interactions, the thesis will suggest that community of practice theory may be a starting place to model a NOP.

1.2. Research problem

The research problem addressed in this thesis is:

What is the character and significance of cross organisational networks of practice in web production in UK Higher Education?

Essentially it is argued that though limited by a primary commitment to the local organisation and by lack of formal professionalisation, cross organisational networks are important in

meeting diverse information and support needs for many individuals. Such networks take most coherent form in an online community, web-support (WS), 1994 onward (Web-support, n.d.) and an annual conference series called the Institutional Web Management Workshop, 1997 onward (UKOLN [n.d.]). Participation is not uniform, however, among potential participants. Cross organisational activity is skewed towards technical aspects of the work, while other areas are undervalued, such as interest in content. Also the community is bounded by UK HE; it excludes FE, the rest of the public sector and people outside the UK. These limits and boundaries require explanation. The varied pattern of participation seems to arise from

- Individuals' divergence in terms of background, role, resourcing and organisational position, itself arising from continuing diversity of organisation of the web in different institutions

- Differing sense of liminality or embeddedness in the organisation

- Some common information needs, a common need for legitimation but also differing levels of involvement in fashionable technical innovation

- Differing cultures and power structures of institutions

The potential freedom and variety offered by lack of formal professionalisation is paid for in a cost of vulnerability, for there is evidence that discourses about professionalism and technology disadvantage women, for example.

To address the research problem a number of specific research questions were investigated. The first two sets of questions apply to the cross organisational spaces and are framed by COPT used as a model:

- Who participates in the online community, WS, given that there can be different levels of participation? What do they do: what information or knowledge sharing is achieved? What other purposes are served? How do they see themselves as individuals and as a group? What is the climate of the group and how is it governed?

- What is the make up of delegates and speakers at the conference series, IWMW? How is participation bounded? What information or knowledge sharing is achieved? What other purposes are served? How and why is the group constructed as a community?

- The third question shifts focus to look at the individual level and considers, through the frame of the theory of the professions, how does the character of participation or non-

participation in cross organisational spaces such as the online community or the conference (or other forms of network) link to an individual's local situation, such as their specific roles, organisational position, professional identity or involvement in fashionable innovation and culture of the organisation? How do such factors shape the cross organisational spaces? What are the implications of a lack of formal professionalisation?

1.3. Significance

As the one time editor of a practitioner journal (on IT applications in libraries, *Vine*,) the author of this thesis was puzzled by the patchiness of contributions. Some people were keen to share what they were doing, so many others not. When he tried (with others) to set up a "virtual community" (lis-webpeople) for librarians interested in web matters it was found that people joined, but nobody sent any messages. Working on a project to share knowledge about Knowledge Management among librarians, he was again puzzled by the degree of apathy from the voluntary participants and intrigued by the challenge of choosing appropriate IT and the problems of facilitating interaction. These two issues bulk very large in practitioner thought about online or "virtual communities of practice" (Wenger, McDermott and Snyder 2002, Wenger 2001). Looking across the fence he felt the grass was greener in the web production area. There, for example, the online community seemed very active and lively - so unlike all the library orientated lists that the author had ever been a member of. The web area seemed to be a good place to start looking for some answers about what made professional communities "self sustaining." Concepts like community of practice, social networks, and collaboration were in the air, debate about "knowledge sharing" and social software was beginning to emerge. All framed direct but often informal relations of professionals (commonly mediated by technology) as a key information behaviour, involving knowledge sharing but also involving issues of professional identity.

These largely practitioner questions have evolved and changed almost beyond recognition through the course of the research but the concern with understanding the nature of the cross organisational space and the circulation of information and knowledge within it remains the centre of the research.

Doing the web is a complex, demanding role. In universities it is a key source of information, probably influential in student recruitment (Dunn 2004) and relied on by existing staff and students. Yet the construction and maintenance of the site is a highly political process, and has to be accomplished with limited resources. It became apparent through the research that people involved in web production were very enthusiastic about the work and that they thought what they were doing was important. They valued the variety of it and many felt

empowered through a technology which was "transforming the organisation," to borrow the phrase used as a subtitle for IWMW2004. They were keen to talk about it. One individual said that she could not imagine a job she would like more (MF160). For others it seemed to have had a major impact on life chances, by opening up an opportunity to higher status roles, overcoming disadvantages in terms of educational qualifications (OF, NF). There was a darker side for those who were struggling to maintain or expand professional positions in the face of departmental conflict, where the ambiguities of lack of formal professionalisation were a cause of vulnerability. A sub theme of the thesis that emerges here is gender. Computing is known to be a male dominated profession, patriarchy is in a sense only reproduced at the micro level examined here, but it cannot be ignored. We can trace some of the processes in the reproduction of gendered ideas, such as associated with informality.

As Kotamraju (1999) has argued the cultures of the Internet are remarkably ephemeral. The role of web manager did not exist ten years ago and it may have disappeared in ten years' time. The role seems to have evolved to meet the needs of the specific characteristics and cultures of the university sector and this merits investigation as a process (Oliver 2002, p.251). There seems justification enough on humanistic grounds for a study of the people in these roles and their individual and collective attempt to make sense of this new form of work. Whereas a vast amount has been written about the technologies of the web and some on the interpretation of web sites, the role of intermediaries who play an essential part in web production in institutional contexts has been neglected. There is a truly microscopic amount of research into this process of production and the producers themselves.

This reflects among other things, that our existing knowledge of the computing professions is in some respects quite narrow. Much of the literature focuses on heavily ideological public images of hackers (bad) or Open Source creators (good). More mundane work actually supporting existing systems is not much researched. Rose (2002) has recently suggested that the early expectations for computing professionals as a revolutionary social force may be misplaced. For, he argues, they lack the networked position in the organisation to actually be vehicles of major change and are more socially conservative in their attitudes than other types of managers. However in this analysis he assumes that census definitions of computing professionals are adequate. This may be misleading as computing skills remake other hybrid roles filled by people who are not "techies" as such. The web continues to transform organisations and as agents of this change web managers are worth investigating.

The nature of the organisation of knowledge outside formal professionalisation is an important theme. The thesis presents a detailed case study of how the balance of cost and advantage in formal professionalisation are worked out in a particular role, in one part of one

industry. Within this the salience of online communities in the professional organisation of the web also opens up some interesting lines of investigation. From information science, we do have a small amount of research investigating the logic of choosing between internal and external sources of information, and the nature of online communities as information sources. Although this must be seen within the context of what are the factors in intra-organisational contacts, the informational processes are of interest as such. WS is a relatively successful virtual community; the thesis explores how this works in itself but critically how it interlocks with more familiar cross organisational institutions such as a conference to order the cross organisational space. Thus the thesis helps to understand the nature of online communities by connecting more tightly with studies of the real world.

At a more practical level the study may help us to understand how to nurture this particular community and work out the implications for organisations such as JISC or professional bodies about how cross organisational activities can be effectively sustained.

Universities - as the context under investigation here - are a particularly interesting variety of types of complex organisations. They have been key players in how web production has come to be generally understood. Although there is a view (repeated by some respondents themselves) that universities as public sector institutions are less real or important compared to commercial organisations, such a view is inherently ideological. Universities are long lasting institutions of immense importance to society, and so are worth studying for themselves, quite apart from the applicability of the logic of the study across the public sector and even in the commercial world.

1.4. Methods

The approach of the thesis is qualitative, developing a rich account of emic perspectives through naturalistic inquiry based on close reading of thick data to produce a holistic perspective of an emergent phenomena. The different levels encompassed within the thesis, dealing as it does with both particular community spaces and the springs of individual participation in them, implies a need for multiple methods. Equally the very different character of a continuous virtual space such as WS and an episodic, partly formalised space like IWMW also offer different sources of data and require somewhat different methodological approaches.

For the online community the primary sources are the archive of past messages, membership data, as well as questionnaire responses and interviews (including some e-interviews). The main analytic methods were genre and subject analysis.

For IWMW only more fragmentary data is available: powerpoints of past conference papers, reports on the conference and delegate and speaker listings. Direct observation of two of the conferences was another important source of data.

Patterns of individual participation were studied through in-depth interviews, which were treated as a source of "factual data," indications of persistent attitudes as well as of the repertoire of discursive resources in use.

1.5. Outline of chapters

Chapter 2

Reviews the literature, explaining how a choice was made of conceptual tools from the theory of the professions and community of practice theory. Methodological choices arising from these are explained. It considers what we know about IT people and web specialists in particular, their structural position, their information and knowledge behaviours and their use of extra organisational networks and ties. It also summarises what has been written about the specific characteristics of the main technology employed in WS.

Chapter 3

Sets out the methodological position of the thesis, introduces the methods used and discusses ethical issues that arose from the research.

Chapter 4

Examines data about WS the main online community for UK HE in the web area, exploring the character of membership and subject, generic and other qualities of interactions. It is a useful, timely source of technical answers and discussion of standards issues. In terms of scope and inventiveness it could be considered disappointing, however, compared to the richness of a community of practice.

Chapter 5

Investigates the annual IWMW - its subject coverage and the pattern of participation of speakers and delegates. It shows how a discourse of community is constructed, and yet there are significant under-representation and exclusions of marketing and more broadly content perspectives in particular.

Chapter 6

Reports on 21 in depth qualitative interviews of web managers and participants on WWW-list to see how their range of participation interlocks with their local roles and responsibilities. The analysis shows a great variety of pattern of cross organisational participation.

Chapter 7

Is a summary and discussion of the significance of the findings of Chapters 4-6, in relation to what is known from the literature. Limitations of the present study are acknowledged and further areas for research are considered.

1.6. Definitions

Because the web area in HE is not formally professionalised and still organised locally in multiple ways there are no standard job titles. For ease of presentation it has been necessary to use two terms:

"Institutional web manager" (IWM) is used here to refer to people in central administrative departments with some responsibility for the overall university web site. Web manager is preferred to university web editor or webmaster, but the standardised use of the term in the thesis should not be taken to imply that such a distinct role exists in all universities (it does not) or that web managers are or see themselves as a coherent group (that is partly the question pursued in the research).

"Web authors" is used to refer to people in particular units in the university such as academic departments who have a responsibility for maintaining information about their unit.

The term "web production" has also been coined to refer to the process of producing a university's informational web site. Some more definitions can be found in the glossary.

1.7. Delimitation of scope and assumptions

The primary focus of the thesis is people in "support" or administrative departments who produce the informational web site for a university, and it largely excludes consideration of the major application of the web directly in academic work, e-learning (as well as the emergent field of e-research). For an understanding of the role of those involved in e-learning we have Oliver's recent studies of learning technologists (2002,2003; see also Beetham, Jones and Gornall 2001, Land 2000,2003, Conole 2004). These constitute a useful but external reference point. The delimitation is not arbitrary for there is a distinct difference of mentality associated with the two activities: learning technology is much closer to the teaching role of

academia, whereas informational sites were often (though not always) separately organised and run largely by administrative staff, both at a central and departmental level. Nevertheless the two practices are not wholly separate.

The area of study is HE; i.e. specifically the thesis does not attempt to encompass FE or other parts of the public sector. This is because the community itself seems to be limited in this way in practice, though rhetorically FE is frequently included as in the often heard phrase "the Higher Education and Further Education communities." How the actual boundaries of participation come to be drawn is part of the research problem, and to address this some limited data was collected about FE. The focus of the thesis is on the community in the UK (including Northern Ireland) for similar reasons. Though some material was collected about American activity it was used to sketch out an external point of comparison, rather than as an object of direct study.

2. Literature review

2.1. *Introduction*

Chapter 1 introduced the thesis and explained its focus on the nature of cross organisational spaces in web production in UK HE. This chapter proceeds to look at what is already known about web production and also about the nature of such cross organisational activity and to evaluate available theoretical approaches and associated methods.

Thus the objectives of the chapter are to:

- Set out the theoretical background to the thesis by examining the theory of the professions and the nature of a profession as a community.
- Explore the break down and expansion of the theory of the professions.
- More specifically, explain the place of networks of practice in this literature, as a likely if under-theorised concept for the level of analysis in the thesis. The chapter considers if COPT is able to supply a possible basis of a model, if NOPs are seen as on a cline with them.
- Evaluate other theoretical approaches and their associated methods.
- Review what is known about those involved in web production, and since this is relatively sparse, what clues to their structural position (particularly in relation to cross organisational community) there may be in the literature of the computing profession particularly in the HE context.
- At a more general level, examine what is known about cross organisational information and knowledge sharing.
- Examine the character of the email mailing list technology in use to support cross organisational interactions.

2.2. *The theory of professions*

In searching for theoretical resources to understand cross organisational activity an important starting point is the theory of the professions. The functionalist view of the professions took a few examples (especially medicine), particularly as they had developed in the UK and the

USA and generalised from historic features to produce a model of how professionalisation should occur and what professional institutions should exist. As in essence the professions' own story about themselves, this narrative continues to be reproduced in uncritical views, and is still partly defended by some scholars as capturing the continuing value of professions (Freidson 2001).

"Professions are knowledge based occupations" (MacDonald 1995, p.160) their key claim being to possess a unique, abstract body of knowledge with practical, useful applications (ibid., pp.10-11). They act collectively, for example, to promote the idea of this special knowledge and to organise peer review of competence. A central objective is to win control over licensing of training and so entry into the profession, to control the "production of the producers" (ibid., p.196). From this derives a stress on qualifications and credentials for the profession's knowledge is, or is portrayed as, requiring long training to acquire. The profession claims the right to self monitoring and self-regulation of members in their day to day work: to "independence, autonomy and discretion" (Middlehurst and Kennie 1997, p.59). Also at the individual level the profession is a source of social identity; it is a

> central life-interest which provides its own intrinsic rewards. Professionals develop intellectual interest in their work, so they are concerned with extending and refining it and they believe in its value to society. (Freidson 1994, p.200)

From this attribute follows attitudes to work such as: "dedication, reliability, flexibility and creativity" (Middlehurst and Kennie 1997, p.52).

A profession needs to achieve a collective identity, enabling collective action. Simple self-recognition is an early stage of this emerging. Part of the process involves practitioners being encouraged to dispense with secondary occupations (MacDonald 1995, p.193). Then, achieving wider social recognition further reinforces self identity. Ultimately the profession comes to have a sense of shared values and a common outlook: it becomes a community (Goode 1957, Freidson 2001, p.101, 202), even an epistemic culture (Knorr Cetina 1999) or community of knowing (Boland and Tenkasi 1995). It is also a source of a network of useful working relationships. Professional bodies both work on direct dissemination of information about innovations and support the creation of networks that can be used to gather information about new technologies (Swan and Newell 1995, Swan 1996). Critically such informal ties allow practitioners to find out about things that go wrong (knowledge which is rarely formally published; Snowden (2003) stresses the importance of stories of failure). Such networks are most advantageous when "problems are complex, ambiguous and poorly understood" (Swan and Newell 1995, p.872). These connections are particularly important in the UK because of the strength of professionalism as an idea in British culture (Swan 1996, p.133).

There are several bases of common ground in professions qua communities:

1. The **public image of the profession** (though inaccurate) prefilters the candidates who seeks to join it, thus tending to produce a set of initiates who are already somewhat similar in character and aptitudes.

2. A **formal socialisation process** of professional training inducts candidates into a common (if broad and contested) epistemic position, knowledge base, set of skills, values and ethics (Freidson 2001, pp.100-1).

3. The local organisation of work is influenced by (and influences) professional discourses, as a result all places of work in a sector have similar ways of working: for instance, one academic library is much like another in its working procedures. A newly qualified professional is, therefore, also **socialised at the level of the workplace.** This could be both a formalised explicit process or a rather informal process partly accomplished through working with or just chatting to colleagues and partly accomplished by the learning of tasks themselves (eg doing cataloguing instils certain attitudes which are embedded in the practices of cataloguing). Collaboration between institutions, for instance in projects, is a further factor in the alignment of the sector.

4. There is a continuing **parallel exposure to the professional media.**

5. Professional associations (and other bodies) encourage direct social relations between fellow professionals through **special interest groups (SIGs) and continuing professional development (CPD) activity** and conferences and workshops. Some of this could be accomplished online, "virtually".

6. Credentialisation creates a clear **job market,** which enables professionals to move between organisations expanding their individual network and propagating ideas between organisations. The existence of the market may motivate individuals to build a cross organisational reputation.

7. Processes 2, 5 and 6 trigger the creation of **personal networks,** through which individuals are also socialised, renew their skills and make sense of their local role.

8. A whole sector is coordinated through **exposure to common pressures,** such as resource issues, legislative changes, fluctuations in demand and fashions of ideas in technology. The existence of common challenges motivates cross organisational work, but simply by addressing the same issues parallelism in organisation is increased.

9. The group can have a common set of interests, which might be pursued collectively.

Clearly direct connections (networks) between individuals are important to information transfer and diffusion of innovation, but this is premised also on common ground (epistemic culture, common interests) which are sustained out of indirect relations, such as reading the same media or having parallel experiences.

The benefits of professionalisation can be summarised under two headings, those for the organisation and for the individual. Benefits to the organisation are:

- The creation of a clear job market through which suitable candidates for a local role can be contacted, with credentialisation in proven, efficacious knowledge helping to identify the most suitable candidates
- Reliable, predictable and measurable outputs, since the profession publishes data about best practices
- Partial displacement of effort of maintaining skills onto the individual, who seeks to develop their own career through the profession as a personal project
- Self motivated, highly skilled individuals

Benefits to the individual are:

- Clarity of job role, career path and external job market
- Training in appropriate skills to meet the known needs of the role
- Local legitimacy is underscored by professional status

Within the theory a classic dilemma was the management of professionals where they were located inside an organisation (rather than acting as independent professionals). The profession's corporate sense and communal values, and the claim for self regulation of expertise, and also their special relationship with the customer, sets up a conflict of loyalty with management or a host organisation (von Glinow 1988, Middlehurst and Kennie 1997, p.63, Trice and Beyer 1993, p.179). Problems of professionalisation to the organisation include:

- A potential conflict of values between the individual in their professional community and the values of the organisation

- Issues of control over professionals who seek autonomy
- Potential leakage of knowledge and competitive advantage through the professional's desire to report work in the professional community
- If a problem crosses professional divides there are problems dealing with the issue
- Inflexibility about how to do the job and who should do it. This could manifest itself both in barriers to substituting cheap non-professionals for expensive professional labour and by low quality work being done by professionals who just carry out pre-existing formulae and not reinventing whole practice in response to change.

Problems for the individual are:

- Less freedom in how to do the job, perhaps less personal engagement in its performance as a result
- Less variety of role since professionalism tends to be associated with exclusivity
- More competition to perform a task, since the requirements are known and there is a clear job market
- Possible inequalities in access to credentials (eg gender bias in the education system)

From the 1960s there was both a social attack on the special status of the liberal professions and an intellectual revaluation of the functionalist model. The professions came to be seen as a social group pursuing a "project" (MacDonald 1995, p.1), an exclusionary strategy of "social closure" to boost their social status and material rewards. Social closure

> [...] refers to the process of subordination whereby one group monopolizes advantages by closing off opportunities to another group of outsiders beneath it, which it defines as inferior and ineligible. (Murphy 1988, p.8)

The gendered nature of the professions was uncovered (MacDonald 1995, Chapter 5). Further, Schön (1991) challenged the connection between abstract professional knowledge and actual practice. Their ambivalent role in innovation was exposed: for they tend to resist major change unless it increased their own power (Drazin 1990) and can, in fact, be part of the problem where an issue occurs across professional jurisdictions. Professional conflicts are imported into organisations (Swan and Newell 1995, Swan 1996). These suspicions have been among factors strengthening the hand of management and the state vis-a-vis professions. The possibility of relying on developing one single specialist skill, was being displaced by a

stress on flexibility (Middlehurst and Kennie 1997, p.55). At the same time, on the whole, more work was coming to be seen as requiring knowledge and discretion, undercutting the exclusivity of the professions' claim to be knowledge based work. A perception of increased competition empowered managers to take control of work and subordinate professional loyalties (Newell et al 2002, p.xi).

While the special status of the old professions was being questioned and reined in, the conceptual reach of the idea of the profession also saw an *expansion* of its application. All occupations could be seen as having aspects of professionalism, so that all work could be judged against a number of parameters that made it more or less professional (Stebbins 1992, p.23, Alvesson 2004, p.31, Rothwell 2003, p.47), although Alvesson suggests using the term knowledge intensive work to preserve the integrity of the concept (p.33). This was mirrored in the multiplication of professional associations and increasingly loose use of the concept of profession.

A contributory factor in these shifts was probably the destruction of the safety of the organisational career, the pattern of life long employment in one firm. Commentators are divided over whether the "boundaryless career" is a liberation or a burden (Brocklehurst 2004, Brousseau et al. 1996, Sennett 1998, Rothwell 2003, Barley and Kunda 2004, pp.9-26), but the weakening of organisational roots meant the grounding supplied by professional membership or something equivalent was potentially more important.

Stebbins has pointed to the growing importance to individuals of "serious leisure" (1992, pp.6-8) leading to the increasing role in social production of amateurs pursuing an activity as a vocation. Leadbetter and Miller (2004) reinvent the concept claiming for a new breed of "ProAms" special social value eg in disruptive innovation, threatening to effectively supersede the professional. ProAms are "knowledgeable, educated, committed and networked" (ibid., p.12) and work in self regulating communities (ibid., p.22). Open source is presented as a classic example. If this is a bit far fetched, the changing relation between the amateur and the paid professional is particularly relevant to this study because so many of the people doing the web are on the borders between enthusiasts and professionals.

2.2.1. Occupational communities and social closure

Three expansions or mutations of the reach of the theory of the professions are of particular importance to this thesis. First, is van Maanen and Barley's (1984) notion of occupational community which identified the same project of social closure operating in unorganised occupations as in formalised professions. This could apply to newly emerging occupations

such as web production. The authors define occupational communities as "bounded work cultures populated by people who share similar identities and values that transcend specific organisational settings" (van Maanen and Barley 1984, p.314) - examples would be policemen or fishermen. The authors identify four defining characteristics of such groups (see also Trice and Beyer 1993, pp.180-5) :

1. They consider themselves to be engaged in the same sort of work. Thus this is a category subjectively identified by insiders, not inherent to the work, and not necessarily recognised by outsiders.

2. Individuals in the group draw identity from their work. Certain features of the tasks or environment tend to increase the probability of such identification occurring: often it is linked to a sense that what is being done is set aside from ordinary work, for example. High involvement in the work also fosters identification or a claim to special high value skills (for example, among programmers) or claimed responsibility for others is a third possible factor.

3. The group have shared values, norms, perspectives, including a standard about what is good work.

4. There is an overlap between work and social relationships. This is often influenced by proximity, or found in kin based occupations or total work institutions (van Maanen and Barley 1984, p.287).

Van Maanen and Barley suggest that a test to see whether two individuals are from an occupational community is whether it allows two individuals who are seemingly far apart in terms of demographic characteristics such as race, age or gender, to quickly converse on esoteric matters after a few moments' acquaintance (ibid., p.307). The bond between people who do the same type of work, occupational socialisation, is a powerful force[1].

One of the most interesting insights of the paper is the observation that for members of occupational communities the career may not be seen in organisational terms. The ambition may not be to move up the hierarchy, but to attain greater "inclusion" in the occupational community, so achieving special privileges, rewards and respect. The authors identify three connected ways to centrality within the occupational group, through:

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[1] This is perhaps a more specific and satisfactory concept than the notion of homiphily, which is an assumption of Social Network theory that people like people who are similar to themselves.

1. The work itself, for example, centrality through expertise or reputation. An example of this would be to be known for having come up with a solution to a particular problem. "Centrality may be achieved in a variety of ways, of course, but the more spectacular careers will almost invariably entail the violation of social conventions, accepted knowledge," they comment (van Maanen and Barley 1984, p.329). However, those embodying traditional values may also retain centrality.

2. The work setting, for example, by working in an organisation which is particularly prestigious for that community.

3. The social network.

If van Maanen and Barley see social closure being pursued by groups other than organised professions, Noon and Blyton (2002) expand our understanding by arguing that social closure has more than one mechanism. They argue that at the theoretical level, occupational social closure is achieved by deploying three mechanisms in combination: an ideological process of the group recognising shared values; a political process, in which the group works collectively, often to regulate the labour supply; and a material process, where it seeks to appropriate the tools of the job (either the organisation of work or the allocation of tasks). Because of the tie of shared values, the occupational community can be seen as a sub-culture. The group identity is built around a claim to have a special skill (ibid., pp.127-32).

An occupational group may not achieve social closure and only operate in two of the three domains according to Noon and Blyton (2002, p.131):

1. Political-material - where the group has a representative body influencing labour supply, and control the organisation of work, but have no common identity.

2. Ideological-material - where it has shared values, seek to organise work, but has no representative body, and therefore, presumably, fails to influence the flow of recruits into the occupation.

3. Ideological-political - where the group does not influence the organisation of work or the use of technology, but is organised and has a shared identity.

2.2.2. The system of professions

A second expansion of the reach of the theory of the professions is Abbott's (1988) notion of the system of professions. Rather than focussing just on the liberal professions, he examines the continuous struggles for "jurisdiction" over domains of work as fought out between many

occupational groups, showing how the same logic is in operation even where the groups involved never achieve recognition as professions. It is often precisely this recognition that is being battled for. Such struggles are fought out at three levels: in public opinion, at the legal level and within the workplace (ibid., pp.59-69). Of these, workplace struggles - the most relevant to this thesis - are hazier, more short run, more vulnerable to organizational perturbations. They may, however, be more realistic in terms of recognising the efficacy of different group's knowledge applied to a problem (public images of professions are notoriously inaccurate (idid., p.61)). Various sorts of "settlement" of such struggle are possible, not just the achievement of "full and final jurisdiction", but also subordination of one group to another, split jurisdiction or where one profession acts in an advisory capacity over certain elements of work (ibid., pp.69-79). Abbott examines the sources for groups of strength and weakness in such struggles, and the main drivers for change. The abstract knowledge of the profession is seen as having an important symbolic role in legitimising it as more than a craft by connecting to major cultural values (ibid., p.54), though Abbott does not deny a connection to efficacious practice. As Alvesson argues, a sceptical concern with the political process by which knowledge attains a privileged status is not to cynically assume that it is purely self interested, without any warrant in efficacy (2004, p.38).

Abbott applied his theory specifically to the information professions (1988, chapter 8; see also Ray 2001); and Kotamraju has shown how the battle in the web field saw the gendered victory of "code" over "design" (2004). Part of the thesis is to examine aspects of these struggles in the web production field in the academic sector.

Scarbrough (1996a) argues that the theory of the professions should be decentred by the study of expertise. While expertise/knowledge/innovation are now recognised even more to be the critical resources for organisations, he argues, professions as traditionally understood, as tight knit communities, are less central. Thus Scarbrough prefers the term expertise, which encompasses "diffuse occupational networks, the expertise of specialist groups" as well as the established liberal professions (1996, p.3). In this framework, expertise is widely diffused, but also fragmented and transient (Scarbrough 1996b, p.35). Shallow pockets of expertise are created through local struggle and opportunism, but quickly too are broken down. This sense of a dynamic accommodation (in competition with other professionals, technology, organisational control, the state) is in Abbott, but on the scale of an occupation. For Scarbrough it is on a lower, more micro organisational level (though linked to wider forces) and to be part of an even more dynamic picture. Such a level of analysis is highly relevant to this thesis. Like professions expertise is knowledge based, it is the "active construction and application of knowledge, 'knowledge power'" (ibid., p.38). Power does not simply derive

from knowledge, rather equally power is used to portray knowledge as valid, useful, or to control knowledge. Thus knowledge is partly what is defined by the powerful to be knowledge. Rather than seeing a struggle between the organisation and the professional's trans-organisational loyalties, the traditional interpretation of the problem of managing the professions, Scarbrough argues that the tension is within organisational goals: between the need for innovation and the principles of efficiency (ibid., pp.35-43). Innovation requires allowing space for expertise and the trappings of the profession, such as knowledge sharing communities. The quest for efficiency leads management to break down and rein these freedoms in, replacing skills and discretion with reliable routines or technology.

Within this analysis the tension between loyalty to the profession and the organisation may suggest a too negative view of the value of professional or other groups to the organisation. As Scarbrough points out, some aspects of professionalisation are useful to an organisation: for example in providing self directed, well motivated staff with excellent skills and with a motivating career structure (1993, p.945). Having a highly trained cadre of experts who invest effort themselves in developing skill reduces training costs and may even displace the risk of deep training on a skill that is suddenly outdated onto the individual rather than the organisation. Also the survival of the professions originates to a large extent on the fact that "our market based occupational structure favors employment based on personally held resources, whether of knowledge or wealth" (Abbott 1988, p.324). It offers a coherent career to the individual in a shifting marketplace. Also as Scarbrough argues, knowledge sharing through communities requires experts to work together (1993, p.947). Such benefits lead the organisation to accommodate itself with the occupational community and its ideological claims.

Reed (1996) suggests other expert groups to sit along side the liberal professions. Most interesting for this thesis is the account of the structural position of the "organizational professions," examples being managers and administrators (ibid., pp.584-5). These are people whose expertise relies primarily on local knowledge about the organisation and its politics, as well as some technical expertise. Their power base is quite vulnerable in several senses: unlike professions they lack a generalised, abstract code of knowledge that can be applied to multiple situations. They lack this level of legitimacy. Further, because their knowledge is local it is vulnerable either to it being appropriated, that is, encoded in technology or routines by the organisation, or to it being undermined by mergers and re-organisation. Reed argues, though, that such groups typically rely on "credentialism" to protect their position, as their "power strategy" as he calls it (i.e. as a means to achieve social closure). If by this were meant seeking credentials (surely the usual meaning) it would not be a plausible assertion, but from

the discussion it would seem he means that they benefit by the bureaucratisation and formalisation of processes, which gives power to those who control the rule systems. Examples include job titles and formal remits which capture areas of work.

Reed also identifies a third new form of profession, whom he calls knowledge workers: they are highly dynamic with highly specialised and esoteric knowledge, who can successfully avoid routinsation or appropriation of their skill. They tend to work in highly dynamic contexts such as media or R&D. They are orientated towards the market rather than the employing organisation.

A case study by Williams and Proctor (1998) illustrates the approach. They investigated the interaction of management policy and personal and group agendas in the construction of expertise, among IT experts. Management policy was very relevant: for example, organisational policies reflected a realisation that IT is poorly integrated into the organisation, so management created special groups, recruited individuals with hybrid skills, attempted to diffuse IT skills (Williams and Proctor 1998, p.199). These policies interacted with individuals' own strategies which can be interpreted as a balancing act between seeking local institutional knowledge and expertise recognised in the wider labour market. Few merely trade on externally warranted skills. Another group relies on very expert knowledge of locally created legacy systems (leaving them vulnerable since they lack a position in wider marketplace). More commonly individuals seek both technical expertise and local knowledge (and contacts) which gives them leverage within the organisation. This, however, also sets up "a dilemma between the security of presenting themselves as 'technical specialists', and the bigger opportunities and risks of taking on board the broader role as change managers for the organization" (ibid., p.221). This level of analysis begins to expose the complexity of individual and organisational behaviour around the control of knowledge.

2.2.3. Professionalism

A third expansion of the notion of the profession is the emergence of "professionalism" as a "discursive resource" (Watson 2002, p.99) to be used as an individualised strategy in constructing a career. This is potentially highly relevant in emergent areas of work, such as the web specialism. With the decline in unquestioning acceptance of the status of the old professions, the idea of *professionalism* has been reconfigured, but an "underpinning association with privilege, specialism, autonomy and trust has not been totally removed" (Dent and Whitehead 2002, p.2). Claiming to be "professional" is a way of differentiating oneself, of seeking special status, and claiming a position of relative certainty in a highly unstable work environment.

> A professional identity carries the promise of high social status and generous rewards warranted by the socially admirable service that the professional worker provides through putting into action the expert knowledge that they alone possess. (Watson 2002, p.114)

However, unlike the stable, uncontested position some professions may have enjoyed historically, such a claim to professionalism is temporary and has to be performed or constructed continuously, through words and actions. The negative associations of the concept of the profession have to be finessed in talk (Watson 2002). It is also double edged, for people who believe they are professionals work harder, so it is possible the idea has an element of a controlling ideology that management can use to engage employees in work and disguise subordination (Dent and Whitehead 2002, p.3).

Fournier (2002) in her discussion of how aromatherapy is legitimated as an activity, by recourse to a claim of professionalism, notes elements of the discourse:

1. A stress on certain aspects of self presentation in the practice situation, such as appearance, rapport with client, attitude, manners are seen as proof of professionalism (Fournier 2002, p.116). Grey (1998) also finds a stress on appropriate forms of behaviour and physical appearance as defining professionalism, as much as knowledge.

2. A voluntaristic code of ethics. It is "by invoking self imposed discipline that the professions can perform their 'higher calling'" (Fournier 2002, p.129). By being offered a voluntary code rather than a set of explicit rules, the aromatherapists can invoke professionalism.

3. Professional status is somehow linked in a training programme to learning apparently irrelevant management techniques such as market research, staff appraisal. Fournier does not interpret this connection, but it is presumably about bulking up skills native to the actual domain with other socially approved (but probably easy to learn) knowledge.

4. Writing about aromatherapy attempts to accommodate it with orthodox medicine, stressing its subordination in most medical conditions, but hinting at its ability to address issues that orthodox medicine been less successful with. By accepting the hegemonic position of orthodox medicine it diverts criticism (ibid., p.133).

5. At the same time a common technique is to invoke an amateur or quack behaviour set, that contrasts with the claimed professionalism of the "true" aromatherapist.

Professionalism is often associated with a certain lack of emotion (Watson 2002, p.109), cool detached behaviour (Orr 1996, pp.83-4) and other aspects of image which become important

where objective criteria of evaluation are difficult to determine (Alvesson 2004, p.81). It is through this quality of emotional restraint, that it can be seen as gendered (Kerfoot 2002).

2.3. Community of practice theory (COPT)

Although Brown and Duguid's early paper (1991) framed the newly coined concept of community of practice as a way of rethinking the nature of organisational knowledge, it could equally be seen as another aspect of the break up of the theory of the professions. COPT revalues the knowledge that wells up from the level of practice, whereas the theory of the profession privileges formal abstract knowledge.

The idea of communities of practice originated among a group of researchers who were associates at the Institute for Research on Learning and built on a body of common influences in ethnographic studies of work by Suchman and Lave (Jordan 1996). These studies showed the richness of knowledge needed to perform many seemingly routine tasks. Although a rather changeable concept (Osterlund and Carlile 2003, Table A1.4), what is fairly clear is that community of practice is the level at which this knowledge is collaboratively generated, and the vigour and complexity of such invisible work challenges the importance of the formally codified knowledge of the organisation but equally (in a less noticed way) the formal knowledge derived from professional socialisation.

The concept of communities of practice was first proposed in Lave and Wenger (1991) and in this manifestation highlighted learning through informal and situated social interaction, rather than as a planned mechanistic process of cognitive transmission (see Table A1.1). Such interaction achieves authentic, motivated learning of what is needed to be known about the complexities of real practice. It is a central proposition that learning is more than simply acquiring knowledge, it is about an identity change. Peripheral participation, active involvement in marginal parts of the practice, is identified as a key process in learning. The way that old timers in the community sanction participation adds the concept of legitimation, and supplies some sense of the inequalities, power structures and generational tensions within communities.

Brown and Duguid (1991) used Orr's (1996) ethnographic studies of photocopier repairmen to illustrate the importance of collaborative improvisation and storytelling to "getting the job done." Whereas in Lave and Wenger the stress is on socialisation into the community, Brown and Duguid focus on improvisation of solutions to new problems, in voluntary collaboration taking place outside the control of the formal organisation. Such improvisation is necessary to address the limits of "canonical", i.e. codified knowledge (Brown and Duguid 1991, p.41;

Table A1.2). They also open up the issue of the relation between different communities and between the organisation and a community, whereas Lave and Wenger (1991), using models from studies of apprenticeship (and perhaps reflecting assumptions in anthropology) tended to focus on the internal workings of the community as a bounded and seemingly self contained world.

Whereas neither of the two early works offered a precise definition of a community of practice, Wenger's 1998 book does supply an explicit one. Thus here a community of practice is defined as a group that coheres through "mutual engagement" on an "indigenous" (or appropriated) joint enterprise, creating a common repertoire. The tight knit nature of relations created by sustained mutual engagement is clear from Wenger's indicators (1998, pp.125-6). Surprisingly, the indicators have not been widely referenced by subsequent researchers, even though they do substantially clarify the nature of Wenger's concept. Wenger's definition will be the basis of the understanding of the idea in this thesis.

Wenger's (1998) focus is identity, and he particularly stresses the importance of trajectories through different levels of participation in a community and the tensions of multi-membership of different communities as a key dilemma for the individual. The nature of boundaries between communities and the challenges in bridging them is also explored.

The strength of the concept as proposed by Wenger (1998) is that it offers a holistic model of a social group and from an information science perspective intertwines social processes such as identity with purely informational ones. The wide currency of the concept means that there is a useful repertoire of writing and pre-existing research that can be drawn on to further develop use of the idea, though the variability of how it is understood is a problem.

However, Wenger's account has its weaknesses, such as its complexity and its disconnection from a clear position in a wider literature. Fox (2000, 2002) and others have focussed particularly on its poor conceptualisation of power. To remedy this, Callon's theory of interessement from Actor Network Theory (ANT) is proposed to theorise the process by which one group recruit others to become a community for their purposes. This could be contrasted to Wenger's own conception of "co-ordination" developed in a later, practitioner orientated work (Wenger, McDermott and Snyder 2002). The co-ordination concept points to the difficult but vital role of a facilitator in cultivating a community and coordinating it with the purposes of the host organisation, whereas in the 1998 work the community of practice seems to emerge without facilitation and does not necessarily see itself as a group. Such a leadership role is also a central concern in the literature of online communities (eg Collins and Berge 2003) and online learning communities (eg Salmon 2000).

A particularly controversial aspect of community of practice theory has been the use of the word community to describe the emergent relationships around a practice. Brown and Duguid (2001, p. 203) ask how the concept of a community of practice would have fared if the label of cadre or commune of practice had been chosen instead, for in sociology, defining community clearly has proved impossible (Komito 2001, Etzioni and Etzioni, p.241, Cohen 2002, p.167). In general usage it tends to have unqualified positive overtones, as Raymond Williams (1976) pointed out (and Wenger (1998) acknowledges, fn4 p.288), though inevitably everyday usage is quite different from sociological use (Kling and Courtright 2003, p.224). However, it seems that the ambiguity of the concept is part of the power of the community of practice idea, even if it is a difficulty for its use as a scientific concept. Finnegan (1994) convincingly suggests that the word community is used in five ways, to mean (pp.210-211): a locality, a grouping based on "shared interests" (in the sense of vested interests, eg the academic community), "a locality or grouping bound by close ties, such as those of kinship or neighbourliness," a sense of belonging (a subjective experience) and "a claim or exhortation to observe common ties" (an attempt to mobilise sense of common feeling). Thus it can mean anything from a geographical area to an interest group to a closely bounded group.

One common usage of the label "community" is rather intense clearly bounded groups, based on direct social relations. Herring provides a useful recent summary of this usage of the term in her review of some of the literature of virtual community[2], pointing to six sets of recurrently identified attributes (Herring 2004, compare for example with Brint 2001 quoted Kling and Courtright 2003, p.224):

1) active, self-sustaining participation; a core of regular participants
2) shared history, purpose, culture, norms and values
3) solidarity, support, reciprocity
4) criticism, conflict, means of conflict resolution
5) self-awareness of group as an entity distinct from other groups
6) emergence of roles, hierarchy, governance, rituals

A recurrent theme is that a community is not inherently consensual, helpful or friendly (eg Kling and Courtright 2003, p.224). Nevertheless, often what is central to an online group being named a community is simply a level of interaction and supportiveness (eg Kling and Coutright 2003, p.225) to be distinguished, for example, from web sites which push information out to a body of "passive" readers. Butler's (1999) review of potential metaphors

[2] Since Rheingold (1995) discovered the virtual community, the debate over this concept has in many respects been "polemical, dualistic, ahistorical, anecdotal" (Bell 2001, p. 93, Wellman and Gulia 1999), nevertheless it has constituted a large part of the definitional debate of the concept of community (Delanty 2003, p.167).

or labels for online communities concludes that they are more like voluntary associations than small groups (p.35).

Wenger's own (1998) conceptualisation of community is paradoxical in relation to common usage of the term (see Table A1.3). A community of practice, he says, is not necessarily friendly or harmonious (see indicator 1, Wenger 1998 p.125 [3]). It has a purpose, whereas communities are usually seen as unpurposive. Connections are circumscribed by the "joint enterprise" (indicator 7, Wenger 1998, p.125), whereas community is seen as typically a total, a unity (Fox 2002). It is a group based on a practice not a locality (though it is in one sense local and situated). It is also unexpected in being located in the workplace, often even in mundane work, a context which is generally seen as simply alienating. More obviously it is a community of people who differ, having different skills and knowledge and "mutually defining identities" (indicator 8, ibid.), whereas community tends to imply sameness. It also has internal structure (periphery), whereas communities are usually thought of as unstructured; it evolves over time, is a creative force, whereas communities are generally seen as rather static.

It almost becomes difficult to see why Wenger used the term community at all since he denies most of our usual assumptions about the concept, save to express the strength and voluntary, informal, authentic nature of the direct relationships identified. Yet, however paradoxical a view of community this is, it does accord well with revisions of the notion in current sociological thinking (Delanty 2003). This increasingly stresses diverse forms of sense of belonging, acknowledging that boundaries can be vague, solidarity based on ambiguous symbols, that sense of community is an accomplishment (Frankenburg 2003, p.xiv, Baym 2000), episodic and situtationally limited (Amit 2002), and that community can be limited rather than all encompassing of the individual. The residual problem, though, is that the term community does lure the reader into the trap of seeing it simply as a rather large, helpful and friendly bounded group. This is a view Wenger himself warns against, but may himself fall into.

The concept of "informality" is pervasively used in the discourse of community (of practice), in a way that suggests it is both separate and more real than the formal, and inherently good. Yet Misztal (2000) shows how formality and informality are entwined, and the risks of informality are well charted in Misztal (2002). Table A1.5 sets out the balance of advantage

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[3] Contu and Willmott (2003, p.287) may be correct, however, in pointing out the consensual connotations of much of Wenger's language, eg "joint enterprise".

and disadvantage. Wenger acknowledges the "dark" side of communities, but he does idealise them too.

Perhaps the major limitations on COPT as expressed by Wenger (1998) is that it idealises direct social relations and tends to disconnect the community as a bounded object from wider structuring forces (Vann and Bowker 2001). Eraut (2002) suggests some of the ways in which 21st century workplace conditions would limit the extent of collective appropriation of an "enterprise." Lacking the understanding of these limiting and structuring forces the theory teeters on the brink of being a theory of pure agency.

The theory also in itself tends to downplay other forms of solidarity than direct social relations, though Wenger (1998) does provide a number of alternative concepts to explore more indirect forms of social relation. Thus he proposes the notion of "constellations of practices" to capture the case when different practices are perceived to be linked, for example by (Wenger 1998, p.127):

- Facing similar conditions
- Having members in common
- Sharing artefacts
- Having overlapping styles or discourses
- Competing for the same resources.

Being part of the constellation need not be recognised. Oliver uses this concept to explicate the nature of relationships of learning technologists in UK HE (Oliver 2003). Each learning technologist participates in a local community of practice, but their similarity creates the basis for some form of pre-professional community, and a "yearning" for mutual engagement (p.263). The question is then, how does it come about that different, parallel practices are the same?

Wenger also offers the terms "community of imagination", echoing Anderson (1991), and "community of alignment" (chapter 8), to refer to people who have a common ground in, for example, exposure to common media. Anderson's original concept referred to the way in the modern world people feel a sense of solidarity with others who are seen as somehow like them, but whom they do not know personally, a community which is imagined at the level of ideas, and propagated through the press and books (and other social structures, such as educational systems). It is a symbolic link rather than based on actual relationships (see also

Calhoun 1991, 1998). Amit (2002) argues, however, that the visceral, intense quality of such imagined community requires that it be imagined immediately in experience of direct human contacts.

> the emotive impact of community, the capacity of empathy and affinity, arise not just out of an imagined community, but in the dynamic interaction between that concept and the actual and limited social relations and practices through which it is realized. People care because they associate the idea of community with people they know, with whom they have shared experiences, activities, places and/or histories. In turn, they use these interpersonal relations to interpret their relationship to more extended social categories. (Amit 2002, p.18)

This suggests the thought that COPT in its idealisation of direct social relations could be treated as a model of a type of association and that actual communities are more likely to be composite of such direct social relations combined with indirect social relations.

Interestingly, the Internet also opens up opportunities for audience communities to become communities of practice, as suggested in perhaps the best study of a virtual community that we have (Baym 2000). Baym is interesting for the way she sees the culture or climate of the online group as the outcome of the interaction of the inherent characteristics of the topic discussed (Wenger does not specify that the nature of the domain of interest influences the character of relationships), characteristics of the group members (including their offline contexts) and conventions of the medium. That the group feel like a community, is a "communicative accomplishment" (Baym 2000, p.121), achieved through:

- Avoiding flaming
- Talking about personal life, as "tangents"
- Unlurking acts
- Passing mention of dyadic relationships, "indicating the presence of backstage friendships" (ibid., p.137)
- Treating each other as they would friends: "with kindness, breadth, depth and an accepting attitude" (ibid., p.135).

Thus we can identify a number of forms of less direct social relations, such as between those working on similar activities in different contexts, in parallel practices (constellations of practices) or groups who come to be similar through similar socialisation processes (professional communities) or exposure to common media (communities of imagination or alignment). A particularly relevant form of this would be occupational socialisation. In coining this term van Maanen and Barley (1984) pointed to the power of solidarity based on doing similar sorts of work, even if it is not organised in professional communities. It is

interesting to note that Orr (1996), though often after Brown and Duguid (1991) seen as writing the most definitive portrayal of a community of practice, does not himself use the term community of practice or even cite Lave and Wenger (1991), preferring to use the concept of occupational community. A continuing cause of confusion in community of practice writing is its relation with occupational/professional community; increasingly in Knowledge Management COP literature what are often being described are in essence professional special interest groups within an organisation (see the examples in Wenger, McDermott and Snyder such as the turbodudes (2002, pp.65-8) or Muller and Carey 2002).

Brown and Duguid (2000, 2001, 2002) have also proposed the term "Networks of Practice" to describe occupational groups with similar practices, but with indirect rather than the direct links of a community of practice (2002, pp.141-2). Members of such groups do not know each other, they are "very loosely coupled systems" underlying which are a substrate of similar practices (Brown and Duguid 2001, p.205)

> Collectively, such social systems don't take action and produce little knowledge. They can, though, share information relating to the members' common practices quite efficiently. (Brown and Duguid 2002, p.142)

This seems to be a concept at the right level to investigate cross organisational contacts, and one which others have begun to use (eg Faraj and Wasko 2001, Beetham 2002). Yet Brown and Duguid do little more than propose the concept without developing it theoretically; in effect it is defined only negatively as *not* a community of practice. Clearly within a NOP there could be quite powerful direct social interaction, but equally it is reliant on common ground derived from similar socialisation, similar tasks or common media exposure.

This suggests the idea of using COPT to generate a model to which a NOP could be compared, seeing any actual community as existing on a cline with a COP as based purely on direct relations.

2.3.1. The community model

Table A1.6 draws on COPT to produce a set of dimensions as a comparative model through which to examine particular communities. Most of the model is derived from Wenger (1998), but it also incorporates several themes from both Brown and Duguid's (1991) study, namely narrative as a collaborative improvisation, and from the practitioner orientated literature (Wenger, McDermott and Snyder 2002, Wenger 2001), namely the idea of facilitation and time aspects of communities such as rhythms and evolution. These are somewhat more specific predictions than most of the characteristics identified in Wenger (1998) and seemed to be useful in looking at the data addressed in Chapter 4.

In essence (row 1) a community of practice is seen as a rather tight knit group of people who interact intensively in pursuit of a valued, joint enterprise, a collective purpose which they have appropriated (or is literally indigenous). It is a group with a common set of purposive activities, sustained over time, with a history of interactions and arising from this history a common repertoire of valued ideas, knowledge, values, stories and in-jokes, that are to an extent locally invented. It has a shared way of talking about the world. The group is governed through mutual accountability.

Expanding on this core definition we can examine a community of practice through four main dimensions of community:

Dimension 1. Membership and participation

From the notion of sustained mutual engagement it follows that the scale of the group is likely to be small (row 4) and to be face to face rather than mediated by communication technologies (row 3) and exist in a particular locale (row 2). A community of practice is a group within which there is a pocket of high interactivity - a dense network (row 6). However, the concepts of peripheral participation, trajectories of participation and boundary work all point to lesser forms of involvement as important elements to the working of the community (row 6,7).

The question here is: who participates at the different levels of participation? What rhythms of activity are there?

Dimension 2. Joint enterprise and repertoire

The joint enterprise is placed in a domain of interest: this may not fit into pre-existing topical boundaries (eg the jurisdiction of a particular profession) because it is determined by the unique appropriation, reinvention of the enterprise. The level of interest is pragmatic: to get things done, more than theoretical. The group is capable of circulating information rapidly (because of its intensive communication), but also creating, improvising new knowledge and cultural artefacts: the repertoire (row 11). It is a place where learning occurs. Brown and Duguid (1991) frame narrative and collaborative improvisation as particularly important processes or genre of activity as it were (row 10). Equally the enterprise may address other needs than for information. Wenger (1998) sees such communities as potentially rather transient, though in the later work he points to their ability to evolve (rows 12,13).

The questions here are: what and how are information or knowledge shared or created? What other purposes does the group serve? How does this change over time?

Dimension 3. Identity and sense of community

Because it is the enterprise that ties people together, anyone involved in this is potentially part of the group. The concept is mutually defining identities, rather than a one way process of "socialisation" into a member identity for the community; there must be more give and take (row 14). Any individual has multiple memberships, so multiple identities. Wenger does not seem to predict a "sense of community" though people know who is who. So it is unclear how much of a sense of groupness a community of practice has (row 15).

The questions here are about how the group see themselves as individuals and a community: what identity work takes place and what sense of community is there?

Dimension 4. Climate and governance

Wenger does not predict a particular climate of interactions in a community of practice: it could be conflictual or consensual (row 16). However he does see the group as strongly governed: through mutual accountability (row 17). Since this emerges through interaction the suggestion is of a rather egalitarian distribution of power. The treatment of power in the theory may be one of its weaker points, however. Fox (2000) supplies a theory to describe a process of recruitment to a particular agenda, building a community around a particular interest (row 19). This has its counterpart in Wenger's later thought in the idea of facilitating the group, or "co-ordinating" it with the wider organisation within which it sits (row 18).

The question here is: what is the climate of relationships and how is it governed and led?

Although the four dimensions are pairs of ideas these are interlocked: we cannot separate issues of the membership from different levels of participation; of the enterprise and the historic repertoire it (re)produces; the climate of exchanges and how the group is governed (issues of power). Identity and community are perhaps less closely entwined.

The proposed model of a community of practice through four dimensions plays two roles in the thesis. Firstly, it provides a set of rather general dimensions by which to explore particular communities, without totally determining what is studied and how, given that the phenomena under examination are not seen as communities of practice as such. These dimensions are in some respects obvious aspects of any group: who is a member, what do they do, etc. The concerns are mirrored, for example in many studies of online communities and such studies could provide alternative models (eg de Souza and Preece 2004 or the best available empirically based factorisation of community features, Andriessen 2005). However, because COPT is quite sophisticated relative to most online community studies (eg is not technically

deterministic, indeed not concerned necessarily with mediated community at all), and has been the focus of useful theoretical debate this may be a somewhat superior starting point than offered by much of online community literature. The focus on identity and boundary work are particular features of COPT that would probably not be commonly found in studies of communities. One benefit of starting with this overall model is that a rather holistic view of the community is produced. COPT also provides a convenient set of terminology, such as "enterprise" and "repertoire". Some teams have been added by the researcher, such as climate; Wenger frames it as an issue in his indicators but does not supply a general term. The researcher has also introduced the idea of sense of community, which Wenger addresses negatively saying that the group may not identify itself as a group. In this role the model is not intended to be a straitjacket, only a loosely structuring guide: for example, the dimensions are related (eg self identity of the community is an aspect of the repertoire). Inevitably in some cases data may not be available to explore all the dimensions fully.

The second role of the model is more specific: it is to provide an expectation of what would be found in a community of practice for each dimension, against which to set what is actually found, i.e. to act as a comparative model. As a conceptualisation of a rather intense self inventing group arising from direct relations, community of practice is relevant to many entities in so far as they achieve a level of collaboration, but most are also sustained by indirect relations, the enterprise is not fully appropriated and the repertoire generated is heavily borrowed from other contexts. Any community (eg a NOP) can be usefully seen as existing on a cline with a community of practice, therefore.

This is not the only definition that could be produced and found warrant for in COPT. It is a feature of the COPT literature that people have productively appropriated the idea in many ways, arriving at different often rather loose definitions. The one proposed here is not a very tight definition, in that it is relatively complex and some respects indeterminate (climate, groupness). This has the benefit of not strangling the data with theory. There is still room to explore the data for itself.

2.4. Other theoretical resources

2.4.1. Social network analysis (SNA)

Two other conceptual models for looking at cross organisational connections would be social network theory and social capital theory.

Networks are a pervasive topic both in science and the social sciences (Kilduff and Tsai 2003, p.13, popularised by such authors as Buchanan (2002)). The very ubiquity of the concept has aroused suspicion that it is in some way ideological (Law 2001), perhaps because it seems to offer to combine the appeal of both Gemeinschaft and Gesellschaft (Garsten 1999, p.614) solving the tantalising choice between community and freedom (Bauman 2001, chapter 1). It may be "less a theoretical model than a rhetorical tool for researchers to easily discuss the variety and complex and not well understood relationships currently found in organisations" (Iacono and Kling 2001). Jensen (2004) points to the variety of meaning of network (as clubs, chains and acquaintances) and it could be argued that the concept potentially obscures differences between social relationships.

SNA is a social rather than psychological approach in that, as a determinant of behaviour, it focuses more on "the kinds of ties and networks in which people are involved than [...] the norms and attributes that the individuals possess" (Haythornthwaite and Wellman 1998, p.1102). Yet as an approach to social life it almost has the flavour of a conspiracy theory of sociology, focussing on who knows whom, rather than common structural positions (such as class or gender)[4] that influence people who have never met to behave similarly or have a common interest. Like COPT it focuses exclusively on direct social relations. This potentially interlocks with the discourse of the Internet in which distance between people is constructed as a social problem (Iacono and Kling 2001). Social network theory is not central in sociological thinking, for example, rarely mentioned in general works on social theory (eg Best 2003). However, it does have the strengths of being capable of working at both micro and macro levels and combining qualitative and quantitative data (Kilduff and Tsai 2003, pp.19-25).

In some respects it is unclear whether social network theory is primarily a method or a theory (Kilduff and Tsai 2003, chapter 3). However, two theoretical claims about the value of particular types of connection or network configuration are recurrent themes in the literature:

[4] Social structures not network structures. The concept in SNA of structural equivalence merely points to the common ground of two people positioned similarly in a network, eg two individuals who are both secretaries of managing directors.

- The notion of the *strength of weak ties* (Granovetter 1973, 1974), which refers to the particular advantages of loosely linked acquaintances and sparse networks, connections who are cheap to maintain and offer diverse forms of information compared to close ties

- Burt's concept of *structural holes*, which points to advantages deriving from an individual having a unique bridging position in a network (eg Burt 2000)

Certainly it does provide a terminology to describe the dimensions of a social network, eg centrality, density etc and a method to attempt to measure them.

In organisational studies SNA has increasingly been presented as a practical way to help identify problems through seeing weaknesses in communicative structures, eg groups not talking to each other (though this begs the question of whether we can define what should be the communication pattern and measuring real quality of interactions) (Cross and Parker 2004) but it has wide application in more scholarly work in the field especially social capital (Borgatti and Foster 2003, pp.993-4). It often has the exciting quality of offering to reveal informal networks as more real and effectual than formal channels of communication (Cross, Borgatti and Parker 2001, Krackhardt and Hanson 1993). It has also been used to attempt to identify communities of practice (Schenkel, Teigland and Borgatti 2001). Kilduff and Tsai's exploration of the implications of the different logic of goal directed and serendipitous networks is an interesting variation on many themes of informality found in writing about communities of practice (2003, Chapter 5).

There are two main approaches to performing a SNA: the first centred on discovering the pattern of one individual's connections (egocentric) and the second capturing the pattern of relations within a particular group (bounded), the latter generally being seen as providing a more complete picture. The method tends to look at different types of network used for different purposes; for example, Krackhardt and Hanson (1993) claimed to find within a single organisation, an advice network, composed of those who people turn to to help solve problems, a network of trust, those with whom one would trust political information and a communication network linking those who talk to each other regularly. The method often boils down to a questionnaire asking respondents to describe the nature of their contacts with others (rather than observation of actual behaviour), which can then be mapped using computer based tools to produce visualisations of the network, a sociogram.

An emergent research strand is to use computational methods to analyse emails or email headers to chart or visualise social networks, including communities of practice (Tyler, Wilkinson and Huberman 2003, Allatta 2003). The appeal of this is to automate the exploration of social networks, creating visualisations for managers or participants. This might be more plausible if it looked at the content of messages too, analysing patterns of words (eg McArthur and Bruzer 2003) and it assumes that email networks are good proxies for all social contacts, which is possible (Ruuska and Vartianinen 2003) but debatable (Haythornthwaite and Wellman 1998). Yet the ethical concerns that arise even from just using email headers point to the limits of automating the study of informal links without consent. Obtaining consent may be so time consuming as to negate the effort saved in automating the description of the social network.

A more typical type of study relevant to this thesis would be Haythornthwaite (2002) which looks at the precise shape of the networks of informational, social and task support among a group of people who are in a virtual community, on the assumption that certain network configurations are favourable to achieving the group goals, in this case, learning. It looks at patterns in the network, and overall qualities of the network.

2.4.2. Networked individualism

Closely linked to SNA as a research method, Wellman (Wellman et al. 2003) and Castells (2001, chapter 4) have proposed the concept of "networked individualism" as a general characterisation of contemporary society. This suggests that local community is being replaced by social networks centred on the individual: "personalised communities," "me-centred networks" (ibid., p.128), "communities of choice" (ibid., p.132), "individualised, fragmented personal communities" (Haythornthwaite and Wellman 2002, p.32). The background is the breakdown of collectivity, and rise of individualised relationships, chosen by and centred on the individual. Social changes such as the individualisation of the relation of capital and labour, a crisis in patriarchy (the undermining of the family), urbanisation and a crisis of political legitimacy lie behind the rise of "networked individualism" (Castells 2001, pp.128-9). As a technology the Internet reinforces and enables such pre-existing processes: the study of virtual social networks is an important strand in the study.

In this type of society most of an individual's ties are private, specialised, sparsely-knit, transitory and maintained over a distance. They offer the individual more freedom (from community control and surveillance), but less security. The "security and social control" of localised community are replaced by "opportunity and vulnerability" (Haythornthwaite and Wellman 2002, p.33). Boundaries are less clear cut:

> In such networked societies, boundaries are more permeable, interactions are with diverse others, linkages switch between multiple networks, and hierarchies are flatter and more recursive. (Haythornthwaite and Wellman 2002, p.33)

So networks are loose knit, boundaries are vague and changing, groups ephemeral, less hierarchical. Yet, though weakly linked they are important as they offer the individual "support, sociability, information and a sense of belonging" (Haythornthwaite and Wellman 2002, p.34). People participate in multiple groups and their behaviour is best understood in terms of individualised motivations (van Baalen and Bogenridder 2004).

At the heart of this interpretation is the individual actor making "choices and strategies" (Castells 2001, p.127) building a personal network on the basis of "interests, values, affinities and projects" (Castells 2001, p.131). So behaviour can be analysed in terms of individualised motivations, even if it results in collectivities. Wellman stresses how the mobile phone is owned by the individual, the person is the portal (Wellman 2003). This could imply both networks unique to the individual and instrumental motives to join loose networks. Most of the relevant studies have been based on social network analysis as a methodology.

The idea of community as social network is a quite contrasting view to that of community of practice. Table A1.7 expresses both concepts in SNA terms (after Schenkel, Teigland and Borgatti 2001), to reveal the contrast in the two conceptions. In Wenger's closing talk given at the C&T conference in 2003, there was a sense that his core idea (promoted almost as a moral crusade) was mutual engagement, horizontal engagements, true dialogue and collaboration (Wenger 2003). Wellman in the opening keynote of the same conference stressed the power of loose networking between individuals (2003). This has an alternative attraction: the appeal of freedom of choice. There was a difference in flavour in the sense that Wenger, as a practitioner, was advocating community as a moral force (though he also claims that communities of practice are to be found everywhere) whereas Wellman (as academic) presents networked individualism as an achieved historical reality (see Table A1.8).

In a sense it would seem that the positivistic methodology of social network analysis with its stress on quantifying social relations and behaviours was likely to bring Wellman to see weak ties as the most significant social phenomena because it focuses on counting externalities. Meanwhile Wenger's approach, since it focuses on meaning and identity, is bound to be explored through qualitative methods, the method which, again, is likely to find the most interesting (i.e. meaningful) relationships to be strong ties. Looking at definitions of community that emphasise sense of belonging, mutual knowledge etc, it is difficult to see how these could be expressed in SNA terms. Thus the methods in both cases are closely married to the results, which could potentially be seen as partly artefacts of those methods.

Yet it would be simplistic to see the two paradigms as polar opposites. At the most fundamental level both deal with direct relations between people and tend to ignore wider structures. Wenger does account for some sense of loose ties, with the idea of peripheral participation, trajectories of membership and the broker role, in particular. The broker could be an isolate, yet has an important role in mediating between one community of practice and other communities. The concept of multi-membership can also be used to explore the tensions for the individual in participating in multiple practices for the individual; presumably such tensions are relevant to the position of the networked individual. Wenger's interest in boundaries shows a concern to make them permeable to new ideas and include a diverse membership in the community to keep ideas fresh. This means that a community of practice is more than just a group with strong ties; it has elements of weak ties, even of boundary spanners. Concepts such as NOPs open up the application of the same theory in the area of weak ties.

While acknowledging the affinity between method and findings, some have tried to use SNA to identify communities of practice. Attempting to express the community of practice notion in SNA terms is clearly problematic since it turns statements about meaning into the counting of communications. Schenkel, Teigland and Borgatti's (2001) realisation of the concept as four network variables, seems to be reductive and far removed from Wenger's conceptualisation with its stress on meaning, though obviously having the virtue of being measurable. The choice of dimension is selective in relation to the six characteristics of networks identified by Wellman (1997, pp.186-98). Interestingly, they found only that the group they were studying was more like a community of practice than other parts of the organisation, and most of the hypotheses were disconfirmed.

Although the themes pursued by Wellman through the concept of networked individualism are highly relevant to this study which was looking at a weak NOP, the method followed is not SNA. This is partly because the starting point was Wenger, so was likely to use an ethnographic style of analysis focussing on meaning. SNA tends to focus on quantification of ties, which gives an illusion of specificity, while ignoring the weight of different contacts. One principal dataset and object of study, the email list, did not really suggest that SNA would have been useful. There was little evidence of particular cliques of respondents; most interaction was between the individual and everyone (the strength of no ties, perhaps). Off list posting seemed not to be a significant activity, though clearly there were clusters of people who knew each other. Such posting was less important than the publicly acted out dynamic of the list as a whole. As a method SNA was influential in the interview stage of the thesis, though the intention was never to perform a fully fledged SNA. The boundaries of the group

were precisely an object of study and the scale of the group involved would inevitably preclude a bounded study. The main thrust of the thesis was to discover the relative value of extra organisational contacts rather than to differentiate between different individuals or types of individual for different types of information or support. Instead the study follows Barley and Kunda in making suggestions about the character of informants' ego centred networks, without formal collection of SNA data (2004, p.265).

2.4.3. Social capital

The main thrust of social capital theory is that "relationships matter" (Field 2003, p.1) as a resource for individuals, organisations even regions and nations. It is the "stock of active connections among people" (Cohen and Prusak 2001, p.4). For a more precise definition Bourdieu's is often cited:

> The aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalised relationships of mutual acquaintance or recognition. (Bourdieu 1985, cited Portes 2000, p.45)

Huysman and Wulf's definition is suggestive of the multi dimensional quality of social capital:

> Network ties of goodwill, mutual support, shared language, shared norms, social trust, and sense of mutual obligation that people can derive from. (2004, p.1)

SCT is quite closely related to social network analysis for the character of the network is often seen as a key dimension of social capital, but it is only one aspect. In an influential paper Nahapiet and Ghoshal (1998) identify three dimensions of social capital: a structural dimension, the overall pattern of connections between individuals, relational embeddedness, the kind of relationships that have been built up (trust, norms, obligations and expectations, identification) and the cognitive dimension, the systems of meaning shared by the group (shared language and codes, narratives).

An important emerging theme is the potential downsides of high social capital (eg Huysman and Wulf 2004, pp.6-7). Field stresses the importance of the skills that are needed to activate social capital as a potential resource (2003, p.143).

A typical relevant study from the SCT perspective might look at the impact of a virtual community on face to face social capital (Blanchard 2004). The strength of this may be the exploration of multiple aspects of relationships. Social capital is a more general concept than community of practice that would be interested in patterns of relationship, not just within communities. Starting from SCT leads one to map out the pattern and quality of social relations in a particular field, even quantify them. However it is essentially descriptive: although, for example, it is obvious that network density and the level of trust are related,

SCT does not offer a theory of how the factors relate. Thus a social capital study might offer a snapshot of the level of social capital but not be good at predicting change or causology. It may be more useful to focus on one attribute and fully explore this, thus there is a large literature on trust (Daniel, Schwier and McCalla 2003). In contrast, COPT links a particular dynamic - mutual engagement in an indigenous enterprise - to a particular configuration of social capital.

In this thesis SN and SC are referred to as important, but COPT theory is preferred as a starting point because it captures a driving dynamic and focuses on communities as such. There are certainly other theoretical resources that might have been applied to the research problem, or part of it, such as social world theory (Strauss 1978,1980, Clarke 1991) or the notion of epistemic cultures (Knorr Cetina 1999, Winroth 2003) or, at a less macro level, theories of creative social groups such as collaborative circles (Farrell 2003) or theorisations of human interaction with technology, such as activity theory (Kuutti 1996, Russell 2002). This part of the discussion will confine itself to briefly looking at the notion of the invisible college as a reference point.

2.4.4. The invisible college

The study of connections between academics often stressing informal links and labelled the "invisible college" may offer some suggestions of approaches to understanding the topic of this thesis, if only because academics' networks could act directly as models for professional ones specifically in the university sector. Zuccala reports Price's original conception of the invisible college as "groups of elite, mutually interacting and productive scientists from geographically distant affiliates who exchange information and monitor progress in their field" (Zuccala forthcoming).

Wenger, McDermott and Snyder acknowledge the invisible college as one among many forerunner concepts of communities of practice (2002, p.239 fn 1), and increasingly writers use the term community of practice where they might previously have used the term invisible college eg Tomlinson (2002), Kienle and Wessner (2005) or Webber (2003, p.322), who also uses the concept of NOP. Work on networks among academics also offer models of studies in a somewhat similar context, eg using similar technologies.

Academic networks may also be considered relevant because in the theory of the professions academia has a particular place in the social management of knowledge (Abbott 1988, pp.52-8). Professionals and academics work in a joint space through which knowledge diffuses (Lewison 2002). In fact, however, considered as the invisible college scholarly networks may

also have their own specific dynamic that has to be modelled separately (Zuccala forthcoming).

Particularly for information science, a bibliometric approach to understanding patterns of collaboration (eg Kienle and Wessner 2005) is one important methodological approach that is not available for the domain of this thesis. The problem of motivating knowledge sharing, a key issue in this thesis, is met in the very nature of scholarly communication, reinforced by such systems of reward as the Research Assessment Exercise.

The most revealing parallels may be differences such as the importance in academic networks of geographical mobility of colleagues whose work is closely intertwined by intellectual linkages. Professional behaviour may be different, especially because relationships among them are not the strong intellectual ties found among academics. Unlike disciplinary communities professional communities organise on a national rather than international scale. This may point to the importance of factors such as legislative frameworks in moulding professional communities, which have less impact on the abstract concerns of scholars. On the other hand, the diversity of background and trajectory noted by Tomlinson (2002, p.24) may also be a feature of the professional network in the web domain. Specific findings are intriguing; for example, Becher and Trowler note that academic networks have inner and outer circles of acquaintance (2001, p.93); perhaps this is reproduced in professional networks.

As regards the specific role of technology, idealistic predictions of major democratisation and enrichment of the invisible college (Gresham 1994), like all the inflated hopes for the Internet, have been reined in. Electronic media have some effect but tend only to slightly reconfigure or reinforce existing networks (Koku, Nazer and Wellman 2001). Perhaps the same would be expected for professional communities.

2.5. Engineers, technicians, computing specialists, web specialists

Having looked at the general theory of the professions and COPT, the discussion turns to what is known specifically about the occupational groups relevant to this thesis. Although it is not assumed that web production should be in the hands of computing professionals, they are a key group. Much of the thesis is concerned with developing an understanding of their perspective, whereas the study of marketing as a set of professions has been more cursory (but see Roberts 2003, Campbell 2002). This section considers what we know about engineers, technicians and computing specialists and web specialists as such.

2.5.1. Engineers

Some features of engineering as a whole may give clues to the structural position of computing and web specialists in particular. Historically engineering has failed to be strongly professionalised, partly, it is thought, because engineering practices require the resources of organisations to practise, whereas classical professionals own the tools/knowledge to perform the role themselves (Barley and Kunda 2004, p.300). Knowledge is central to the image of a profession, ideologically, but this may be as much about gaining prestige as the problem solving efficacy of that knowledge (Torstendahl 1990, pp.2-3). Again historically, the useful knowledge of the engineer has not gained the occupation entry to the elite of society, seemingly because it does not have the right cachet and mystery (Collins 1990, p.18) and perhaps because its activities are tainted by associations with manual work.

Yet if they are not formally professionalised, according to Pinelli et al. "engineering work and communication is rooted in the concept of 'community'" (1993, p.174). The diversity, speed of change and specialism of engineering leads to there being a "multilevel, overlapping hierarchy of sub communities" (Constant (1980) quoted Pinelli et al. 1993, p.176). Constant sees a community as an embodiment of a "technological tradition of practice" which has "at minimum, a knowledge dimension, including both software and hardware, and a sociological dimension, including both social structure and behavioral norms" (quoted Pinelli et al. 1993, p.176). Unlike scientific communities, they have been little studied Pinelli et al. suggest (p.174).

2.5.2. Computer specialists

Turning to computing as such, some basic dynamics of the occupational group have been identified by Abbott, who sees one driving force as rapid change in which skills are outmoded in less than a generation (1988, p.241). Most practitioners are trained in operational skills, not academically (p.245) and careers follow widely diverging patterns (p.245). Traditionally, computing professional identity was founded in maths and engineering, and centred on programming (Danner 1998). Hopkins complains that such positivist, "techno-rationalist" thought, still dominant in training by universities, produces practitioners ill prepared to do the job (Hopkins 1998). In fact, though, for Danner the explosion of demand for computing personnel means that they have very diverse backgrounds and education, and work in diverse contexts so that they lack the commonality of professional groups such as librarians, and are disconnected from the engineering mentality. Practising professionals feel remote from their academic base. This diversity of entry is encouraged by the software industry. Reliance on certification of narrow skills, often by systems suppliers themselves, has been one solution to

the lack of credentialisation of skills normally supplied by professionalisation. However, an increasing number of practitioners do have some qualifications, suggesting a possible reconnection to academic "engineering" culture.

For this thesis, a key set of arguments about computing as a profession is a reworking of the idea that when professionals are employed in an organisation there is a dilemma of loyalty. Von Glinow (1988) reworks this perennial theme in her analysis of the problems and advantages of "hi-tech" workers. For managers, she argues, such employees exhibit diverging loyalties and values from those of the organisation, they:

- Seek autonomy (at both strategic and operational levels) and resist organisational hierarchy,
- Have alternative values from the organisation,
- Pursue technical perfection rather than pragmatic solutions and wish to specialise too much,
- Have their own code of ethics
- Want to publish results to the professional community, against the need of the organisation for confidentiality.

Von Glinow makes less of the benefits of the connection to profession i.e. special knowledge, the link to collective knowledge, a special level of commitment, externalisation of effort of keeping up to date (p.10; Scarbrough 1993)[5]. Interestingly, though, Pinelli et al. find engineers in general more orientated toward managerial control, at least *compared to scientists*, the usual reference point in studies of engineers (1993, p.182,184).

In analysing specifically the structural position of information specialists in universities, Zabusky (1997) again reworks this theme of conflicting loyalty, and offers probably the most directly relevant starting point for this thesis. Zabusky sees IT support specialists as a type of technician, a "broker" (Barley and Orr 1997, p.14, see also Barley 1996) whose fundamental determining structural position is that:

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[5] Ivancevich and Duening's *Managing Einsteins* (2001) recasts the problem as an issue of the personality of IT visionaries in the organisation (Lord 2004). So the sociological problem of conflicting loyalty and values morphs into a psychological problem of gifted individuals, perhaps a classic move in the popularisation of an academic concept.

> The work of maintaining and developing a technological infrastructure requires broker technicians to integrate technological criteria and capabilities generated outside the organization with the needs and requirements of users of technological systems within the organization. (Zabusky 1997, p.131)

As brokers or translators (ibid., p.131) their ambivalent position leads to "conflicts over belonging, loyalty and identity" (ibid., p.150). Their membership of the organisation is seen as doubtful and they are an object of suspicion for management. They are cast as low status, but resist this evaluation by stressing their expertise and reworking the notion of professionalism.

Zabusky found that IT specialists tended to both see themselves and be seen as outsiders, particularly indicated by eating and socialising apart (ibid., pp.140-1, compare with Nardi and Whittaker's (2002) point that eating together is a particularly potent form of socialisation pp.89-90). Often they were found to have been put in marginal spaces of a building. They were distrusted by managers. The organisation is dependent on their expertise, yet suspicious of the potential conflict of loyalty. Further, technicians' non-organisational, expertise-based view of status sets up a tension with legitimacy based on organisational hierarchies and ascribed position and job title (Zabusky 1997, p.143 cf. stories told by managers, Gabriel 2000, pp.158-60). Yet, though they are perceived to be untrustworthy by those in hierarchical authority, in fact, part of their notion of professionalism is to do the job well (Zabusky 1997, pp.141-2). In their own department, Zabusky claims, relationships are more collaborative than hierarchical (ibid., p.151). Supervisors do not tell people what to do. Interestingly, though they tend to see their careers within the occupation, not the organisation, they do tend to work for the same organisation for a long time.

From those within the hierarchy IT specialists tend to be seen as low status and the technicians are painfully aware of this, especially as some of their duties are semi-manual. Physical aspects of the job are a cause of embarrassment and discomfort, as it makes the technician look like a servant (ibid., p.148). They may employ non technical staff to perform these tasks, or focus on doing them excessively scrupulously. There are echoes in this of Orr's stress on being clean and tidy as an aspect of professionalism (1996, p.84). Whalley and Barley (1997) see manual aspects of technicians' work as a particularly important ambivalent attribute, since we tend to demarcate manual and non-manual labour very clearly (p.41). This may be an extension of the problem for engineering as a whole, in its struggle to legitimate itself within the elite of professions.

For Barley, the key dilemma of the technician is whether they are an expert or servant (1996, pp.429-34). The ambivalence is built into the classic job title: "support specialist" *support* implying a subordinate support role, *specialist* implying expert knowledge (Zabusky 1997,

p.145). Thus technicians did not like interruptive firefighting (dealing with users), which was often seen to arise from users' laziness and which interfered with doing more high status development work (dealing with the expert community) (Zabusky 1997, pp.135-6). The joke "A message from the IT department" [n.d.] widely circulated on the Internet captures this in the stories about being expected to drop everything or interrupt their lunch break to come to a call to fix problems created by users' laziness or stupidity. These themes are confirmed by Darr and Scarselletta (2002), who again found IT specialists in a university context as uncomfortable about their status and tending to make jokes about "stupid users" (classic stories told by computer experts according to Gabriel 2000, pp.166-7). Their study found that IT specialists tried to construct a role of mentoring users, to reinforce their own skill, a relationship users tended to resist (Darr and Scarselletta 2002, p.69, after Zabusky 1997, p.147). In Zabusky's study by rejecting the servant role the specialists dismissed a credentialist basis for professionalism, and saw themselves as professionals "in the minimal sense that they had specialized knowledge combining with commitment and dedication to do whatever it took to get the job done" (ibid. p.149). For them everyone was a professional, constructing the organisation non hierarchically as composed of a number of horizontal groups. So the discourse of "professionalism" is a key contested resource. Within this Barley stresses adherence to work style as an important aspect of the mentality of the technician: "the ability to project an improvisational, coolly detached, decisive demeanour, even when frightened or confused" (Barley 1996, p.427).

Although seeming to capture a key dynamic, Zabusky gives relatively little consideration to the nature of the technician's connection to the community of expertise outside the organisation. Barley suggests that the relations can be "sporadic and distanced" because the technical community does not actually need the input of the organisational technician (ibid., p.423). The terminology is echoed in Brown and Duguid's (2001) characterisation of NOPs. Such communities could also be user communities, dominated by suppliers of systems. However, the web as a low level, non-proprietary technology would not tend to be organised this way. Furthermore, the importance of localisation, usability and participatory design all point to the strength of the locally based IT technician in relation to the system supplier, even where big scale systems are concerned. Perhaps the reconfiguration of this relationship is why the Open Source paradigm is so potent. Although in many respects portrayed as a stressed and vulnerable position by Zabusky, the technician's broker role is potentially a powerful one from the perspective of SN theory (Burt 2000). Thus Ray sees brokering roles of choosing systems as powerful, even if firefighting small problems has lower status (2001). Clearly it is critical how dependent the organisation feels it is on the expertise of the technician, a sense of dependence that could be actively constructed by participants. If technical work can be

reinforced by articulation with other values, such as legal requirements of accessibility, the broker role would seem to be a particularly powerful position.

It is also true that conflicts of loyalty exist for many workers and professionals. Indeed, such conflicts may be particularly prevalent in universities where loyalty to the discipline among academics may be stronger than a loyalty to the university and where much other work is in the hands of specialists, who have loyalty to their own professional communities. Ironically, in a university, IT staff may have the weakest link to an external community, particularly as most are self taught and so lack a common socialisation path (McCombs 1998). Zabusky does not say very much about the particularities of it being a university setting, where academia is in Abbottonian terms the dominant profession, so that academic values in knowledge, such as a stress on abstraction are likely to be particularly dominant (shown in librarians wishing to appropriate academic like roles, eg teaching (Ray 2001)).

Zabusky also does not consider the impact of the increasing size of computing departments, themselves developing as social structures. Her technicians like those of Darr and Scarselletta (2002) are technicians based in academic departments. The dynamics may be different where they are working in their own department. A key factor in technicians' positions is the precise relation with the client (Darr and Scarselletta 2002, p.70).

Zabusky argues that support specialists are marginal to their organisation in terms of values through a connection to a wider community of expertise. Another important and relevant exploration of marginality, or "liminality", is by Gornall (1999), who has written about a wave of "new professionals" who are changing universities through temporary, organisationally anomalous, but powerful positions (p.48). Although the analysis is most immediately offered for learning technologists, the position of web managers may also be explored through the concept, not least because the part of the Dearing report that proposed the concept of new professionals seems to encompass them (Whyley and Callendar 1997). The new professionals have divergent job titles and backgrounds. They have temporary contracts and a wide range of roles (Beetham, Jones and Gornall 2001, p.30). Here, interestingly, the professionals are seen as liminal both to the organisation but also not fitting in a wider community. Yet the notion of liminality, as it is taken from Turner's work on community (Turner 1969) hints at the potential urge arising from a marginal position to make a connection to a wider group, and this indeed seems to be the direction taken by learning technologists, the core group of new professionals (Oliver 2002, 2003, Oliver et al. 2004). This position of organisational liminality (a reworking of the idea of the boundaryless career) is a vulnerable position for the individual (Garsten 1999) but also has strengths both for the individual and the organisation, at least in terms of learning (Tempest and Starkey 2004).

Perhaps the dominant public image of computing people in currency is of the geek or computer nerd, which has numerous manifestations from *Geekus Unixus* (Chmielewski and Wellman 1999) to the hacker identity (Raymond 2003, Seebach 1999) or linux geek (Cowen 2003). These humorous self caricatures generally portray the "techie" as young, male and, self deprecatingly, as social misfits and obsessives. On the other hand the open source paradigm lauds them as realising a new model of altruistic collaboration. Interestingly both the hacker and the OS image are essentially amateur. Certainly the "techie" image echoes themes not only in Zabusky's (1997) analysis connected to lack of membership of the organisation, but also in von Glinow's (1998) comments on about dedication to work.

Although the "nerd", "geek" or "techie" is clearly a dismissive, self critical characterisation, Woodfield (2000) shows that embodied in this an essentially engineering view of computing survives, which has a role in the continuing exclusion of women from the profession. The old culture of computing was certainly masculine, she argues, tracing the connections between the image of the highly intelligent, yet solitary, arrogant and ascetic techie (2000, pp.15-17) to scientific, masculinist constructions which draw a gender divide with women who are identified with the social and the body (p.21, citing Keller 1992). The ascetic disconnection from the body is a key feature of the masculinity of the discourse and computing, unlike most engineering, is conducted in a relatively abstract sphere. Woodfield finds that increasing competition driving trends in the industry towards a greater user and service focus led to a recognition of the need for "hybrid" skills and this was a cause for a new wave of optimism that women would have increased role in the industry (ibid. chapter 2). Yet her ethnographic case study of a software firm found that the old cultural image still held sway. Specifically she discovered that the espoused theory was indeed to stress the increasing importance of having "hybrid" workers, people who were good at communicating, not techies. Such values were often propagated under the label of increasing "professionalisation" (ibid., pp.74-8). This rhetoric stressed service, honesty and building a relationship with client. Yet all the male employees still tended to espouse the old beliefs and almost all the women the new ones (ibid., pp.90-95). The stars were still engineering types who were seen as having an "instinct" and love for computers and as highly intelligent in abstract (ibid., p.141). The crowning injustice was that it did not work for women to adopt a masculine style; they still tended to fail to be valued equally (ibid., p.144, 161). In essence women are judged by their gender, not the value of their skills. Time does not seem to have changed the position (Woodfield 2002).

It is possible that the position might be less acute outside dedicated software houses, but this survival of engineering culture is echoed in the one of the few ethnographic studies of an academic computing department that we have. McCombs (1998) found that:

> The espoused values of service, communication, flexibility, and vision seemed to be belied by adherence to the "real" and, in many cases, "original" values - technical competence, long hours of solitary work, putting out fires, and well-defined boundaries. (p.694)

A new employee, "Boris", is lauded by the boss because he embodied old values: he worked with "big machines", had nothing to do with users, preferred email communication and was very well qualified (ibid., p.695). All in all McCombs paints a bleak picture of a dysfunctional organisation which, though it espoused communication, failed at it to a kafkaesque degree (Woodfield's account is much more nuanced, and perhaps more convincing). This is doubly interesting, perhaps, because the employees in McCombs' study were all self taught, so it follows that socialisation into the old engineering culture must have occurred through their reading and possibly practices governed by the technology itself, rather than socialisation through training.

There are some ambiguities here, such as the sense of the self deprecation in geek culture, cutting against Woodfield's characterisation of it as a controlling discourse. There does not seem to be sufficient recognition that it is a defensive ideology. Equally it is interesting to note that in this case the discourse of professionalism is introduced to support hybridity and associated with female work, rather than the general association others have traced to masculinity. The fluid and complex nature of such ideological work means that it is necessary to look at local contexts very carefully to see how discursive resources are being used.

If Woodfield looking at the self identity of IT professionals finds a tension between two fundamental images of computing, Westenholz has found six common identity constructions, with most practitioners using at least two, often sincerely (2004, p.23). Thus they would identify themselves as:

- Wage earner - separating work from life
- Nerd - work replaces life
- Self employed - selfish
- Employee - primary loyalty is the organisation
- Expert - primary loyalty to the professional community
- Consultant - sells services to customer

The latter three were the most commonly expressed identities in her study, specifically of (Danish) IT workers. The web area might also give rise to some of these identities.

2.5.3. Web producers

The expansion of use of computers has led to the dilution and divergence of computing culture (Woodfield 2000, p.11). Old analyses of computing as a profession may be as vulnerable to obsolescence as computing skills themselves. Gabriel (2000), for example, reports classic stories of computers, as if the computer were not itself capable of changing as a symbol. The ubiquity of computers in the working lives of all workers changes the position of computing specialists, creating an increasingly fuzzy divide between power users and support staff. The web itself potentially fundamentally changes the way computers are seen, as do, in different ways, blogging and open source as paradigms. Equally major changes in the structure of the labour market after the dot-com bubble and also arising from outsourcing programming work to developing countries may make analyses written before 2000 suspect. Thus care has to be taken in applying past analyses to the present. We have relatively little recent analysis or specific studies of the web area.

One defining factor may be that although the public image of a profession always diverges radically from the reality of what it does, it is key to struggles for jurisdiction, according to Abbott (1988). At the most fundamental level then, the public image of the web as the work of enthusiasts and amateurs may be a key obstacle to professionalisation. "Professionalism" might correspondingly be expected to be an important area of discursive contestation. As a low level skill it may be seen as an operator culture rather than an engineering one, to use Schein's (1996) distinction. Von Meier (1999) sees an epistemic divide between engineers and operators (in a study in electrical power distribution):

> In contrast to the engineering representation, which was described as abstract, analytical, formal and deterministic, the operator representation of a technical system can be typified as physical, holistic, empirical and fuzzy. (p.105)

This may be a surprising distinction given claims about engineers' information preferences, suggesting that the stress on know how may be a function of the typical comparison being of engineers to scientists (Pinelli et al. 1993, pp.181-3). Von Meier's (1999) account is probably partly sector specific: eg in its stress on physical safety, however it may usefully capture a distinction between those dealing with high end systems development and those at a far lower level of practical integration (perhaps all people in computer services). In a sense the distinction offers an expansion of the gap between the academic and the practitioner.

Ray argues that in web design collaborations have high prestige as a form of brokerage role, whereas maintenance is seen as a low status buffer role (2001, p.9). Buffer roles are where technicians facilitate the use of technology by another profession, as one step in a chain of activity (Barley 1996). There may also be a parallel, in Danner's analysis of how jurisdiction

is settled in the area of networked information, between computing and librarians. He suggests that it may be solved by two types of settlement. "Advisory jurisdiction" is where one profession "interpret, buffer or partially modify" the actions of another (Abbott 1988, p.75). "Treatment substitution" is where one group carry out ends determined by members of another more effectively (Danner 1998). The web as a highly complex area is likely to see a complex pattern of such jurisdictions, especially at the more fluid workplace level.

Kotamraju has applied the Abbottonian logic to the web as an occupation (2004). Through job adverts, she traces the evolution of the web as a diverse bundle of skills any graduate might have in the early years (up to 1996) to in later years a bifurcation between technical skill, "code", and specialised graphical skill, "art". Most of the coders were men; the graphic designers (apart from the stars in the field) were lower paid women (ibid., p.194). After the bursting of the dot-com bubble, code continued to be seen as a skill worth paying for, and came to be dominant in requirements in job adverts, whereas the art of design was increasingly seen as subordinate, an after thought.

Again looking at job adverts (from 1999), Wade and Parent (2002) also found that although organisations appeared to value technical skills above all, "webmasters" themselves actually felt greater deficiencies in organisational skills (such as management techniques).

The lack of emergence of clear nomenclature may be symptomatic of the failure of professionalisation. The name webmaster was popular till 1997, according to Kotamraju, but increasingly derided (2002, p.9). It seems to be associated with purely server level activity[6]. Guenther (2005) points to the proliferation of titles in web management, web design and development, web site production marketing and technology and content.

For direct studies of the UK HE web space, we virtually only have Armstrong et al.'s 2001 study and a handful of practitioner writing from the UK and US. It is interesting that the journal *Campus Wide Information Systems*, the obvious home for studies in this area, has exclusively published articles about e-learning in this century. Even major technical changes, such as the introduction of content management systems, for example, have not been reflected in its pages. Oliver's studies of UK learning technologists (2002, 2003) and Barley and

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6 An informal survey by Kyrnin (1998) produced a divergent collection of 59 definitions. This is scarcely a rigorous study, it is not even properly dated, but certain themes recur:

- Inclusivity "all aspects" across a range of skills, from beginning to end
- Excellence, i.e. mastery
- Various technical skills

Notably absent was the ability to communicate or supervise staff (each was only mentioned once).

Kunda's (2004) ICT contractors do offer some points of comparison and methodological models.

Armstrong et al. (2001) give us some baseline data. Their paper refers to the results of a study of what they call webmasters[7] from November 2000 to May 2001, through an email survey and interviews. The main methodological problem found was that as the role of "webmaster" was organised so differently in different institutions, it was difficult to obtain comparability in interviewing.

As individuals, Armstrong et al. found "webmasters" to have heavy workloads, with responsibility for the web site being generally only one of several roles: none spent 100% of their time on the web (ibid., p.40). Equally graphic design, and particularly server management as the most specialised areas of the work were likely to be handled by persons outside the functional web team (ibid., pp.46-49). In terms of education and professional training the web managers studied had diverse backgrounds: from IT, information science and a variety of subject disciplines (ibid., pp.41-2). Commonly their web skills were self taught (ibid., p.42). In larger institutions there was a web team, in smaller ones the work was the responsibility of one or two people (ibid., pp.46-50). They were often based in marketing or information services, less frequently in registry or central administration. In a few cases the web team was its own department (ibid., p.40).

Key forces for change were identified: the growing scale of the web site, convergence of library and computing, the increasing importance of marketing (ibid., pp.52-54), subcontracting of work (generally seen as bad) and extension of legal regulation.

Armstrong et al. also identified a range of sources of influence on the web site and variety in the strategic decision making processes between institutions (ibid., p.50). Some institutions had formal strategy documents and some had web management steering groups (ibid., p.51). In some institutions departmental web masters worked together. Generally at the time of the study it was found that "webmasters" typically "feel a degree of professional isolation within their own organisations" (ibid., p.81).

Armstrong et al. investigated "webmasters' " current awareness methods, finding that the main methods mentioned were attending seminars and workshops and referring to web sites (25% each), with mailing lists around 15% (ibid., p.81). Surprisingly their recommendations

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[7] Defined as persons responsible for the main web site of the university.

(ibid., p.95) included creating cross organisational support network, a conference and closed email list, when in fact these already existed.

The major new themes since Armstrong et al.'s work are few but significant. They include the introduction of site management tools, "content management systems" and also the turn, in large organisations, to portals. Achievement of serious E-commerce functions should be seen as part of this. These are big scale initiatives and reconfigure the relationships between departments and fundamental work processes. By being at the centre of such an initiative the web manager is propelled further into attempting to manage relationships with departmental web authors and senior management, as well as end-user groups. CMS offer to take technical skill out of web publishing, promising to build and offering more centralisation and control by non technical people (Browning and Lowndes 2001). Portalisation in essence allows silos of information to be maintained separately and integrated at the service level, leaving content providers in ownership of the data (Schelleman 2004). As large scale systems both CMS and portals make big demands on an institution, unlike the previous essentially distributed effort that characterised the web.

One direction for the study could have been to rework Armstrong, i.e. using a more survey style approach to update the facts of organisational variation across the sector. It is probable that since the 2000 study the sector has changed and it would be particularly interesting to know the current levels of staffing and division between marketing and information services based groups and to explore how far there has been convergence towards common models across all HEIs. There was scope to expand the reach of the analysis to FE (or indeed beyond this into the rest of the public sector). Although this approach was seriously considered as one activity within the thesis, ultimately there was insufficient time to collect the data. A practical problem was identifying respondents in smaller HEIs. The interview study showed up definitional problems, such as divergence of meaning of a "web team" that would have made interpreting results far more difficult than was apparent. However, fundamentally, the focus on cross organisational activity made collecting this baseline data essentially a secondary priority.

Another approach would be to look directly at university web sites and their production. Thus, from a linguistic perspective, Boardman examines choices of layout, syntax, font and images that are in used to construct subtle messages about an institution such as a university through its web site (2005, pp.21-26). McAvinia and Oliver's 2004 paper further opens up the study of the production of university web sites as collaborative processes, seemingly expanding from a simple evaluation exercise (using generalised usability criteria) to a fully fledged investigation of them as an outcome of competing values, using discourse analysis

and new historicism. This is a promising beginning for looking at the contested nature of the local process of web production and again, suggests an alternative focus the thesis might have taken. It would have been interesting to look in detail (perhaps using ethnographic methods) at the local interactions which occur in the process of producing the web or perhaps in implementing web related systems such as portals, seeing them as contested organisational struggles as prefigured in Cornford and Pollock (2003, particularly Chapter 7), but, not surprisingly, omitted in such practitioner work as the portal case studies funded by JISC (eg Dolphin and Sheratt 2003). This would more easily have fitted with the local focus of COPT (and also Beard and Olsen's (1999) conception of "webmasters" as gatekeepers). However the centre of this thesis is cross organisational relations as such so the scope to investigate local action, except as the springs for activism in networking, was limited.

2.6. Cross organisational knowledge sharing among computing specialists

The discussion has now reviewed both the general theory of the professions and the specific findings about engineers, computer specialists and web producers. This section turns more specifically to issues around knowledge sharing in informal online communities, which seems to be an important aspect of cross organisational contacts specifically in the web, but in many other areas too.

Because it is a relatively new area of work, there is a lack of specific studies of information seeking or knowledge sharing among web specialists, apart from a few references in Kotamraju (2002) and Armstrong et al. (2001). What are available are studies of engineers in general, some of computer specialists in particular, plus some studies of sharing of technical knowledge. Though it is not assumed that web specialists would see themselves as technicians - indeed they might see themselves as managers or even marketers - this seems to be the best place to start to build up some understanding of the potential issues. Again the studies available range from the use of personal contacts to the use of weak ties within large organisations as well as cross organisational contacts in network communities. So care has to be taken in thinking through how the logic revealed in previous literature may differ in the context of this thesis. Much of the literature falls within two broader debates, one about the springs of online generosity and the other the knowledge sharing debate in Knowledge Management. The review begins by considering these as offering potential conceptual tools or models.

2.6.1. Online generosity

It has been commonly observed that online people are willing to help others they do not know: Kollock (1999) refers to this as "online generosity". This can occur to a paradoxical extent, thus Hall and Graham (2003) report on Cipherchallenge, a community within which people shared information, even though they were all competing for the same prize. This is a particular problem for rational actor theory and the reasoning used to explain the paradox, from exchange theory, has become an important though often unconscious part of the understanding of the Net and knowledge sharing dilemmas (Hall 2001c). Thus an influential way of viewing such generosity is to see the products of a virtual community as public goods, i.e. goods that anyone can use, and use of which cannot be limited. Online, Kollock (1999) argues, the logic of the production of public goods may be changed so that the cost of creating them is reduced and the output can often be made available to all. Kollock suggested that a key factor in helpfulness was the notion of "generalised exchange" i.e. that one hoped for reciprocation from the group as a whole for help given, rather than help from the individual whom one helped. Equally one is grateful to the group as a whole, not just the individual who helped one in the past.

However, within this rational actor logic, Kollock and Smith (1996) also identified a key risk for online communities in "free riding." If people who do not contribute to the public good can make easy use of it, they may over use it to the extent of it being destroyed, "the tragedy of the commons." The size, lack of boundaries, weak rules and sanctions and low visibility of actors make virtual communities particularly vulnerable to free riding, they suggested.

One example of online generosity used by Kollock (1999) was open source software projects. The success of apparently self organised communities of unpaid volunteers in writing and maintaining some of the most trusted computing software (such as linux, apache) (von Hippel, 2001, p.82) seems almost to challenge conventional economics. The apparent novelty of OS has attracted a vast amount of research, using every conceivable theoretical approach from motivational (Kim 2003) to ANT (Lanzara and Morner 2003, Tuomi 2001) or epistemic community (Edwards 2001). For this thesis, however, OS may be more important as a cultural paradigm about the nature of computer specialist culture (Bergquist and Szczepanska 2002, Cowen 2003) than a directly relevant model of cooperation, since the character of knowledge shared is quite different: the group studied in this thesis precisely did not have a collective project. In fact, although often idealised as "communities", how OS groups are organised seems to be very varied (Rahtz 2005); some seem to be hierarchical and rather formalised (Barcellini et al. 2005, p.304).

Such concepts as public good and free riding have been influential notions, but the growing realisation that the Internet supports genuine communal feeling side steps the issue somewhat by suggesting that there could be sound feelings that would easily overcome personal interest. Outside rational actor theory online helpfulness may not seem particularly surprising at all.

As Hall notes the social network approach has similarities to this model (Hall 2001c), and many of the studies considered below (notably Constant, Sproull and Kiesler (1997)) start from the premise of the value in information networks of "weak ties" because they have more diverse information than close acquaintances, and as links require less effort to maintain. However one should be slightly careful here: by weak ties Granovetter (1973,1974) originally meant acquaintances, former employers, friends of friends. The largely anonymous connections in online networks are much weaker than this.

2.6.2. Knowledge sharing

One of the key problematics explored in the emergent field of organisational Knowledge Management (MacMorrow 2001, Alvesson 2004) is "knowledge sharing" (eg Hall 2001b, Newell et al. 2002, pp.178-9, Sharratt and Usoro 2003) or how to stop people "hoarding" their knowledge (Skyrme 2002). This is in a sense a supply side consideration of an equation, whose demand side is explored in the information seeking literature. It asks why should someone share what they know with another? The origin of the debate is the "stickiness of knowledge" (Brown and Duguid 2000) and the failure of an organisation to "know what it knows." Particularly important instances of this are said to be the recognition that lessons from past projects are not learned (Scarbrough 2005) and that the computer systems such as intranets set up to share information often fail to be used (Hall 2001b). Forming corporate communities is often seen as one way of increasing knowledge sharing (Wenger, McDermott and Snyder 2002). Much of the debate focuses on organisational issues, particularly those parameters under organisational control such as incentives (Hall 2001a,b), however many of the general principles are often somewhat relevant also to the cross organisational context under consideration in this thesis.

The tendency to assume that sharing knowledge is inherently good, the inherent complexity of the problem and the failure of research to differentiate between different sorts of "knowledge" are problems for using material in the debate. Thus it is often difficult to see why knowledge sharing is considered different from giving information, if it is an interactive process or why the term learning is not used (in which case there is a large literature on learning). Stahl (2003) has pointed to the ambiguity of whether knowledge sharing refers to the sharing of existing knowledge or new knowledge being generated through interaction. Is

the new knowledge in an individual's mind or is the understanding latent in a group, each person in which has separate knowledge which collectively understands a problem, i.e. "distributed cognition"? Boland and Tenkasi (1995) point to the importance of sharing of perspectives, not just pieces of information - how far should we separate sharing knowledge (which sounds like it might mean "facts" and insights) and their concept of "perspective taking"? Further, when is knowledge sharing to be differentiated from knowledge creation; are the processes different?

Even if these matters are clarified, it is the potential complexity of the whole problem that strikes the reader. The model outlined in Table A1.9 points to the potential impact of factors operating at every level:

- Broad social values
- Sector/organisational values
- Group values, governance, processes
- Individual motivations
- Nature of the knowledge concerned
- Channel attributes of the infrastructure to share knowledge

Different commentators focus on different factors, but it is evident that all these levels would have to be explored to produce a comprehensive model of knowledge sharing. It would be difficult to integrate different levels of analysis, because interpretations are likely to make different epistemological assumptions: eg individual motivation versus group identity (eg Faraj and Wasko 2000, pp.157-161). Although the initial thoughts captured in Table A1.9 were useful, there was not scope within the thesis to further develop the model at this level of generality; it was simply too complex. So the review turns to more directly relevant contexts to try and establish what is known about knowledge sharing among technical people, especially computing engineers.

2.6.3. Knowledge sharing among technicians

There is a small body of work that specifically deals with networked knowledge sharing by technicians, often computing specialists. By focussing on this the variables can be limited, rather than tackling the whole knowledge sharing problem.

The most directly relevant study is Kotamraju (2002), who identifies the nature of the knowledge in the web area as the defining force in cooperation. She points to the way that the continuous pressure on web designers "to keep up" generated by technical change is met by participation in informal online communities. She sees these informal, transitory associations as effectively substituting for professional organisation because they allow for knowledge to be shared about "design, technical standards, technological breakthroughs, available jobs, and the web in general" (ibid., p.14). Yet unlike professional organisations, such groups are never able to regulate entry into the profession. There are a number of pseudo professional bodies in the web area, such as the HTML writers guild, World Organization of Webmasters, Webmasters' Guild, Association of Internet Professionals (Kelly 1998b) or chapters of other bodies (such as the British Web and Marketing Design Association's Accessibility group). These bodies are not recognised by employers, not surprisingly, because though they have the trappings of formal professionalism there are no barriers of credentials or skill to membership. Kotamraju found that membership of such professional bodies was never a requirement in job adverts (2002, p.13). One might expect this to result in completely free entry for labour. Without recognising the irony, Kotamraju reports that employers used the constant need to "keep up" as a justification to employ graduates because only they were seen as having the skills and attitudes to do so (ibid., p.17). Thus an element of credentialism is preserved in an area that seems to be very open to entry by people with less education. She finds the evidence inconclusive about whether the pressure to keep up to date is experienced as oppressive (ibid., p.19).

Kotamraju is not categorical about why professional closure is not achieved or even attempted. The rapid change of the technology is enabled by the lack of professional closure, she suggests (ibid., p.15), but it may also be the cause. It could be because the web falls between professional areas, or because the skill is or is perceived to be too low level to be limited. Certainly the intention of the inventors of the web to make web publishing as easy as possible could be seen as creating a fundamental symbolic obstacle to the organisation of web design itself as a profession. This may be further tied up with the self taught ethic of the web.

Uimonen (2003a, 2003b) argues that it is particularly characteristic of the Internet to have a culture of networking. She suggests that the annual INET conference itself represents "the materialization of the Internet community" (2003a, p.145). In fact, the way she describes the conference it seems rather like any other; despite the pervasiveness of computing tools, the main activity is social networking. Nevertheless, she argues that the spirit of the Internet is precisely of "open sharing of knowledge" (2003b, p.274) and this culture is embedded in the "decentralised and interactive nature of the Internet" (ibid., p.275). The logic of this is that the

technology in itself is a carrier of what she sees as a utopian computer counter culture ultimately derived from the 1960s. This could be criticised for failing to recognise the extent to which the Net is now commercialised, witness, for instance, Werry's (1999) comments on the commercial appropriation of the idea of online community. She herself acknowledges the digital divides that effectively exclude groups with poor Net access from being part of this community. Yet it may be that the web ethic of sharing knowledge is to a certain extent inscribed into Internet technologies themselves, as well as defining the espoused ideology of the system itself. This could be expected to be a reason for web professionals to be particularly involved in cross organisational activities: working with it is inherently orientated towards distributed collaboration and interactivity.

Barley and Kunda (2004) explore the cross organisational networks of IT contractors, who offer an interesting counterpoint to the primarily employee groups studied in this thesis. They argue that although one of the main reasons people give for becoming an IT contractor is to avoid the organisational politics that prevent things getting "done properly", ironically, their skill in managing social relationships and networks is actually vital to contractors' success (ibid., p.283). The two key dynamics were to find work (largely through small "referral cliques") but also for "scanning" to "gain awareness of new technologies, the fate of existing technologies, evidence of emerging trends, and clues about the fortunes of firms" (ibid., p.251; see also Swart, Kinnie and Purcell 2003, p.11). For contractors, keeping ahead, "riding the curve", in the sense of choosing new technologies to learn, seems to be a driving logic as much as keeping up to date (Barley and Kunda 2004, p.245). Contractors felt they were more vulnerable to the obsolescence of their skills than employees (ibid., p.246). Much information seeking through colleagues or the Net turned on tracking the newest technologies and most interactions with fellow professionals turned to discussion of this (ibid., p. 253). Yet, rather inconsistently, they say such "spontaneous and informal" community building is driven less by conscious design than the need to "solve immediate problems" (ibid., p.301). It would seem that contractors read a lot, relying more on this than the personal contacts used by engineers in general, because engineers typically rely on organisational gatekeepers who play the role of keeping up to date for a group. Such a resource is not available to the contractor (ibid., p.251). In a more professionally organised space keeping up to date might be less frantic (the indifference of professionals to CPD is a common complaint) and carried out through formalised systems (CPD structures). In computing it seems to be very much a personalised activity. Contractors saw their networks as reaching further than employees (ibid., p.266). Much effort went into maintaining the network and keeping contacts fresh (ibid., pp. 276-8, Nardi, Whittaker and Schwarz 2000).

Kotamraju (2002) and Barley and Kunda (2004) differ a little in their stress on what information is being sought in such informal groups. There is another piece of evidence here from Finholt, Sproull and Kiesler (2002), though their study was in a somewhat specific and intra-organisational context. They found that field technicians preferred advice from peers to that of experts from the head office. The designated experts based at headquarters talked in abstract terms and did not refer to personal experience (ibid., p.367). They offered more theory ("know what"). In contrast peers offered practical advice and "know how" (Brown and Duguid 1998) -information on how to get things done, with pointers to further information and recommended consulting the customer, which the headquarters experts did not. The preference was not linked to newness of information (Finholt, Sproull and Kiesler 2002, p.373). Another factor was that in communities of peers, the frequency with which a particular answer was offered was a crude indicator of the likelihood of an answer being right (ibid., p.374).

After Brown and Duguid (1991), Orr's (1995,1996) studies of photocopier technicians have tended to be treated as a classic instance of a community of practice. Orr himself never uses that term, preferring the concept of occupational community as a reference point (1996, pp.76-7). His findings are unexpected, even strange in many respects (the research was done in Silicon Valley), but he does make a number of interesting claims about technical work which may be relevant to this thesis:

- Such work is highly skilled, improvised (ibid., p.1), operating in a context of uncertainty (ibid., p.20), resisting the organisation's attempts to construct the technician as functionaries merely requiring direction through the diagnostic manual (ibid., p.105)

- Because of the uncertainty, the technicians were talkative (ibid., p.20) in a variety of ways, using collaborative, elliptical (ibid., p.125) narrative to make diagnosis of and improvise solutions to newly arising problems, as a way of remembering these solutions and also to construct a heroic, professional identity in resistance to a downgrading view from the organisation, also to construct a status position within the group, as well as simply to amuse (ibid., p.126)

- "Fixing the customer" (ibid., p.82), since they consider handling the customer is as important as dealing with the purely technical matters

- They are passionately concerned with work (ibid., p.89), investing personal time, in breaks, to discuss work

- They are part of an occupational community where the object is status within this group rather than the organisational hierarchy, separated from organisational culture (ibid., pp.76-7)

Orr (1996) sees them as a separate sub-culture but this culture is premised on a very specific organisational context: resistance to an alienating management, an egalitarianism based on lack of career structure, the ability to find unsupervised places to socialise together, the specific inadequacies of the manual and the precise way work is organised with different individuals working on the same machine. How far these seem typical characteristics of work (or technical work) is a problem for taking it as a more widely applicable model. Orr does not comment on this but there is a suspicion that most of the technicians are male.

The preference for know how and stress on colleagues as sources are both consistent with what is known about engineers in general. Leckie, Pettigrew and Sylvain (1996) reviewing the literature on information seeking among professionals, suggest that a key factor in engineers' information seeking is that they tend to work on solving problems and producing services, rather than generating abstract knowledge in terms of reports and papers (p.164). Engineers as a whole deal with know how, as do technicians: substantive knowledge comes from doing (Barley 1996, p.425). This blurs the distinction between operator and engineer cultures. Hertzum in his studies of computing specialists also found knowledge from hands on experience was privileged (Hertzum et al. 2002, p.585): experience in using tools was a key thing people were searching for (Hertzum 2000, p.11). Also there was an interest in design decisions more than the well documented final design (Hertzum and Pejtersen 2000). This would partly explain why local contacts are so important, but it might apply less in the web area where code is more transparent and copyable. Nevertheless, engineers are intensive communicators and users of information, tending to prefer oral contacts, and relying on colleagues as a source (p.165).

> Engineers search for documents to find people, search for people to get documents, and interact socially to get information without engaging in explicit searches. (Hertzum and Pejtersen 2000, p.761)

Documents do not have to be complete to play out the role of mediating contacts between people (p.774). These tend to be internal contacts (Hertzum and Pejtersen 2000, p.763) partly because engineers accept the organisation's need for confidentiality (Pinelli et al. 1993, p.184). Often particular individuals act as gatekeepers to the wider world for a whole group. In a small study of employees of an automotive consulting engineer company, Ward found what he called knowledge clubs with whom "respondents frequently aired problems and tried out solutions on groups of colleagues chosen for their usefulness" (2001, p.171). Nevertheless, extra organisational contacts are used too (Holland and Powell 1995, p.11).

Engineers' preference for informal and oral sources has often been interpreted as a case of least effort (driven by time shortage) triumphing over information quality. Engineers are notoriously bad at using formalised information sources, such as libraries and databases (Anderson et al. 2001, p.149). Conceivably, the heavy use of virtual communities by computing engineers could be seen as an extension of this "laziness" and refusal to use bibliographic type sources. Hertzum et al. (2002) in a sensitive study of a software company, reinterpret these dynamics, by developing an understanding of information use influenced by the notion of trust. This suggests that a complex process of evaluation of trustworthiness is taking place rather than a simple choice based on ease of use.

Engineering is very diverse (Pinelli et al. 1993, p.167) and each job tends to be diverse (p.170). A key differential giving rise to divergent information needs among different groups of engineers are specific roles and associated tasks, including the divide between contractors and others (Leckie, Pettigrew and Sylvain 1996, p.166), as well as phases in development and career stage (p.167). Information behaviour may also be influenced by factors such as awareness. It is a complex picture and web specialists could be expected to diverge dramatically even from computer programmers, for example, since their task set is different. Equally each individual task might have divergent information behaviour associated with it.

It is not just engineers who seek information from others. Other people are an important, often a preferred, source in all information seeking (Johnson 2004). Thus some more general studies shed useful light on the character of people as information sources that might be relevant to this study. Managers, for example, prefer to receive information orally (Auster and Choo 1993, p.202) and networking is a key to success in work (MacKenzie 2005). They tend to seek information from those with whom they have a relationship, rather from those with the greatest authority. In one study, Cross, Borgatti and Parker (2001) identified that Human Resource managers seek particular sorts of information from others: solutions to problems (know-how was more valued than know what), meta-knowledge (suggestions of people to talk to, documents to read), problem reformulation, validation (of an approach) and legitimation (support of an approach to a problem) (pp.216-219).

> Individuals recognize many different kinds of advice on work-related matters, and that these different kinds of advice connect different people, yield different structures, and probably hold very different meanings for people. (Cross, Borgatti and Parker 2001, p.231)

Thus there may be multiple networks of advice, including cross organisational ones, or ones with cross organisational elements. We would expect these to interlock in some way with looser more large scale extra-organisational communities.

2.6.3.1. Motives for knowledge sharing in networks of practice

Whereas Kotamraju (2002) and Barley and Kunda (2004), for example, start with the professionals as a group and consider their information behaviour, Wasko and Faraj's studies examine the dynamics of the online knowledge sharing groups for themselves (Wasko and Faraj 2000, Faraj and Wasko 2001). Wasko and Faraj (2000) report on an open ended survey of attitudes among members of three cross organisational "networks of practice" on Usenet, comp.lang.c++, comp.databases, comp.object.

The main motivations for participation, in order of frequency of mention, were found to be:

1. To be part of a community and have discussion and interaction with like minded people (though not to "make friends" as such). The motive was particularly strong when people were geographically isolated (ibid., p.167). Specifically it was felt the group would be less valuable if it were just questions and answers (ibid., p.169); this is supported by Gibbs (2003) who saw free wheeling discussions among a technical community he studied as important to group identity as simple questions and answers.

2. "Intangible gains" such as to learn or to test competence and direct enjoyment: "people participate and help others because participation is fun, and helping others is enjoyable and brings satisfaction" (Wasko and Faraj 2000, p.170).

3. For tangible benefits such as to gain information, since they offer:

   - Fast replies (so timeliness)
   - More up-to-date information than anything published (so currency)
   - Otherwise unfindable information (so uniqueness)
   - Authoritative statements, because there are many experts on the list (so authority)
   - Help on specific, complex problems – though those who ask this sort of question tend to be self interested, rather than good community members, respondents thought (ibid., p.163).

4. For personal gain.

5. To satisfy a sense of moral obligation, either direct empathy with those with problems or a more general sense that information on good practice should be communicated within

the profession or to make a return for help the group had offered them in the past, i.e. generalised reciprocity.

It is interesting that the desire for professional contact outweighed any other factor, including the value of the information as such.

The main problems with such groups identified by respondents were (ibid., pp.168-9):

1. Members were inhibited from contributing by a sense of lack of knowledge.

2. The many cases of one-up-manship seen

3. Reading the messages was difficult because of the sheer volume:

- There was lots of low quality material
- Participation was time consuming

Overall, this is a convincing picture of the diverse motivations for participating in large, rather anonymous, open discussion groups in the computing field; actually Kim (2003, p.4) and Lakhani et al. (2002, slide 29) found similar motivational structures in OS projects. Probably the method of survey (as opposed to looking at actual behaviour) favoured respondents putting a somewhat favourable gloss on their own motives. This research did not investigate actual list interactions, relying wholly on self reporting. A second limitation of the study is that the authors do not establish the basic demographics of the list. Who exactly are we dealing with, enthusiasts, professionals or contractors, and how does this compare to the profession as a whole? It is revealing when Kim shows that OS developers are male, in their 20s and 30s, graduates working in IT or students (2003, p.3). It seems quite probable that the usenet groups studied had a similar make up. It may also be useful to refer to the debate about quality in electronic information sources which has generated a set of criteria for evaluating information: relevance, timeliness, currency, authority, depth and accuracy, completeness, coherence, reliability, cost and uniqueness (Smith 1997, Miller 1996, SOSIG 2005) to expand our understanding of the dimensions by which information can be valued.

A second study (Faraj and Wakso 2001) found that level of expertise was a predictor of knowledge exchange, capturing the important if obvious point that to participate actively one must know something. In this area Hinds and Pfeffer (2003) are useful for focussing specifically on the problems and methods for sharing of knowledge between experts and non-experts (most of their evidence is from experiments or anecdotal from the management literature). They see many inherent problems with sharing expert knowledge: cognitive ones

in the gulf of understanding between expert and novice (the ability to share) and motivational ones, mainly arising from the competitive ethos of most organisations (influencing the willingness to share). This suggests a distinction between willingness and ability to share (van den Hooff et al., p.121). It is likely that these issues would be particularly significant in the web area, given that the self taught ethic of the Net attracts a wide range of levels of expertise.

The importance of the distance between experts and novices in participation is supported by the fact that Faraj and Wasko (2001) found that the group was "divided between a core of expert knowledge providers and a periphery of less involved knowledge seekers" (p.34). Experts felt an obligation to contribute, but were actually distrustful of much of the advice provided in the group. The knowledge seekers trusted the advice, but felt under no obligation to contribute. Butler et al. (2002) found the same divergence of motives in all virtual communities: owners had social, altruistic motives; silent participants just wanted information. A slightly different view comes from Zhang and Storck who found that low posters shared the same sense of community, identity, communications repertoires and sense of engagement as more active members; they also contributed as much as non-peripheral members (2001, p.6). This warmer view of low posters is somewhat supported by Nonnecke's general studies of "lurkers." Nonnecke (2000) certainly found that lurking does have a value, that individuals are active in relation to the list, even if they do not post to it and they benefit in a great variety of ways, for example, receiving entertainment, information, access to experts and sense of community. As Nonnecke and Preece (2003) state, most individuals will lurk on some of the lists they are members of, so lurking is normal behaviour. In fact, posting may be abnormal (p.125). Nonnecke (2000) found an average of about 55% of members of lists he studied never posted, though it varied between domains of discussion lists: it was less in health than the computer science lists he looked at (p.64).

Legitimate peripheral participation (Lave and Wenger 1991) and lurking are superficially congruent concepts. In fact, legitimate peripheral participation points to a very specific process: the value to learners of performing peripheral tasks as a prelude to fuller participation in the practice as an appropriate means to learn. Lurking does not necessarily imply any such trajectory of increasing involvement. Yet the revision that sees lurkers as readers rather than free riders is reasonable. In a sense both active members and lurkers should also be compared to non-members. The concept of "reach" (Bennett 2003) points to the importance of considering what proportion of a target demographic actually participates in an online community in a particular field. If one uses the analogy of non-users in the library field (eg McCarthy 1994) there is always a question to ask about why part of the potential

audience is not present. Equally one could consider the (admittedly hypothetical) question of topical reach: to what degree are the topics that should be discussed actually dealt with?

If Wasko and Faraj start from asking participants in a cross organisational community why they contribute, a slightly different, less rosy, perspective is gained by looking at the same behaviour from the organisational perspective. What motivates some employees to seek information beyond the walls of the organisation?

It is worth noting first that an early study by Kettinger and Grover (1997) found that broadcast use in online communities was the main extra organisational use of email by all users, outstripping task orientated and social uses (p.540). Higher usage was associated with task uncertainty, and the authors speculate that this is because such uncertainty leads to more passive forms of information seeking (pp.541-2). This idea links to Burnett's notion of the virtual community as likely to support a form of generalised information seeking in which "people may simply situate themselves within a promising 'information neighbourhood,' because it is a likely place within which to stumble across information of interest" (Burnett 2000). If something with important implications for the relevant practice happened, this would be a place to find about it first.

Specifically studying employees of an Internet firm, Teigland (2000) found that respondents often preferred to contact experts outside their organisation in preference to local people for advice on technical matters for several reasons: the pool of expertise was larger, it did not place an unfair stress on busy colleagues to offer support, and the potential embarrassment of asking a "stupid question" was reduced (p.170). The latter point suggests the value of relative anonymity. Teigland found those who talked to outside communities were more creative; those who relied on organisational ones more likely to deliver projects on time. The creativity finding was partly confirmed by a follow up study using a somewhat more rigorous methodology, though in this study seeking information did not seem to be related to performance (Teigland and Wasko 2003). Note, however, that "creativity" was measured by self evaluation. Teigland (2000) rightly identifies the dilemmas for the organisation posed by such extra-organisational contacts, though he fails to link this to long standing debate about the issue (see above Section 2.2). The result is also interesting, because it cuts against the stress in the study of engineers of local contacts as key. Yitzhaki and Hammershlag (2003) found that discussions with experts outside the organisation was a relatively low ranked information source (for both IT practitioners and academics in Israel).

Yan and Assimakopoulos (2003) also found that in all cases software engineers preferred local ties in answering queries. However they did find that when these contacts failed to yield

an answer programmers referred to online communities as a source of help in preference to their own personal network. This was partly because of the greater diversity of the resources available in the public network, but also because they felt asking for help would disturb their friends (similar reasoning to that found by Teigland). They also felt obliged to phone personal contacts which meant explaining the problem multiple times, whereas an email could distribute the query to a large number in one go. Further they preferred to keep their personal network for more important matters. Contacting a friend meant incurring an obligation which would have to be returned, the type of obligation incurred to the online community was evidently felt to be less onerous (2003, p.1004). Though plausible, this (indeed all their findings) might be culturally specific, for the study was conducted with Chinese workers; all the other studies quoted in this section were conducted in the USA.

It is also instructive to review some studies made within organisations investigating similar themes of motives to seek or contribute answers, particularly in the area of technical expertise, since the same or related logics could apply to the cross organisational space.

The importance of the diversity of potential contacts available through networks as an aspect of participation is suggested by Teigland (2000) and Yan and Assimakopoulos (2003), is supported by Constant, Sproull and Kiesler (1997), who looked at how technical advice is sought from a geographically distributed group of people within one organisation, using CMC. They found that more sustained strong ties were a better source of useful comments than answers to queries (an interesting distinction); people unknown to the questioner supplied better answers. They did not find that the sheer number of respondents was a factor in the value of replies; it needed to be a diverse group.

Poor replies were also received reducing the value of good answers. The authors point out that the system was self limiting in that too many postings would make the whole system break down. More general studies, notably Butler (2001), explore this same critical aspect of participation, size. Butler argues that the bigger the group the more potential resources are available (in terms both of contributors with ideas and people to influence) (p.347). Indeed Benkler (2002) argues that sheer numbers are the solution to motivational dilemmas and coordination problems in what he calls "commons-based peer production," such as OS projects. However large groups also have increased logistical problems, Butler argues, and there are fewer chances to participate. It is difficult to get to know the rest of the members or develop personal relationships. It is more likely for people to free load and each individual will put in less effort (p.348). There is less sense of the efficacy of one's own contributions (Cabrera and Cabrera 2002, p.699). Larger groups' interactions are more complex, less personal and more rule bound and formal (Korenman and Wyatt 1996, p.239). Butler argues

that the point at which the problems of scale are over taken by the costs are complex, since there is a non-linear relationship between the variables; for example, there are geometric increases in complexity of potential relationships as the number of members rise (2001, p.349). The forces at work are multilayered in terms of size, communication volume and communication diversity. He concludes that online has exactly the same problems as offline in sustaining very large social structures (ibid., p.360).

Constant, Sproull and Kiesler (1997) also note that individuals offered answers to questions even though they believed others also knew the answer (this might be thought to discourage responding). Their study was in the context of an organisation that encouraged spending time on participating, and the authors saw this policy was an enabling condition. The particular value of CMC was in reducing the stress of contacting unknown experts, reducing the need to track down experts, making it technically easy to spread the question and providing a public forum in which information sharing was seen to be taking place, reinforcing the sharing culture.

In another widely cited set of experiments on attitudes to information sharing within organisations by staff of all kinds Constant, Kiesler and Sproull (1994) came to a number of interesting conclusions about the nature of the information as a factor:

1. Ownership of information. They found that sharing was greater where there was a belief that products of an individual's work were owned by the organisation (p.412). They felt such attitudes were more likely to be acquired over time at work, so they expected that length of service and age would be associated with sharing, which seemed to be confirmed. Perhaps in a cross organisational context the logic is reversed: because a newcomer feels less that their ideas belong to the organisation, so they are empowered to share it more freely with those outside the organisation.

2. Type of information: the authors also found that different types of information were shared differently. "Tangible information" such as facts and figures in a spreadsheet were, surprisingly perhaps, less likely to be shared than expertise and ideas in an individual's head. An individual was more likely to share their expertise, because it would be associated with "heightening of self-esteem and pride, increased self-efficacy, increased personal identification with co-workers or the organisation, more respect from others and a better reputation, and reduced alienation or stronger feelings of commitment" (ibid., p.406). Interestingly this motive seemed to operate even if the person requesting the information had themselves been previously unhelpful. By extension one could guess that it operated even if the other is unknown. Tangible information was less likely to be

shared. "Psychologically, information is not a monolithic, undifferentiated 'information resource'" (ibid., p.418), meaning it may be shared in different ways at different times. While the latter point is perhaps quite obvious, the point that systematised knowledge may be less likely to be shared than the fruits of self owned individual expertise is interesting.

Confirming Constant, Sproull and Kiesler's (1994) conclusions, and extending them, in a study of various (not just technical) academic electronic fora, Jarvenpaa and Staples (2000) argue that using electronic media in knowledge sharing increased when individuals:

1. Valued knowledge sharing
2. Had tasks that were interdependent
3. Had computer skills
4. Liked computers

Interestingly they found a negative relationship between an open organisational culture and the use of electronic media to share information. They speculate that this may because people in hierarchical cultures use electronic groups as a point of relief (ibid., p.145).

Applying these logics to a cross organisational context one could point to the potential importance to the first factor of group or wider cultural values. Thus Uimonen suggests that a culture of knowledge sharing is particularly associated with the Net (2003b). The third and fourth points are again obvious but useful reminders that when looking at online activity one can expect certain biases in who participates, eg less technically orientated groups involved in web production might participate less.

However, the findings point to an important limit on cross organisational knowledge sharing: for here tasks are not interdependent. It is useful in concluding the review to return to this key point: it is reasonable to expect employees to prefer to seek help from others in the same organisation (however problematic the literature suggests this still is). This may not simply be because of task interdependence or organisational loyalty, but is reinforced by the likelihood that within organisations other desirable conditions for cooperation exist such as the benefits of face to face contact, unplanned and multipurpose informal contacts (Kiesler and Cummings 2002), common language and frequent interaction (Teigland and Wasko 2003, p.266), lack of "distance" (Olson and Olson 2000) as well as a history of prior relationships among other factors (Constant, Sproull and Kiesler 1997, p.304). It is always likely to be difficult to share knowledge without these advantages.

2.6.4. Summary

The literature suggests that informal networks and online communities play an important role for web specialists as for many groups of computing professionals, though the relation between this and professionalisation is unclear. While the data available on patterns of knowledge sharing among university web specialists as such are minimal, drawing on a range of literature we do have some concepts and suggestive propositions as starting points, for example in relation to the enterprise/repertoire aspect of informal groups:

P1. Informal online groups are in some sense a substitute for professional organisation.

P2. It could be that the focus of information/knowledge seeking is about keeping up to date, keeping ahead or practical solving of problems.

P3. Collaborative, elliptical narrative may be central in problem solving. "Fixing the customer" is part of this process.

P4. It is likely that what is valued is know how, not formal knowledge, with a stress on experience of use of tools.

P5. There is likely to be stress on informal, oral contacts, contacts with people.

P6. It could be that networks are relatively narrow compared to that of contractors, because there is less need to maintain a network or reputation to find work.

P7. Different networks may be in use for different types of information, though Wasko and Faraj (2000) picture a diversity of information being shared in a large anonymous space.

P8. Information from informal groups is valued for its attributes of currency, timeliness, uniqueness and authority, but participation is also about contacts with like minded and some sense of professional obligation.

P9. People will share their own knowledge and expertise, more than facts, reports, etc.

The literature also makes some suggestions about participation:

P10. There is likely to be discontinuity of participation between experts and non-experts, but groups are valued by lurkers.

P11. Scale is likely to be an issue online as much as offline.

P12. People are more likely to share knowledge with other organisations if they are new, and do not see their knowledge as owned by the organisation.

P13. Attitudes to computers will influence participation, if the interaction is computer mediated.

P14. Sharing across organisations is likely to be secondary to local contacts, due to lack of task interdependence and other factors.

These will not be treated as formal hypotheses to be tested, rather as propositions that loosely structure the discussion of the data.

2.7. Technology

One specific factor in knowledge sharing that has not been touched on in great depth so far is the characteristics of the technology available to support cross organisational interaction. Early studies of CMC tended to be rather deterministic in their view of the impact of technology on behaviour in general and were influenced by two theories developed in the lab. Media richness theory distinguishes different communication channels in terms of richness along the parameters of speed of feedback, variety, "personalness" and richness of language (Levy 1998). Email is generally considered to be a lean medium, and so was predicted to be better at exchanging information than for social engagement. Without denying the importance of channel attributes, media richness is not a simple determinant of behaviour. There have now been many studies showing that lean media can support rich (Baym 1997, 2000, Savory 2005) and empathetic cultures (Eley 2003, Walter and Boyd 2002, Preece 1999). The other supposed salient feature of CMC was loss of social presence, meaning the loss of non verbal cues in language (tone of voice) and other non verbal behaviour cues (stance, facial expression etc.) and of indicators used to evaluate others taken from physical appearance, status indicators indicating a communicator's position in the hierarchy (Panteli 2002) or any visible socially significant categories such as gender, race, ethnicity or disability. Such lack of presence was used to explain some forms of extreme behaviour on the Net through the concept of disinhibition (Wallace 1999, p.126). In reality, again, anonymity is only relative. Verbal cues often give away gender (Herring 2001), for example. The literature now sees

technology as offering "affordances"[8] rather than determining user behaviour, and would encompass issues of appropriation (Andriessen 2003) and unexpected uses.

Although there has been a proliferation of community and other "social software" (Allen 2004), from complex modular systems (SIFT 2003) to easy-to-use blogs and wikis (Wagner and Bolloju forthcoming), the subjects of the study continued to use a rather old established form of CMC, the email discussion list, also known as listservs, mailing lists or simply email lists, the designation which will be used in this thesis.

2.7.1. Email lists

Such email based fora have probably been successful because:

1. The underlying model of email or usenet posting (of a communication like a letter or memo) is easy to grasp.

2. The technology has been in use for twenty years, so designers have built robust systems and users have developed and learnt a rich set of conventions of use.

3. Although emails are generally "just" text, text is very flexible and users are skilled in its use. It is interesting to note that Hustad and Teigland found that email was used for all levels of learning they identified, from problem solving through incremental to radical innovation (2005, pp.253-4). Lean media has unexpected advantages, eg it is easier to detect a lie if one only hears a voice and does not see the speaker (Olson and Olson 1997, p.1443).

4. Email has been widely adopted for "serious" uses in business and significant personal communication, therefore email based communities gain value by association by using the same media. Email is inclusive because a large proportion of the population have email accounts and use it (Dutton, di Gennaro and Hargrave 2005, p.45). In academia in particular it is a core communication technology, and along with meetings and the phone, a primary means of sharing documents (Ducheneaut and Bellotti 2001, p.31, Norris 2003).

5. As a push technology email keeps members engaged, without effort on their behalf. Even web based communities often use email push to alert to changes or newsletter.

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[8] The precise meaning of the term is a point of debate (McGrenere and Ho 2000, Oliver 2005). However, by its focus on the properties of a thing that allow it to be used the term is attractively non-deterministic in quality.

6. Because there are often no structured roles, no hierarchical structure of access rights and permissions (a common feature of most computing systems) they are inherently informal, capable of being appropriated in a variety of ways.

7. Email discussions are very flexible or malleable (Whittaker, Bellotti and Moody 2005), the community *is* the latest discussion, it is not constrained or bounded by a technically delivered system, therefore as a community it can evolve (if anything problems lie in its lack of structure). Thus web based communities will generally have specific functions defined, such as to share documents, effectively defining forms of interaction. Email is capable of supporting the sharing documents but does not inherently proscribe any form of interaction.

8. Such lists are capable of supporting deeply meaningful, supportive and creative interactions, even without a face to face element (Walther and Boyd 2002) as well as conflictual and antagonistic ones (Brown 1999, Romm 1999) and power games (Ducheneaut 2002). Most community systems rely largely or wholly on text for communication, often email itself (eg yahoo groups).

9. Email works for many scales of interaction. Thus Cronin and Jones identify many scales of social group, 1-2; 2-20; 20-100 in which they say interactions are of different qualities (2003, slide 42). Yet email is listed as a suitable communication medium for all these levels, though not above 100.

10. The user can configure their email software to suit their needs; this solves the problem of designing an interface to the community and personalisation issues.

If further justification for studying email and other text based communication is needed, one can consider that:

1. They continue to be heavily used, by a wide audience. Thus, for example, HE and FE's main list host, Jiscmail's usage figures show a substantial if not exponential growth pattern (from around 50,000 unique messages sent for distribution in 2001 to 80,000 2004) (Jiscmail 2005).

2. Their longevity makes possible longitudinal studies, as here.

3. Email lists have particular characteristics such as retrievable membership lists which enable in depth studies.

4. A certain amount of baseline data is available from Butler's (1999) study of the characteristics of a sample of them.

Email itself is still a focus of research, especially personal email as a "habitat" and in personal information management (Ducheneaut and Bellotti 2001, see also the Special issue of *Human-Computer Interaction* volume 20 numbers 1&2, 2005) but also for its impact on organisations (Ducheneaut 2002).

This is not to deny that there are problems with email and email lists as a form of communication: they are poor for sharing visual information, for example. The evidence seems to be that often media are used in a coordinated way (eg Quaan Haase and Wellman 2005, p.226, Genath and Boden 2005, p.6), so the failure to use other means of communication in parallel with email may reduce its effectiveness.

In fact, email based communities are so well established that it may be difficult for different technologies now to displace them. Users will be loyal to email or Usenet until something much better is developed. Technical preferences might be generational, with subsequent generations finding text messaging more natural. Certainly this frames a potential problem of migration.

The features of email discussion lists are very well known, what is offered in the rest of this section is a brief summary of features and of less obvious aspects which may be significant to this study.

The specific characteristics of email itself, its "social affordances" (Wellman 1999), have been much debated (see summaries by Garton and Wellman 1995, Ducheneaut 2002). In essence in an email list a message from one "subscriber" is distributed to every other person who is subscribed. Subscription is free and unlimited. Messages usually contain:

- A body of text
- A time stamp (including time zone, which could be significant to interpretation)
- An indicator of sender (commonly this consists of a handle and a domain type and specific institution of origin)
- Title or subject line claim to be about a particular subject (in the subject line)

The subject line and sender information are often vital clues to the receiver about whether to read the message and about its significance. The medium is low cost (typically zero cost at

point of use) and uses low bandwidth. Netiquette enshrines basic rules of polite behaviour on lists (Rinaldi 1998). It attempts to define a form of public discourse, but tends to be structured around avoidance of flames (and possibly conflict reduction). Adherence to such rules in jiscmail lists is largely voluntary, and posting unmoderated (compared with the almost draconian rules of such spaces as Webmasterworld (2003)).

Another widely recognised (if not necessarily used) convention is sets of textual devices such as emoticons, special punctuation or less commonly stage directions to indicate emotional states, to disambiguate the tone in which a statement is made or comment on text (Baker [n.d.]). Yet text is itself a rich, highly flexible medium, capable of much intentional and unintentional communication. It is fairly easy to express a wide range of thoughts and emotions, even in a few words, though greater immediacy may be possible for most people verbally or though non verbal behaviour.

Unintentional cues can reveal much about sender, including supposedly hidden status indicators of hierarchical position, gender, race or age. Women's language is marked (Mann and Stewart 2000, p.66). Readers may be motivated to project categories on correspondents where no direct knowledge is available (Mann and Stewart 2000, p.163). Users can strategically hide such clues or subtly or boldly declare them. Yet it does seem that gender issues in CMC are an issue: a small male minority tends to dominate "both in terms of amount of talk, and rhetorically, through self-promotional and adversarial strategies." (Herring 1993, 2001). Women, constrained by images of femininity that tend to associate them with conflict avoidance, may be inhibited from participation. Further, they receive less response to their messages.

Email messages are generally, by convention, in informal language. Misspelling and fragmented grammar are more acceptable than in most written communication. Although apparently spontaneous and informal, this may be a considered choice. In private correspondence style is casual. However in reality, when posting to a list the author is aware that there is a large immediate audience, and that their text can be quoted back at them in the future. A certain studied informality is a subtle way of indicating ambiguity and leaving open the possibility of dismissing the communication at a later date as sent on the spur of the moment.

A major debate has been how far email follows the pattern of speech rather than text, or has its own characteristics (Crystal 2001, Shortis 2001, pp.83-6, see Table A1.10). This refers to email in general; there is no study of language on lists as opposed to personal mail, though this is an obvious distinction.

By convention also, messages are generally relatively short: it is assumed that the reader will not usually read a long message. This could be related to reading text on screen or awareness of time limits people have on use of email in practice, i.e. the low priority this type of interaction is given. One consequence of this is that longer interactions are fragmentary, highly episodic and not typically complex, fine detailed debates. This also reduces the legibility of the web archive of past messages.

One of the most important features of email is that all the communication is recorded. Typically client software copies a sent message to the sender for review. In the jiscmail case, as well as being distributed to list members, messages are archived (unprocessed and unselectively) for access through the web, to browse by author, date or subject line or to search using full text index. Because of this, messages can be read multiple times and reviewed (unlike unrecorded face to face conversation). This may (in theory) promote careful reflection on comments, as well as the ability to quote or reuse text in another context, though whether this really happens is doubtful (Kling and Courtright 2003, p.232). Forwarding allows a receiver to share interesting material with other mail users. Also mail sending software tends to automatically include a full quotation of any message which is being responded to, this with simple copy and paste functions, invites "framing" that is taking up individual points made by previous sender (Mabry 1998). Yet the quotability and permanence of email can also be inhibiting, for there is the possibility of having past statements quoted against one (Brown 1999, Brown and Lightfoot 2002). This is one aspect of the lack of "backstage", for Goffman a vital aspect of performance. As Bradner explains:

> The informality of communication, indecision, uncertainty, and imperfection that characterises a collaborative work of drafting a business proposal for example, is carefully concealed by the professionalism, formality and certainty portrayed when a group presents the final proposal to a potential customer. (2003, p.146)

A sense of backstage is most likely to be achieved in CMC only if the boundaries of the group are clearly marked and discussions secure. This points to the importance of off list discussions or relatively anonymous lists where there may be a sense of backstage. On the other hand, the discussions as a whole may be treated as back stage in relation to day to day clientele, while being front stage in relation to each other (Ross 2003).

Email "discussion lists" have a particular character as discussion spaces. If everyone in a largish list, with several hundred members, posted continuously it would be overwhelming and repetitious. By definition, only a few can talk at any time for interactions to remain meaningful. This in itself explains why only a few people reply to a particular message and partly explains lurking (compare with Butler's (2001) arguments). Perhaps the closest parallel in face to face communication is with a discussion before a large audience. There is no stage,

but points are debated publicly between a number of individuals, while the mass of the audience is unseen, thought they sometimes intervene. Although physically invisible and invulnerable "the speaker" may liken talking on the list to public speaking before a large audience. Sending a message may be experienced as nerve wracking. A lack of response may be unnerving according to Blanchard and Markus, who report that failure to receive a response is experienced as rejection (2002, p.6). In fact, the sender is unlikely to receive no response, for they will typically receive a number of "out of office" responses to their mail. This might leave the sender feeling that there are only people not there out there, as it were. Generally there is a degree of uncertainty about how large the list membership actually is, although it can be known (by a simple command to the list processing address). How many people actually read messages cannot be known (any more than any audience can be known to have been listening). These features lend an uncertainty to such communication.

Because normal conversations are a series of small interactions with speakers giving way to each other, each turn is very short. In contrast online communication takes place in larger chunks, spread out over a longer time. The rhythm of interaction is slower (Wallace 1999, p.27). As a coping strategy to deal with this, messages often contain contributions to multiple conversations (multiplexing) or exhibit "eagerness", that is the message anticipates and responds to the recipients own expected responses. Multiplexing may explain the difficulty the user commonly has in sorting and using email (Whittaker and Sidner 1997, pp.281-5), since any particular message could be filed in multiple places. However, whereas personal emails are multiplex, it is one of the main conventions of email lists that they stick to one theme, one which should be clearly defined in the subject line of the message. Hence the basic structure of a conversation in email is that it follows a thread. Hewitt (1997) argues that this tends to lead to divergent thinking. Each message has to be placed in a simple hierarchy, which precludes multiplexing or more creative linkage between messages. There is no mechanism to draw threads together. Even summarising a discussion is difficult. Hewitt also argues that email based discussion is susceptible to conversational drift, as each message tends to respond to a specific other note, not the whole previous discussion. Doing so is also an easier intellectual challenge, so participants are not being challenged intellectually to synthesise, and take a broad view. Hewitt argues that this underlies the difficulty email lists have in reaching decisions, avoiding information overload and fragmentation. Conventionally the solution to these problems is sought in moderation or counter balancing synchronous communication.

Although messages are received almost instantaneously, readers may read them whenever they chose to do so. This quality of asynchrony is seen as one of the main advantages of

email. In truth, the time nature of lists is complex. It is most likely on a busy list for the first readers of a message to quickly offer responses. Rapidity of response is valued as part of an individual's projection of a "responsiveness image" (Tyler et al. 2003). Depending on the question internal reaction might include a definitive answer, an answer that discourages further answers or a range of answers that represent the most commonly held opinions. Later readers may miss a chance to participate since there is "nothing left to say" (Moran and Hawisher 1998, p.89). It is probably more obvious than in conversation when one message just repeats what others have said. This is not seen as good netiquette. There is no way to simply register agreement, to "nod" as it were (but this could be implemented as some sort of voting or rating). Lurking may therefore be linked to reading messages infrequently or at the wrong time, and missing the chance to say something. This aspect of the list's logic favours those who are online a lot of the time, and constantly read new emails. Certainly although the asynchronous nature of email gives respondents time to think, this factor limits the time frame within which participation is possible.

Users can opt to receive messages in daily or weekly digest form rather than as individual mails as they are sent. Receiving messages as digests almost inevitably leaves the receiver out of direct contribution to any interactivity, because it is difficult to work out where the conversation has got to when one reads the message. Furthermore, digests are not threaded, so it is difficult to follow the conversation. Again this could explain some lurking.

Other client side options with impact on reading patterns are how often to download new emails, how to alert the user arrival new emails. Filtering allows the user to design filters to remove list messages on uninteresting themes or from particular people. This effectively implements much of the server side personalisation offered in more sophisticated systems.

2.8. Conclusion

This chapter has reviewed the literature relevant to the thesis. It began with the theory of the professions, considering, firstly, how a profession has many forms of common ground which would give it the potential to be a strong community. It also considered the balance of advantage and disadvantage to the organisation and the individual of professionalisation. It was discussed how the professions' own view of themselves, embodied in functionalist theory, has come increasingly under attack, producing a range of variant ideas including four relevant to the thesis. Firstly, the notion of occupational community suggests that under certain conditions occupations which have not been professionalised may have some of the same drivers and sense of community as a formal profession. Secondly, Abbott's notion of the system of professions is important for analysing the way occupational groups struggle for

status and jurisdiction over work. Thirdly, in many forms of work outside formal professionalisation the discursive resource of "professionalism" has a resonance. Fourthly, and most importantly, it was suggested that COPT also represents a post professional viewpoint, because it stresses knowledge created at the level of practice rather than abstract knowledge. COPT was discussed in relation to other notions of what is meant by the word "community", including online community. The section concluded by deriving from COPT a model with four dimensions that could be used to investigate actual communities and offers a point of comparison for evaluation. COPT was thus established - along with the theory of the professions - as a central reference point for the thesis. Alternative conceptualisations including Social Network Theory, networked individualism and Social Capital Theory were described and evaluated, but arguments for using COPT were found to be more powerful.

The literature review then turned to look at empirical findings about the information behaviour and needs of engineers, technicians and computer specialists. It also looked at theories about the relation of computer support specialists and host organisations and it considered thinking about the basis of the gendered nature of computing. Such data as exists directly about those involved in web production was summarised.

The discussion then turned to information and knowledge sharing, looking at how this has been viewed in online and organisational contexts. No satisfactory general model of knowledge sharing was identified, so it proved more fruitful to look at empirical findings for web designers and IT people. The section also looked specifically at the motives for sharing knowledge online and how it comes about that people send their problems to rather anonymous lists on the Net rather than local colleagues. This section produced 14 propositions which are used as reference points in later discussion of the data collected in the thesis.

The literature review closed with a consideration of email lists, justifying why they are worth studying and introducing the basic characteristics of the technology and conventions of its use.

The next chapter builds on this literature review and its evaluation of methods used in previous research, to summarise the methodological approach and methods chosen for use in this thesis.

3. Methodology

Having disucssed the relevant literature in Chapter 2, this chapter introduces the methodological approach taken in the thesis.

From the theories reviewed in Chapter 2 a central place has been given to COPT. This was for three reasons: firstly, because it seemed able to supply a set of dimensions (and terminology) to organise the study of any "community". Secondly, because it offers a comparative model for evaluation - without in any way assuming that a group *should* be a COPT. Thirdly, use of the concept links to a vibrant community of others using (sometimes misusing) the term, enriching the thesis through a host of intellectual connections. Yet it is not claimed that either of the cross organisational spaces studied is, as such, a community of practice. Rather it is considered that COPT offers an idealised model of one specific type of community: the epitome of a self re-inventing social group. It is more intense than that occuring in the groups studied in the thesis, yet it does provide a useful reference point. Also whereas a community of practice would seem to be a group that is inherently a community, without explicit community building processes being needed, in contrast, in the groups studied some active community building is apparent.

Further, COPT can be seen as a theory of pure collective agency and does not fully theorise the structures within which it exists (or individual agency). To meet this deficiency, the theory of the professions supplies another important reference point for the thesis, in the form of bases of common ground, such as formal socialisation or workplace socialisation, which underpin "real community" in the context of a profession. For the web production area, which is not itself formally professionalised, looking at the variation from this expected model is a way to explore why the development of a community might be structurally limited. Such factors naturally influence the likely response to a claim of community.

As has already been noted the concept of community of practice emerged out of research done by workplace ethnography. Many other key studies of occupational groups that have contributed to our understanding of the nature of knowledge at work, emphasising an emic perspective, and that have figured prominently in the literature review, have been based on ethnographic methods, especially Orr (1996), Zabusky (1997) and Barley and Kunda (2004) (also McCombs 1998, Ray 2001). Some of the spirit of the ethnographic approach was followed in this thesis (Fetterman 1998, pp.16-29), such as in:

- Taking a holistic approach

- Having a keen interest in the emic perspective, an attempt to think outside the researcher's own preconceptions, and feel out the specific perspective of the group
- Being non-judgemental, multi-cultural
- The operationalism of impressions

However, NOPs as distributed, loose linked groups are difficult to research using the classic techniques of ethnographic fieldwork: participant observation, informal and life history interviews and projective techniques (Fetterman 1998). Ethnographic techniques cannot be simply transferred to online contexts or distributed phenomena because there are few clear settings, such as a clearly bounded physical space such as a village or office within which to conduct fieldwork style immersion. Even sitting next to participants would not have been practical because their involvement is so episodic. Further, since much of the character of a NOP is derived from wider pressures acting on individual actors, rather than governed by the community as such, a broad context is required. To ignore wider context would be to reproduce the fallacy that the community is somehow a completely independent entity. The focus cannot be just on the internal workings of the community. This suggests the need to examine individuals and their different connections to various communities, and how these are governed by local conditions. Hine uses the term virtual ethnography for deep involvement in online spaces (2000, pp.63-6), and classic studies of online communities such as Baym (2000) rely heavily on an understanding based on long membership and often active involvement in the group. Yet it is acknowledged that a total view is not possible since no clearly bounded group or space is involved (Hine 2000, pp.64-5). Reliance is therefore on interviews (Baym 2000, Wasko and Faraj 2000, Nonnecke 2000), direct analysis of texts generated by the community themselves (Orlikowski and Yates 1994) and questionnaires (Faraj and Wasko 2001).

The precise methods that can be used are also dependent on the nature of data available. The two groups studied here and data availability are discussed at greater length at the beginning of the two chapters concerned.

Having acknowledged these differences from a pure ethnographic method the research will take a qualitative approach to the topic. Commonly a dualistic contrast is drawn between qualitative and quantitative research and methods, and their respective underlying epistemological positions, (see, for example, Table A1.11 based on Sudweeks and Simoff 1999, pp.33-36). In many ways this is a simplification. There are a number of distinct epistemological positions within qualitative research (Silverman 2001, pp.38-39, Denzin and

Lincoln 2000, pp.6-7), few researchers hold to a strict positivist position (a philosophical perspective that has not been taken very seriously for at least a century) and the same methods may be used for both (eg interviews) or combine both (eg content analysis). Yet the distinction is a useful starting point.

According to Silverman (2001) broadly qualitative research shows a number of preferences compared to quantitative research: for words and images over numbers, for naturally occurring data over data collected by the researcher, for a stress on meanings not behaviour. Natural science is not seen as a model of method: there is a preference for hypothesis generation rather than hypothesis testing (ibid., p.38). The researcher has a learning role, rather than a testing role (ibid., p.43). Qualitative research tends to work on a small scale, for example, because it requires very careful analysis of texts or interviews, as opposed to possibilities of processing large collections of text if relatively simple categories are being used. Multiple sources of data are employed (Denzin and Lincoln 2000, p.5). For Patton the approach implies "themes" such as: naturalistic inquiry, emergent design, purposive sampling, qualitative data, personal experience, empathetic neutrality, concentration on process, holistic perspective and sensitivity to context (2002, Chapter 2).

The present study is based on a qualitative approach partly because a key research question is precisely where the boundaries of who is or should participate in the community lie, therefore, the relevant population cannot be decided in advance. The focus is on exploring actors' own views of the world, avoiding categories imposed by the researcher. It also seeks to understand why things happen, why people are active or not, how the community works, questions less amenable to quantification. The focus on alternative and excluded possibilities also implies a qualitative approach in that these are inherently counterfactual characteristics.

It should be acknowledged that this was a conscious, significant methodological choice, reflecting trends in the philosophy and practice of social science, but also the personal context, character and aspirations of the researcher. The choice can be explained at three (inter-related) levels: firstly, there has been a turn in some social science studies towards an emphasis on the lived experience of actors as a valid object of inquiry. This is represented in sociology in Garfinkel's ethnomethodology, itself underpinned by the phenomenology of Husserl (Smith 1998); in anthropology in the application of the discipline's traditional techniques to modern western society itself (eg Orr 1996, Kunda 1992); and in history to an interest in historical *mentalité*, an emphasis begun by the Annales school of French Historians (eg Ladurie 1978) reinforced by post-modernist thought and now referred to as the "new cultural history" (Burke 2004). The latter has had the most direct influence on the researcher.

At a second level, these disciplinary turns themselves should be understood - acknowledging the social construction of knowledge (Smith 1998, pp.12-15) - as a response to the society which has produced them. One can either see them as congruent with a society which ideologically emphasises pluralism, diversity and democracy and which as a consequence has a respect for and fascination with diverse historical and contemporary world views. More negatively, perhaps, one could see them as a result of a post modern, fragmented society where relativism recognises no metanarratives, only the proliferation of many equally valid perspectives, all equally worthy of study. The methodological choice made in the thesis in this sense is plausible in its specific social context and culture in which it was written.

At a third level, the choice is personal, recognising the researcher's greater resources to undertake a textual analysis than quantitative methods. These resources are based on training in history, english literature and the sociology of ideology. These constitute a set of implicit resources that were drawn on to do the analysis, especially in the interviews in Chapter 6. It also represents a personal preference for exploring complexity and ambiguity over more positivist approaches and a choice to privilege research as a creative, embodied, partly unconscious process, a passionate concern (Okley 1994), notwithstanding the risk of losing "scientific objectivity", transparency and rigour.

The potential subjectivity of qualitative techniques remains a problem to be offset by:

- Using naturalistic data where possible such as the archive email messages, so reducing the effect of the researcher on the data itself
- Offering transparent methods and protocols, i.e. very clear explanation of methods of data collection, analysis etc.
- Operationalism, quantification where possible, eg to say x percent of messages are announcements (defined thus), rather than "there were lots of announcements"
- Being systematic and rigorous
- Making available data where possible, thus the full text of transcripts of interviews are made available as appendix to the research, allowing others to replicate the analysis
- Triangulation of multiple sources of data wherever possible
- Reflexivity about the research process and the possible biases brought to the study by the researcher

3.1. Choice of focuses of research

Two main focuses in the thesis were an email list (WS) and a conference series (IWMW). There were other cross organisational activities, such as other mailing lists, regional self help groups, individual clusters of collaboration and the Heist awards for marketing that offered potential alternative objects of study. Part of the reason for selecting WS and IWMW was that they showed a consistent level of high activity. The Heist awards were relatively new; other email lists rarely had posts. In contrast, WS and IWMW have been sustained over a long period and have seen a degree of participation, however minimal, by a large number of individuals and been visible even more widely. This suggests that they may be the most significant cross organisational spaces. Personal networking may possibly be very important, but proved difficult to capture. WS and IWMW were relatively public and there was historical data available about them, through the archives of the email list and of conference presentations. The researcher also had extended personal contact with these spaces, going back to before the start of the research. Further, WS and IWMW were linked, partly by the perception of some that they represented related activity (eg BK or CM, see Section 6.3) but also because participants for IWMW were probably recruited largely through WS and WIM. The two being linked strengthens the thesis by allowing a sort of "double triangulation" in which findings for each space, themselves achieved by data triangulation, are also triangulated with each other.

The third major data source was individual interviewees. The interview data was collected to explore the pattern of participation of individuals in cross organisational activities in general and the relation between this and the character of the individuals' local roles. So interviewees were chosen purposively to capture different patterns of participation, such as participating in the conference but not the mailing list or vice versa, or participating in both or none - as well as engagement in other cross organisational activities. They were also chosen because they had different roles and positions within local organisations, different types of institution with different technologies and the two genders. Conducting the interviews created another layer of data about WS and IWMW, further triangulating all the data. Understanding of each element of the study - the email list, the conference and the individuals - is underwritten by work on the others.

3.2. *Ethical issues*

Any study involving people raises ethical issues, though the issues do not arise in the most acute form because the focus of this thesis was primarily professional concerns, rather than very personal or emotionally laden activities.

Commentators have seen special problems for the researcher in researching virtual social spaces such as email lists. Thus although WS was open to public membership and its archive viewable by anyone browsing the web, it does not follow that participants realised that they might be studied (Scharf 1999, p.250). Detailed analysis of posting patterns and looking at web sites of members, goes well beyond the obvious public exposure implied to sending to a public list. Lurking members might be unaware that there is a publicly accessible membership list.

Scharf (1999, pp.253-4; see also Ess 2002) stresses several ethical principles to guide research in virtual contexts, such as: always considering whether the research benefits the people studied, always introducing one's research to members, openness to feedback and throughout a respectful sensitivity to the "purposes, vulnerability and privacy of the individual members" (ibid., p.254). These are essentially the same principles that would apply to any research in a social context.

Scharf's (1999) second point is equivalent to the notion of gaining informed consent. In the WS study consent was sought directly at four levels:

1. The host institution, who run the software that was used by WS, i.e. Jiscmail. Jiscmail was contacted in late 2002, and this resulted in some passive cooperation, eg in supplying data on archive use.

2. The official list owner (the person who initiated the list). The list owner was contacted in December 2002 to establish his agreement for the study and he raised no objections.

3. Leadership figures in the community other than the formal list owner. This was accomplished partly by including them closely in the development of the questionnaire and by interviewing them.

4. The mass of list members. The main occasion for this was at the time of posting the URL of a questionnaire to the list (May 2003) at which time a short explanation of the project was also provided. In March 2004 results of the questionnaire were also posted to the list in the

form appearing in Appendix 7, inviting comment and further interaction (though there was no feedback in fact).

The need to announce and explain the research was to a certain extent balanced by a potential danger of affecting the nature of the community by the investigation itself. The mere "presence" of the researcher could increase or in some other way change the activity within it, by an equivalent of the Hawthorne Effect. More significantly in ethical terms, publication of results, including less positive findings, could have difficult to foresee effects, possibly quite damaging ones. There was a case therefore, after having received a level of passive consent, to keep the profile of the research quite low.

The ethical issues with the interviews discussed in Chapter 6 centred more on the ownership of ideas and anonymity. In quoting the words of interviewees there is always the danger, on the one hand, of effectively appropriating interviewees' insights and passing them off as the researcher's own - and, on the other hand, of exposing views or feelings that interviewees did not want to be made public. The researcher's own critical (analytic) commentary on their words may be wrongly read as critical (evaluative) of the individual. If the investigation had for example been concerned with the choice of CMS, it would have made sense to attribute quotations to named individuals by default, recognising the effort the person had put into developing their ideas and the fact that interested readers might indeed know them. In this thesis, however, the subject matter, i.e. the nature of community is of less interest to the community itself. Rather, those interested in this research (in the Internet research community) would probably not be acquainted with individuals concerned. The problem lies more in the area of preserving anonymity for those who could be potentially embarrassed by the thesis' findings, eg a respondent who felt alienated from their job might find it awkward if this were made public.

Part of the solution to these issues was to pseudonmise all the interviewees. However, it was very difficult to guarantee individuals' total anonymity without suppressing some data. For example, it might be possible for those familiar with the field to guess who someone was from data provided on job title, region and clues in the way people speak. Not to have included that data would undermine the transparency of the research. It was therefore decided to make the PhD confidential for three years. This meant that by the time the thesis was made publicly accessible it would have effectively been about five years since the interviews were conducted. In fact, it was always unlikely that the matters discussed in the thesis would be embarrassing or even of great interest, but in this way individuals were substantially protected. For planned publications, completed after the thesis, consent was to be requested quote by quote. Publications prior to the completion of the thesis did not use quotations.

Another aspect of the problem of anonymity and acknowledgment was the potential for the thesis to be seen as an evaluation of the professional work of BK. On the one hand it is impossible to anonymise this individual, he was simply too prominent and it was important to attribute to him his publications. Interviewees were universally complimentary of him, and his activities could probably be seen as best practice of community building - yet it could be perceived that that the more critical parts of the thesis were a personal reflection on his performance. However if the thesis were in any way to be a personal evaluation it would be uninteresting, a mere matter of personalities. The point of the thesis is to examine structures and processes that work at a more general level. Again the decision to make the thesis confidential was partly to address this ethical dilemma. The potential problem was further ameliorated by at the IWMW2005 his stating that he would be far less active in the field in the future, so again reducing the relevance of such a level of personal evaluation.

3.3. Conclusion

The following three chapters (4-6) examine data from WS, IWMW and individual interviewees. In each case the findings are preceded by an account of the data sources and analytical methods used. Chapters 4 and 6 both use the COPT based model as the fundamental structure for the discussion. This provides a framework for discussing a wide range of data, with summaries of the raw data provided in appendices.

In Chapter 4, having assembled a variety of data under the four dimensions, a summary section draws together all the findings to encapsulate the character of WS. In Section 4.9 a conclusion is drawn by making a comparison between what was found and a true community of practice.

For Chapter 5 the available data restricts most of the discusion to the first two dimensions. A conclusion is drawn, first by comparing the character of IWMW with WS and then to a pure community of practice.

Chapter 6 is underpinned by the model of the bases of community drawn from the theory of the professions (Section 2.2), for here the focus is on the causes of different patterns of participation. The main body of the chapter investigates what aspects of interviewees' local roles seemed to have an effect on their participation or non participation.

Having established a context in the literature and defined the broad methodological approach, the next chapter proceeds to apply the NOP model to the first of the clusters of cross organisational activity in UK HE web production, an online community, WS. In doing so it

will also show how far knowledge sharing patterns in web production fit the expectations found in the literature.

4. The Web-Support list

4.1. Introduction

The previous chapters have introduced the purpose of the thesis to explore cross organisational NOPs in UK HE web production. The last two chapters have evaluated a range of theoretical approaches and methods, concluding on using COPT as a starting point for theorising cross organisational activities as communities. Chapter 2 also established some propositions about what is already known about web producers and cross organisational knowledge sharing directly or which may be hypothesised by analogy with behaviour of related occupational groupings. It established what is known about email lists as such. Chapter 3 also introduced the methodological approach.

In this first of the data chapters the thesis begins to investigate some of the main cross organisational spaces in web production in UK HE. There are many forms of cross organisational contact in this domain, from regional self help groups to personal networks. The thesis concentrates on two more public clusters of activity: an "online community" and the annual conference. This chapter looks at WS, an email list, the only active online community in web matters specifically for UK HE.

Guided by the model derived from COPT, the aims of the chapter are to examine:

- Participation. Determine who participates in terms of numbers and demographic characteristics, taking into account the potential for different levels of participation or non-participation and to examine where possible change over time. These questions are addressed in Sections 4.3 and 4.5.

- Enterprise and Repertoire. Define the enterprises of the community - what informational and other purposes are served by the community - and examine the repertoire that is produced.

- Identity and community. Examine the group's sense of itself, the nature of identity work and its sense of community.

- Climate and governance. To look at the climate of interaction and how relationships are governed within the group.

The chapter begins with an explanation of the methodological approach taken.

4.2. Methods

4.2.1. Introduction

As has already been suggested, if workplace ethnography is the natural way to study a community of practice, the approach to a looser linked NOP is likely to be somewhat different. Participants are dispersed, and cannot be observed during participation (except in so far as this is visible in the text of the communication itself) or interviewed while acting. The focus, as a consequence, is likely to be on the recorded transactions in the archive of emails, as well as joining the list and observing interactions over time. More indirect methods relying on participants reflecting on past behaviour, such as interviews and questionnaires, have to be used to explore issues of motivation and reading habits. Arguably, in this way, the extent of involvement can approach that achieved in ethnography.

4.2.2. Participant observation

Thomsen, Straubhaar and Bolyard (1998) stress the importance in qualitative studies of immersion in the target community. The researcher had been a subscriber to WS before the start of the study, since 1996/7, and the knowledge this gave him of the background and character of the list was invaluable to the research. For much of this membership, his orientation could be characterised as an aspiration to participate, but without a sufficient technical remit to reach a level where he could plausibly do so. Up to 2003 there had been long periods during which he received the list as a digest and simply deleted it (with a sense of guilt about not keeping up to date with what was going on). In a sense, such a marginal position was an ideal perspective in relation to the object of study, giving him a degree of understanding without being emotionally implicated in the values of the group. Many aspects of the list that have been explored were suggested by the researcher's reflections on his own behaviour and feelings as a marginal participant. Much also was learned by submergence in the archive, following links from it, participating in continuing interaction (such as the very process of posting a questionnaire to the list), reflecting on past and other usage of email lists. There are difficulties with seeing this as immersive in the sense understood in ethnography, but it does achieve a good level of insider understanding. An attempt has been made to find quantitative measures which test impressions about the nature of the list, yet overall the researcher's view built up over long exposure to it is an important source of insight and often relied on to interpret ambiguous quantifications.

During the research process, the perspective has been gradually expanded, by consciously seeking external reference points and researching more deeply into the wider setting within which WS works, and a process of defamiliarisation and problematisation.

4.2.3. Analysis of email postings

One of the main sources of data for the study was the archive of postings to the WS list dating back to March 1998, older messages from its foundation in 1994 having been discarded by a previous service host (Mailbase [n.d.]). Despite the limitation of not having the archive from the start of the list, this is a good form of data for a number of reasons (Langner 1999). They are "naturalistic" data that exist independently of the activities of the researcher, so investigator bias is reduced. The archive gives access to a complete set of low level, immediate interactions, so has credibility as a source for "real" unedited behaviour. The data are stable, and so can be repeatedly viewed by the researcher or another wishing to replicate the study. Use is unobtrusive and makes no demands on the subjects. This is particularly relevant because it is inherently part of the community culture to stress busyness and efficiency. Asking lots of meta-questions would therefore go against the list culture. The data are already in electronic form, so there is potential for searching and analysis using computer software tools, without the cost in time of transcription. The archives are exact; they include, for example, names of individuals involved. Quite long time periods can be studied, since at March 2005 WS archives had existed for seven years. The data was available from the beginning of the study, so that a natural process could be to move between data and literature iteratively from the beginning and throughout the research. Because the data is of interactions there is greater access to responses to particular propositions made by others than is typical of many texts (Potter and Wetherell 1987, p.163).

This is not to claim that the archive is in some sense a complete, self referential corpus. Like all texts, emails can only be understood in relation to other texts and other contextual information. Further, they are only partial records of all the relevant communication within the group concerned, as they fail to capture off list posting. They give only hints about the decision making processes behind posting. How members read messages cannot be understood directly, eg the researcher does not know about the technical environment in which they are read, or, except indirectly, how readers interpret particular statements. The archive tells us little about those who read the messages but rarely or never send them - the "lurking" majority - or indeed a logically relevant category of "non-users."

Other typical issues with email archives as identified by Langner are firstly that online it is easy for people to adopt false identities or play with their real identities, a key theme of early

Internet studies (eg Turkle 1997). In fact, the general prevalence of this behaviour may have been exaggerated (Castells 2001, p.119). It would seem likely that on the particular list studied here that this would not be a problem, since the participants are serious minded, and deal with professional issues. Emotional intensity is low. A second point Langner makes is that although naturalistic data are more reliable, they are also more difficult to analyse. The results from a questionnaire, for example, would be relatively predictable, whereas what the appropriate questions to apply to naturalistic data are more open.

4.2.3.1. General statistics and analysis

The email data were partly explored using basic parameters of activity such as trends in posting and time of day of posting. Two other main specific forms of analysis were undertaken: subject and genre analysis. The character of the data as a large number (10,000) of short (100 word) messages composed by a large number (nearly a thousand) different people could best be approached by sampling and classificatory methods. In contrast, for example, the rich samples of individual talk gathered through qualitative interviews for Chapter 6 were best approached through close reading and discourse analysis. Nevertheless, the intent in this chapter is to generate qualitative descriptions of the character of the list from this data, not to test specific hypotheses.

4.2.3.2. Genre analysis

In analysing electronic communication the idea of identifying genres has been an influential strand of research, especially after Orlikowski and Yates (1994) (see also Davenport and Hall 2002, Bauman 1999, Bergquist and Ljunberg 1999). Genres are typical communication actions invoked in response to recurrent situations (Bergquist and Ljungberg 1999) - as Bauman specifies, social situations (Bauman 1999, p.271). As Fairclough puts it:

> Genres as forms of interaction constitute particular sorts of social relations between interactants. (2003, p.75)

For example, a common type of posting on an email list would be an announcement of a conference (differing somewhat from an announcement of a course). Readers would immediately recognise such a communication from clues in the text and expect it to be a longish message, including certain types of detail (such as the date of the event) in relatively formalised language, cross posted to multiple lists. Departures from these unwritten rules would be noticeable, and possibly reflect on the genre competence of the poster or be intentional, for effect. Again such a posting would be expected on some lists; on others (a hobby list) its appearance would be surprising. The reader response is to a certain extent

programmed into the genre: it might be to visit the site for more information or delete the message as irrelevant, or possibly protest on list that the event is irrelevant.

Genre are a conventionalised marriage of form, style and content. They establish a common ground of purpose (Mercer 2000, p.170). They have a socially recognised purpose or "communicative goal" and common characteristics of form (Orlikowski and Yates 1998). To use a genre is to "implicitly or explicitly draw on genre rules, and also to reinforce and sustain the legitimacy of those rules" (Yates and Orlikowski 1992, quoted Davenport and Hall 2001, p.178). Such rules shape but do not determine what people say, by setting up expectations which can be manipulated for effect in different social situations. They both reflect and reproduce social structures (Bauman 1999, p.271). They reflect a community's norms and outlook (ibid., p.271). Indeed it can be argued that they signal "a discourse community's norms, epistemology, ideology, and social ontology" (Berkenkotter and Huckin 1995, p.4). They are dynamic, changing over time in response to their users' changes in needs and situated uses of the conventions (Berkenkotter and Huckin 1995, p.3). Participation in a professional culture, for example, requires "informed knowledge of written genres" (p.24).

Bhatia (2004) differentiates between

- Genre sets - an individual's collection of genres
- Genre systems - those collections of genre used by all the professionals engaged in a particular activity
- Disciplinary genres - those of a particular profession

In this sense, a community of practice could be characterised as a group sharing a particular genre system.

Many aspects of life in a particular communication space can be revealed through studying genres. By identifying genres in use - with their topics, rules and who participates - we can study the group's character (Burnett 2000, Baym 2000, Zucchermaglio and Talamo 2003). Implicitly this suggests that "missing" genres are significant: what is absent is as significant as what is seen (Orlikowski and Yates 1994, p.561). Looking at changes over time reveal changes in the nature of interaction and the development of the group (Orlikowski and Yates 1994). Conflict may be fought out over the appropriateness of genres or attempts to get new ones accepted. Failure or breakdowns in genre reflect significant events in the life of the community. Old hands recognise newcomers by their mistakes in using genres (Davenport and Hall 2002, p.179). A close linked group would develop its own genres, and have a wide

range of genres of interaction. The origins of genre in use, eg a particular discipline, are also significant.

Several researchers have attempted to study communities of practice using other forms of content analysis, eg Rogers (2000) and Talamo, Zucchermaglio and Ligorio (2001). Both start with Wenger's core definition, but their approaches are flawed by the way they understand the concept. For example, Rogers sees mutual engagement as consisting of "maintaining identity" and the formation of relationships. Talamo, Zucchermaglio and Ligorio do not clearly define how they interpret the different elements of the definition.

4.2.3.3. Practical working method, and use of Microsoft Excel

Past messages sent to the list were available to download as a file (one file per month, with the messages in date order) or to view online on a web site (message by message, or in various summary forms). Both means of access were used. For sample months the file of messages was printed. For close reading of the text this was the preferred access method. For looking at the data in different views, for example, ordered by date, author or thread, and for extracting summary data, the online archive was preferred, though response times of the site were often quite long. The total number of authors, messages and threads can be read off from the archive, acting as a cross check with data analysis in Excel.

Excel, rather than Atlas or a similar qualitative data analysis package was preferred for performing analysis. There was interest both in the character of threads and the character of individual messages within a thread, and analysis at both these levels was relatively easy to achieve in Excel, with a spreadsheet for threads and coding, and a separate spreadsheet for messages. An elaborate system of sub coding would have been required in Atlas to track both threads and messages. Excel also seemed more flexible in allowing coding to be changed. On a practical level Excel enforced a degree of discipline. If every message had to be coded and coded only once by some attribute, it was easy to see if one item had been missed in Excel, sub-totalling was often used to check that all items had been coded. In contrast, in Atlas it was easy to miss a message, or code it twice.

Categories, such as those designating types of post, were derived from one month and tested in others. Coding often felt quite subjective and partial, for example, where a message or thread developed in several directions. However, overall category definitions were reworked until most messages could be categorised. Much was learned from messages or threads that fell outside common categories for they pointed to very rare types of post, revealing gaps in

what might have been expected to be seen far more commonly, for example, warnings, announcements of resources, requests for information sources.

A level of validity was achieved through some double coding (see Section 4.4.2.1). Further, the researcher himself returned to the data iteratively to revalidate findings. This led to a major reevaluation of the core coding. In the first pass longer threads were considered to be discussions. After reviewing all the longer threads from two sample years, a reconceptualisation was arrived at, which saw them primarily as complex threads containing multiple types of genre, including elements of two genre (rants and best practice) which did not themselves exist as genres occupying whole threads.

4.2.3.4. Sample data chosen

Given the sheer quantity of messages, to effectively look in detail at specific exchanges, some sampling approach had to be taken. Two samples were made:

1. All the messages sent in seven specific months, one each from the years in the archive (Table A3.2).

2. All longer threads (over 10 messages) from two specific years (Table A3.21).

In choosing the first sample, it was decided to use the data by month, partly because it was presented in the online archive in this form and was also available to download as a file by month. Given the shortness of email threads (usually at the most a few days) a monthly sample captured complete units of interaction, and it would also capture any patterns of activity between weeks. In fact, the natural unit of activity was a week, given that few messages were posted at the weekend, and threads generally only occur on consecutive days (Table A3.2). Thus unlike much content analysis the sample was orientated towards threads and time periods, i.e. units at which levels of interactivity can be observed. Often content analysis is performed on a sample of individual messages (eg White 2000) but this seems to take them out of context and reduces the ability to really understand the nature of interaction.

Given the interest in looking at development over time it was decided to take sample months from each one of the seven years in the archive. Rather than take the same month in every year, which could have resulted in a distortion from a seasonal pattern in posting, a variety of months were chosen. They were picked partly to spread the sample through the year, also, by the inherent interest of some of the major discussions of the month. Generally relatively busy months were chosen to increase the richness of data. Thus the sample months were chosen by

a purposive method and should not be necessarily seen as representative, as at the very least the level of activity was higher than normal.

The purpose of the second sample was to explore the nature of longer discussions with a larger number of examples, partly because there were only a handful of long threads in the original seven sampled months, and partly because longer threads were thought to be likely to be more interesting, because they evidently aroused more interest among members.

4.2.4. Subject analysis

In order to explore changes in the subjects of discussion in WS and IWMW, and the difference in topical focus between WS, IWMW and the job content of interviewees, a broad subject taxonomy was developed over the course of the research (Table A3.16, column 2). This was based in the first instance on looking at how individuals interviewed for Chapter 6 described their jobs. The taxonomy was first developed while attempting to classify talks at IWMW, and further developed by use. It was later expanded to encompass WS. This is not based on a systematic role analysis (HERA 2005, SFIA 2005) as, for example, the interview data on roles was limited and collected in an unstructured way. Instead it produced a pragmatically useful framework to reveal differences and similarities between WS, IWMW and individuals' roles as revealed by interview.

The taxonomy is close to van der Walt and van Brakel's (2000) task analysis study. This identifies the following "webmaster" roles: management (supervision of a team, managing a project, managing content), editorial (content creation and copy writing), design (graphic design, page layout, multimedia design), marketing (promoting the site itself), systems tasks (system recommendation, implementation, administration, log file analysis and reporting, database administration, web site maintenance and security), programming (script writing, application development, database administration), support and training (end user support, end-user training, WWW staff training), research and development (research of new technologies). The main differences between this list and the classification used here are additions, with inclusion of strategy and politics and liaison, e-learning, legal issues and the specific clustering of marketing functions together. The classification encompasses the more broad brush stroke classification of tasks proposed in the Heinus report (Armstrong et al. 2001). There the authors divide the job into up to five elements: content provision and information skills, design and graphics, IT and technical skills, database design, and quality control and updating. The classification used here is more comprehensive. It also encompasses the implicit classification system used at IWMW for the discussion groups (see Chapter 5.3.2.4).

4.2.5. Membership studies

Another strand of work was to examine list membership. A number of approaches were taken:

1. Analysis of total membership, through study of the subscriber list file which can be requested from the host by any member. This file enumerates subscribers, giving their names and email address (unless an individual has opted to remain anonymous). The data are sufficient to establish both their institutional affiliation, and in most cases the gender of the individual. Although historical data cannot be requested, the research used three files retrieved over the three years of the study (1st March 2003, 2004, 2005). This enabled a number of analyses to be conducted, including of changes over time, membership of different lists, googling all members.

2. Analysis of posters, eg through signature files.

3. To analyse subscribers' "list settings", from a sample of data obtained from the list owner for the 10th May 2004. This showed when individuals joined the list and various of their settings such as whether their account was set to receive digests or individual mails, and also the nomail setting, which suspends receipt of mails.

4. Googling of list members. A search was made using individuals' email as a search term, and if that failed then a reasonable effort was made to find the person using the search engine/site associated with the institution of affiliation taken from their email address. The searches were conducted using the 28th February 2004 membership listing, during March 2004.

4.2.6. Web based questionnaire

Analysing the data in the email archive gave direct access to actual historic interactions, but clearly did not give direct access to information on such issues as: motives or attitudes towards posting, experience of reading messages or their interpretation (except implicitly). To address this, another significant source of data was a web based questionnaire.

The literature of web questionnaire design is generally somewhat inconclusive, for example, about the impact of different input features on response rates (Dowling 2003). Most of the literature is about the applicability of web questionnaires to sampling real world groups, not purely electronic groups, and so is concerned with differential Internet access (and Internet access speeds) and the suitability for mixed mode data collection (eg Dillman, Tortora and Bowker 1999). This is not particularly relevant here. In general the literature is not terribly

helpful in taking the researcher beyond common sense and existing knowledge about print based questionnaires. The literature does suggest that use of open ended text boxes does significantly affect return rates. The size of the text box also influences length of answer; the questionnaire used a number of quite large textboxes, it might have been advisable to vary these more. To a large extent the principles of good questionnaire design (eg Frazer and Lawley 2000) apply as much to web based questionnaires as print ones. Thus the questionnaire was structured with relatively closed questions at the beginning and more open ones toward the end, drawing the respondent into thinking about the topic through the early questions, asking more difficult questions later. Demographic questions were left until the very end. An effort was made to keep the questionnaire as short as possible using a neat layout, with precise wording and clear instructions. Professional presentation was thought to be particularly significant to the group under study. A special concern was compliance with accessibility and other web standards. Given the group's interest in web design it would have undermined the credibility of the researcher if there had been errors in the coding or, worse, a failure to comply with accessibility standards.

A short preamble to the questionnaire explained the purpose of the research and gave a link to further information. It stressed that the opinions of those who did not "consider themselves very active" on the list were of interest. This was important given the high rate of lurking on the list.

The survey instrument was piloted with seven individuals, including fellow students and two academics in the Department of Information Science at Loughborough. The Tables in Appendix 5 summarise comments and actions taken in response. Subsequently the five "core" list members were approached to fill in the form, and comment on it. The idea was to both ensure that they filled in the form, and to offer them some sense of ownership of the research. The form was not substantially changed after this exercise.

Appendix 6 reproduces the final questionnaire. The URL of the form was posted to WS in May 2003, with a reminder after ten days. Forty-three responses were received. Given that the total list membership was at that time around 750, the size of response was not big enough to be statistically significant, even taking into account the proportion of members who were receiving nomail. Although the response rate was relatively low, this was not very surprising. It would seem likely those who filled in the form would be those who are "active" on the list, and this is quite low at any one time. In fact, as Tables A7.2 -7.4 indicate respondents were quite widely spread in terms of length of membership and apparent list activity. However, the questionnaire was quite long and would take at least 10 to 15 minutes to fill in. Therefore some potential respondents may have been discouraged from completing it, especially those

who rarely got involved in list activities. The response rate could probably have been increased by reducing the number of open ended questions (certainly reducing the size of the boxes might have helped). However, it is doubtful whether this would have made a significant difference.

It is noteworthy that the evidence from self description of job roles suggests that the population was not representative of the list membership, for web managers and their teams were quite a large proportion of respondents (Table A3.11) but seem to have been a small group in the whole membership (Table A3.7, A3.10). Notwithstanding these problems, it has been decided that the data could be used as a snapshot of opinion to further develop understanding of the list, if not to validate conclusions in a strong form for which representative samples of responses would have been critical.

The results of the questionnaire were posted back to WS in March 2004, and this summary is reproduced as Appendix 7.

4.2.7. Interviewing

Two types of interview were conducted directly in the WS study. One type (five face to face interviews) prefigured the questionnaire, and their purpose was to validate the questions to ask, but also to explore issues of list use in an open way. Thus, like the questionnaire they concentrated on the habits of usage of the list, and what the list was valued for. Interviewees were BK (a leading list member) and some of the local (Loughborough University) members and one at a neighbouring university. Interviews were taped and transcribed.

The other set of interviews were follow ups to the questionnaire, directly addressing key issues of the research at that point. Most of these were conducted as electronic interviews (Bampton and Cowton 2002, Mann and Stewart 2000). Although one of these was quite successful, and the comments from others were valuable at some level in formulating an understanding of the list, they are not represented here as a major source of data. They were largely superseded by the interviews reported in Chapter 6 as in depth texts, more fully contextualised by questions about individual's job and much richer for being face to face. Although a potentially valuable approach, particularly where anonymity is essential here the response rate to requests to face to face interviews was higher than with e-interviews and only one of the e-interviews lasted through a significant number of interactions.

4.2.8. Other methods used

4.2.8.1. Statistics of usage of site

The hosts of the service supplied the researcher with some limited statistical data about searches of the list archive. Because this showed usage to be relatively low it was not considered a particularly fruitful line of investigation. The hosts were unable to supply search terms used in the archive for ethical reasons.

4.2.8.2. External points of reference

A number of professional or expert online communities were identified as external reference points. These were not studied systematically but were used to get a feel for the quality of detailed interactions in comparable groups that were of a different size, used different technology and forms of governance or were in different fields. Tables A3.25-3.27 summarise the characteristics of these groups. A key reference point was uwebd, being the North American equivalent of WS (see Table A3.25,A3.27). The utility of this data is limited by such factors as the researcher's unfamiliarity with the US educational system and lack of membership data; however, it was helpful in offering suggestions of ways WS might have been different. Some analysis was also made of WIM, a parallel list to WS, also hosted by jiscmail, intended to be more in the area of managerial issues, but which had only ever had low levels of activity.

4.2.9. Summary

In some respects having a complete, full text transcript of interactions makes a NOP easier to study than a complex, rich, face to face "community" in which many things go on at the same time and a small proportion of which are recorded. There is ready made naturalistic data to explore, iteratively, and potentially also for subsequent researchers to reanalyse to check findings. Content analysis can be used to study interactions, or a sample of them, ideally using clear protocols. However discovering the thought processes and beliefs behind postings or how messages are read is less accessible, because it is difficult to observe creation or reception. Questionnaires and interviews have to be used to gather retrospective reflections on these matters. The scale of the group also creates a problem relative to the small size one would expect of a community of practice and the low commitment reduces the likely participation levels in research. However, material was gathered to address all the dimensions of the community as identified in the NOP model.

4.3. *Membership and participation*

This section begins the analysis of WS by examining aspects of the first community dimension: participation. It introduces the question of the level of activity but is primarily about who participates, also looking at changes over time. The pattern of participation is returned to in Section 4.5.

4.3.1. Posting levels and patterns

Table A3.1 and the charts in Appendix 2 summarise the main patterns and features of WS posting. Over the seven years around 10,000 messages had been posted, an average of about 120 per month (Table A3.1, Chart A2.1). The totals showed a distinct decline in the last year. This level of activity is quite high, much higher than WIM or any other web related group on jiscmail. It is of the same order as that found by Butler (1999) in his sample of 204 email lists (p.21). However, it was much lower than busy usenet or bulletin board systems, such as webmasterworld (Tables A3.25-26). It was also significantly lower than uwebd, which had about 400 messages a month (Table A3.27). Relative to face to face groups the total was low: thus as a quick comparison the 21 interviews discussed in Chapter 6, lasting about an hour each, yielded a corpus of about a quarter of a million words. The corpus of the email archive was probably of the order of a million words (see Table A3.31 for an estimate of average message length).

Threads were quite short at around three to four messages, on average (Chart A2.4), implying a low level of reactivity (Rafaeli and Sudweeks 1997, pp.175-6) somewhat higher than the average (mean 1.58, median 1.333) found by Butler for a sample of groups (1999, p.28). There seemed to be significantly fewer single message threads (around 10%) than Butler found (32%) (ibid., p.29). The trend was for the thread length to increase slightly over the whole period, not just in the last year, but it remained low at between three and four messages.

Over the seven years studied the number of unique posters was around 876 (Table A3.13). However, the concentration of postings among a small number of individuals suggests that there was a core of active participants. The pattern of posting shows a classic power law relationship, with a small proportion of participants posting a large proportion of messages, and a large number members posting very little, many not at all. One individual posted almost 10% of all the messages ever sent. Three individuals had together posted nearly 20%; the 13 individuals who had posted over 100 messages had sent 36% of all messages. On the other hand a third of posters had only sent one message, while a large proportion of members do

not post messages at all. So within the total population there is a clearly more active group. For a sample date it was found that a quarter of subscribers had their account set to receive nomail (see Table A3.9).

4.3.1.1. Off list posting

A possibility that needed to be considered was that rather than post to the list many people posted off list, so that the email archive was only a fragment of real activity. Question 10 in the questionnaire explored this possibility. The response implied that most people roughly sent the same number of messages off list as on list, or a lot less. A few people (six) said they posted two or three times as many messages off list. Only one person (the list owner) posted a lot off list. However, about a third were posting far fewer off list. This suggested that while there was off list activity, it may not be very significant. Direct evidence from the list confirmed this conclusion. On the rare occasions a list member summarises responses they have had to a question (eg June 2000 #80); most of the messages appear to be ones that were sent to the list.

To further confirm this, it was important to look at what sort of message was posted off list. This was addressed in the open Question 11. Fifty suggested reasons for posting off list were given, by the 38 individuals who gave an answer. The most common type of explanation was that the comment was relevant only to the poster. Confidentiality was also frequently cited. So there is a sense that the public nature of the list is the main inhibitor of on list interaction. The option "by the request of the person who posted the question" received some support, surprisingly, for it is rarely requested not to post answers on list. Complexity or a sense of their answer lacking authority, or fear of embarrassing the questioner did not seem to be reasons for off list posting. Fear of flames was only felt to be a factor influencing the behaviour by five persons. These results disconfirmed any great sense of inhibition among the group and suggest that if one had access to off list posting it would not be very different in *character* from that on list.

4.3.2. List scale, reach and churn

Table A3.3 summarises the subscriber data for 28 February 2003, 2004 and 2005. It shows a total membership starting above 700, with a gradual 5% decline in membership in the first period, which had accelerated up to February 2005. This mirrors a decline in posting during the last year studied.

At between 750 and 650, this was large relative to the number we would expect in a face to face social group such as a community of practice. It is rather large compared to Butler's findings for a sample of email lists, where the mean was 163 (1999, p.14). On the other hand, relative to the potential population who might join a list about the web, it could be considered only small. There is no real data about this and the concept is hypothetical, but at a simplistic level one could argue that on average every HEI has about 30 people who might be interested in such a list about the web, making a potential population of the order of 6000.

The net fall masks the actual "churn" of membership, as indicated in Table A3.4, with a larger loss of existing members, offset by a continuing influx of new ones. The only benchmark available is, again, Butler's study which showed the mean figures of 63% growth and 38% loss (1999, p.18). Butler's data are from 1997, so the figures may reflect general growth in the Internet at that time. What the WS figure suggests is an apparently relatively healthy level of churn, with a sense of renewal, cutting against the overall loss of numbers.

4.3.3. Demographics

4.3.3.1. Domain origin of subscribers

The basic data from subscriber lists (Table A3.3) shows that most members, around 80%, were from the ac.uk domain. Of these it was found during the googling exercise only 31 of the then current membership of 724 (5%) were from Further Education. There was no strong pattern in the non ac.uk subscriber group, with a spread from other educational institutions, the public sector and a few web consultancies.

4.3.3.2. Gender of subscribers

The basic data from subscriber lists shows that around two thirds were male, a quarter female and 10% unknown due principally to ambiguities of name (Table A3.3). The googling exercise did help clarify this somewhat, showing that the split at the date of the exercise was 188 females (26%): 507 males (70%) : 29 unknown (4%) (see Table A3.7).

4.3.3.3. Role and status

It proved difficult to make sense of what type of person typically was found on the list. Three approaches were used to explore the role and status of participants: the Googling exercise, comparison to a list of known web teams and signature analysis.

The overwhelming qualitative impression of the googling exercise was a sense of fragmentary and patchiness of membership. Table A3.7 summarises the findings. The key finding was that of 388 ac.uk members for whom data could be found, 252 were in a central department, and only 40 were outside computing or information services. Of these 40 only about half were obviously in a marketing or communications office, so a very small group were from this background. One hundred and thirty-six of the group from ac.uk for whom data could be found were in an academic department (only 17 in computer science). Thus most HE members for whom there were data were in a central department, presumably having some responsibility for supporting the university web service, but a significant proportion (a third) were in an academic department, presumably a "web author" with responsibility for a sub-site.

There did seem to be a clustering of membership in the more prestigious institutions, so that whereas 153 subscribers were from the Russell group universities, only 46 were from the post-1992 universities and a handful from the small HEIs. Many smaller institutions and 14 new universities had no members. This presumably reflects the skew in activity towards technology on WS, whereas it is likely that the smaller institutions focus more on marketing and use off the shelf technology. It is also interesting that various national bodies like JISC itself and the funding councils had quite a large number of subscribers, though it was typically difficult to identify exactly what the role was of these individuals.

Of the ac.uk members for whom data could be found only 23 could be clearly identified as occupying a role in charge of the web at that institution. This was significant in that it suggested quite a marked division between those who might be expected to be members of WIM. The implication is that the list consists of many technical people rather than IWMs.

However, an attempt to study list "reach" came to rather different conclusions. In March 2004 a search was made to try and identify a named individual or web team at each HEI (total 164 universities and 44 small HEIs listed by HERO (2005)). It was found that some substantial data about the web team at 28 institutions (only 13% of the total) could be found. The web pages identified gave a listing of all those apparently involved in the web: a total of 130 people, around 4.5 people per team. These data need to be used cautiously. Although likely to be up to date and complete for those working closely with the page's author, it would not necessarily identify everyone loosely linked to that team. It is probable that the data are unrepresentative in that where an institution was not giving much resource to the web or had an intranet behind a firewall the details of the web team would not be likely to be available on the open internet and so visible to the researcher. This probably explains why no one from the small HEIs was identified. Several teams encompassed people working in e-learning, since

the team also handled that area, but, for the purposes of studying list reach, these would not be expected to be the target audience of the lists. Notwithstanding these issues some interesting thoughts arise from the data.

Of the named individuals in the teams 19% were found to be on WS in 2004 and 18% on WIM. At 25 of the institutions a manager of the web team was identified. These individuals collectively had a list membership score of 49, on the basis of giving a point for membership of WS or WIM in 2003 or 2004. The maximum possible score was 100, so the manager group had around 50% of the possible memberships, suggesting quite a high rate of participation in these fora. This is quite surprising since WS in particular seems not to be at a management level. Since the total membership score for the whole group was only 95, nearly half the memberships were by only 25 of the total 130 people. Considering the whole group, the total score of 95 is only 18% of the possible score of 520, and can be taken to represent the "reach" achieved by the lists to the whole sample. This suggests that list membership is an "elite" activity, far more common among those in managerial positions than other members of the team. However, the googling exercise suggested a far more random pattern of membership, and specifically that those in IWM roles were conspicuously absent from the list membership. It should also be noted that 10 of the institutions for which web team data were found had no one who was a member of the lists. This shows how patchy reach was in extending to a sample of the target audience, since a third were not participating at all, even through one team member.

A third approach to exploring the question of the role and status of those on the list was to look at evidence from signature files of posters (Table A3.10). This method had various problems, most obviously that only a small proportion of the membership sends messages. Another problem was that there was no uniformity in what details were included in a signature, from possible elements (usually job title, team and/or department). Many posters did not include a signature file or only gave a job title, without a location. Job titles tend to be very variable in the computing industry, and do not clearly define the individual's role or status. In a newly developing area, in particular, job titles could bear no relation to actual responsibilities. The proliferation of acronyms for departments or teams also makes interpretation difficult. The best that can be done is tentatively explore whether posters fall into one of three categories: firstly, institutional web manager or in their team, secondly, the IT department but working outside a web dedicated team or, thirdly, in a department or a central service other than computing (eg library, marketing or media). Although the quality of the data is patchy, the analysis does suggest that the list is used heavily by those who are in departments, not just those in central services. Such individuals may lack support, especially

if they are being relatively innovative (since central support services may not be able to support such novel working). The list may also be used by those working in IT departments who have a part time role in supporting web page design but do not have it as a main responsibility. Those who specialise in the web are in a minority, for instance, among the March 2002 posters, only nine had web or internet in their job titles out of 27 who included a job title in signature files.

It follows from this analysis that the list could be conceived primarily as of a group with a shared problem area, rather than primarily an "occupational community". However, given the technical level of discussions it is reasonable to say that only those with a fairly serious interest in web development would be active or even subscribers to the list.

4.4. Enterprise and repertoire

This section moves on to the second community dimension: what is done and how this accumulates as a repertoire of information, knowledge, values and ideas. Two main approaches are taken to the first part of this question: firstly, to look at the subject matter of interactions and secondly, to use genre analysis.

4.4.1. Subject analysis

This section analyses the subject content of activity on the WS list in May 1998 and October 2003 as a step towards describing clearly the character of discussions. Table A3.16 shows for each month, in tabular form: the thread number, the subject line of the discussion, a brief summary of the topic, keywords and classification within the taxonomy. The brief summaries of the threads are a good indicator of the range and level of topics, as is the list of keywords used.

Reading the tables show a number of things quite clearly. Firstly, they reveal the clustering of all discussions within the technical field, but also within that a spread across quite a range of specific topics. Thus in May 1998 issues of system choice (with aspects of browsers a key issue) were most discussed. Then there was a rough balance between three other areas: questions on basic mark up, questions on networking/ server installation and maintenance, and on basic interface design. Questions on programming (mostly cgi) were somewhat fewer. The pattern was repeated almost exactly in October 2003, with the exception that mark up issues were then the main topic.

The precise balance between technical topics may vary month to month, however the list rarely strayed beyond this into aspects of writing content, marketing as such or broad strategy.

It is a technical list. At the same time within that limit it was quite broad in its scope, encompassing issues of interest to those responsible for servers (webmasters), marking up content (web editors and web authors) and developing or supporting particular applications, such as browsers (web developers/application support). These features suggests the thought that the list did not address wider issues because it was already stretched to encompass this wide range of technical topics.

Overall the stress is on unusual, unexpected problems, not simple questions. Although the list is usually orientated to immediate problems, in 1998 there is some concern with long term issues, such as XML and PNG, partly driven by BK. This is again true of October 2003, where there is a strong theme about XML, again driven by BK. In May 1998 server questions and aspects of interface design/usability are clustered into a few long threads, suggesting more intractable complex questions, whereas there are more short threads relating to basic mark up. The pattern is slightly different in October 2003 where it is only the interface design issue that has the strong clustering in a few threads.

A recurrent topic throughout the history of WS was the relative capabilities of different browsers. This was possibly because this issue affects all concerned in web production from the user, to the web designer, to those responsible for choice of browsers on campus, through to whoever is managing the server. In contrast, for example, mark up issues are of much more interest to authors than to those running the server (though there are some implications, eg what mime types to support). Equally accessibility is primarily a concern for those designing interfaces/sites, much less for those supporting applications or the server. The fact, that the nature of the web means that some issues do have some relevance to all make it an advantage for the list to be a broad church of technical concerns.

Mark up issues also remained central across both samples, even if the focus had shifted far more to CSS and XHTML rather than HTML in the later month. Again accessibility was a common theme in both sample months, as well as conversion of files between formats. Remarkably, despite being separated by six years, there was echoing even of seemingly very minor technical issues, eg how to open a second window. Particular recurrent themes in May 1998 were content negotiation and SSI. The longest discussions were about what size of window to design for, a problem obtaining server software and an imaginative improvisation about how to deal with robots that harvest emails from web sites to send spam. There was one (web developer) job posting and links to two reports, one on the latest W3C meeting. This suggests quite a wide range of useful content, from specific fixes to HTML problems, immediate help on obtaining software, more thoughtful consideration of the potential of content negotiation, a vociferous discussion about a fundamental aspect of page design, a

semi-humorous improvisation about blocking spam robots, reports on activities on the web's governing body.

In 2003 XML was a recurrent topic, mentioned across multiple threads. The longest threads were about a basic issue of layout design, accessibility needs of those with dyslexia, a request for information about load testing (the negative response suggesting to the questioner that not much was being done), a discussion of XML and of XHTML, evaluations of open office in relation to conversion of files to HTML, a discussion of how well the IE browser supports CSS. Again there were a range of discussions from updates on the work of a commission investigating accessibility, announcements of new resources, and very detailed discussions about use of XHTML.

In conclusion, notwithstanding having kept up to date with latest trends such as XML and open source, the list was rather stable in its concerns: mark up, accessibility, browser capabilities. While quite broad in its technical scope, encompassing the potential interests of web authors, webmasters and those choosing and supporting web applications on campus, it was in fact quite narrow in focussing just on technical matters. This fits reasonably well with the community of practice notion in having a domain of interest, understood through the needs of practice, rather than defined in recognisable categories. It lacks, however, the focus of a highly valued joint enterprise.

4.4.2. Genre Analysis

Tables A3.17-19 summarise the stylistic and other features of some of the main common genre found on the list, and Table A3.20 summarises the frequency of different genres in seven sample months. Appendix 4 includes a list of some common genres with short definitions.

4.4.2.1. Questions and answer genre

The exercise identified a common form of interaction which seemed to typify many list interactions: question/answer (Q/A) sequences. These in turn could more tenuously be capable of being placed in three main subdivisions: fixes, how-tos and tool recommendations (Table A3.17). This subdivision seemed effective for six of the seven sample months, but in October 2003 it was found that many messages were of the Q/A form, but did not fit easily into the more specific classification. Also note that the definitions of the three subdivisions, as set out in Table A3.17, are perhaps not markedly different from each in their features, except in their starting points. The second coder commented on the fine line of distinction between

them. The intention of the originator of the list was probably to support just such interactions, as he stated in a later interview:

> So erm I knew how useful mac-supporters was in terms of having a community of people who could answer questions. And usually very rapidly. (DM24)

The question and answer genre on WS was rather specific in terms of structural features, eg. who participated and content. Essentially these are relatively closed questions, most commonly about how to fix a problem or find a tool to perform a task. On the whole, both threads are individual messages are short. There was a minimal amount of framing of previous messages. "Artefacts", such as bits of code or URLs, were commonly exchanged (Table A3.28).

The genre favoured the precise, no nonsense presentation of a problem, shorn of specific context (as in the examples below). Typically, people posed a single question and one which is obviously of immediate practical importance. Rarely were questions posed out of a generalised interest in a topic, rather the concentration was on making something work, doing something now. Similarly, it was rare to post out information that was only of potential interest to members, such as announcements of relevant web sites, for example.

> On Mon, 11 May 1998, [Name] wrote:
>
> > I would like to automatically mirror a web site. (I have permission).
> > Any recommendation for free software. Only interested in Unix packages.
>
> w3mir, available from http://www.math.uio.no/~janl/w3mir/
>
> [Christian Name].
> [Signature]
> [May 1998 #63]
>
> On Thu, 19 Jul 2001, [Name] wrote:
> >
> > Can anyone recommend a cheap or free utility to analyse logfiles generated by IIS under NT4? TIA.
>
> Try
>
> http://www.boutell.com/wusage/
> I like it.
> [Christian name]
> [Signature]
> [July 2001 #145]

Messages implicitly established the questioner's own reasonable level of competence and expertise. Thus in the second example above the casual reference to "IIS under NT4" conveys a sense of easy mastery. Questions were presented also as immediate though, on inspection, were not urgent and were rarely mission critical.

The genre privileges rapid, off the top of the head responses from personal knowledge, that is "know how", as opposed to abstract theoretical knowledge. Hence the importance of "I like it" in the second example above. Again, it was rare for a questioner to ask for information sources about a problem or a respondent to answer a question explicitly citing a source that has been used to look up an answer. What was being asked for and expressed was individual expertise based on experience: know how.

Responses were prompt, often seeming to be hastily written (shown in uncorrected typos), clipped – not in an unfriendly, unhelpful or impersonal way, but were the efficient task orientated exchanges of colleagues (not polished public utterances). Thus in the first example above the first author signs with his personal name and a full signature, but there is no pathic filling (such as: "I hope it's useful"). Language was often casual, implying an easy familiarity with the context. Casual language may offer a form of repudiability or hedging; if an answer is disputed, for example, one can always claim that the message was written in a hurry. Comprehensive or long and detailed answers were rare - when they do occur they look like a claim of expertise - rather there was a sense of off the cuff shots at an answer. This produces a collegial atmosphere of equals talking to each other, rather than gurus talking to novices.

As one interviewee commented (I5): people can ask a question and get 10 answers in 10 minutes (if you are lucky) and "five different answers and all equally valid;" instead of spending "all day tearing their hair out".

Threads were short, without much iterative interaction. Thus the answers respond to the question and to a certain extent other answers, but it was rare for the questioner to respond to answers as they came. Within the cline of interaction proposed by Rafaeli and Sudweeks these could be seen as reactive exchanges, rather than deeper interactivity at one end of the scale and one way communication at the other (1997, pp.175-6). One-way communication is actually common on email lists, according to Butler (1999) who found that 32% of messages in his sample were single postings that did not get a response (1999, pp.27,28).

Thus the tenor of discussions, and what is a legitimate contribution, was quite specific. Overall, the question and answer exchanges conveyed a sense of rapid, pared, no-nonsense practical rationality and activity, a sense of knowing communication among relative experts. It was not chatty, gossipy, discursive, effusive and rarely empathetic. It was very much a specialist, expert discourse.

Despite being pared information exchanges, there was some sense of moral support being offered, through acts of helpfulness. This interpretation receives some corroboration from the

high score received by the option in Question 4 in the questionnaire, which suggested the list was good for "realising others are struggling with the same issues".

One interviewee commented (I2):

> I think it's because your colleagues have limited knowledge in certain aspects. You would think at a University people would know things, wouldn't you? I've come to the conclusion, if I can't solve a problem then it's no use asking anybody really. You haven't got access to people with more experience. I think is the point there.

This links to the importance of seeing that other people are in the same boat:

> I do find it very useful to share information at times. Because a lot of the time you can find out that people are actually having the same problem as you're having.

As the genre names (given by the researcher) hint, the genres in use seem to echo classic forms of computing professional interaction, eg that might make up a large part of any computer magazine. In other words they are drawn from a particular disciplinary genre. Questions and answers may be quite typical of a preferred way of communicating about technical problems and among technicians, though this is more specifically *fixes* (Finholt, Sproull and Kiesler 2002, Bobrow and Whalen 2002). Kling and Courtright see question and answer pairs as a less demanding form of communication common on many lists (2003, p.233); however, further evidence that what is seen on WS is a relatively specific form of reactive exchange comes from comparing it to White's (2000) findings in her study of questioning behaviour on a health related list. She found that it was unusual for a posting to be dedicated to only asking a question or, if it asked a question, only to ask one at a time. On WS questions tended to be single ones and were followed by a series of answers. A large amount of context was often supplied through narrative in White's case (2000, pp.320,322-3). Perhaps surprisingly the commonest type of question White found was relatively closed "verification" questions (p.324) which in a previous study seemed to be associated with interaction where one party (an expert or adviser) is controlling the inputs of others through closed questions which confirm aspects of a problem (White 1998). Within the classification used by White (2000, pp.328-9), taken from Graesser, McMahen and Johnson (1994, p.521) how-tos would be "instrumental/procedural" (What instrument allows an agent to accomplish a goal?), recommendations would be "enablements" (What object or resource allows an agent to perform an action?) and a fix probably "exceptional" (why did some expected event not occur?). Thus the pattern of questioning on WS was quite different from that found in a similar type of space in the health field. This supports the claim that the Q/A response pattern is not merely a function of the characteristics of the technology.

Arguably, in a community of practice very novel forms of genres might be developed, because relationships are so intense, and there is a need to create new structures to encompass

novel purposes. Looser knit groups such as networks of practice would tend to use commonly understood genres because there is wide understanding of how they work; it is quick and easy to join in. However, there is still a distinctive culture manifest in the precise genre system.

The genre analysis was performed a number of times over the period of research. Identification of the Q/A were a stable outcome of the analysis. It was also confirmed by a second coder, who classified two thirds (23/37) of threads the same as the main coder. The level of divergence probably arose from the complexity of evaluating whole threads, the month (October 2003) was explicitly chosen because of the difficulties of classification and the second coder was were unfamiliar with the topic. The genre types identified were to a certain extent also validated by other studies, eg Burnett (2000) identifies various types of typical email interactions, though his listing is a slightly odd typology in seeming to regard any behaviour that is Net specific (including cyberrape) as providing a comprehensive set of categories of online behaviour. However, it is quite different from Talamo, Zucchermaglio and Ligorio (2001) who (oddly) simply follow Orlikowski and Yates (1994) in the genre categories they use. It needs to be clearly stated what is being claimed here. It is claimed that many threads can be broadly fitted into questions and answer exchanges (with the fix, how to and tool recommendation as common subvariants). However, the genre definitions used here are not very strict. There may be messages in a thread that fall outside the genre (eg banter could be an element of lots of message). It is more typical of genre analysis (and content analysis generally) to be at the level of the message, but here structures of meaning within threads seemed to be capable of classification together. Email is a relatively open media, and there are small quantities of lots of types of message appearing on the list. Also the genre has not been strictly validated with users: it is not certain either that they think in generic terms or that they would recognise the specific genres identified. It does seem probable, however, that they would do both. One interviewee referred to the list as "tips and how-tos", "answers to questions" (I1). Baym's (2000) study shows participants self consciously creating new genre and using subject lines to mark these. That behaviour was not found here, but it seems reasonable in principle to imagine people thinking in generic terms to work out if their message fits a category the list is used to.

The claims made about stylistic qualities in Tables A3.17 to A3.19 should be seen as thinking about clarifying stylistic differences between the genre. They are as much about thinking through the inherent logic of the genre as observed characteristics. Thus someone seeking a fix to a problem is likely to use some hedging strategy in their opening because they are admitting to a sort of failure. This hedging would probably be approached differently from a request for reviews of different tools. The headings in the first column are not supported from

stylistics theory as such and the claimed characteristics have not been validated empirically (i.e. by counting up the match of threads in particular genre to the characteristics).

4.4.2.2. Long threads and best practice

Table A3.21-3 summarise the findings of a study of two large samples of longer threads. Long threads are generally complex mixes of other types of thread that have become concatenated, often simply because a follow up question is asked. Fairly frequently the list went beyond simple questions and answers to consider good practice. About one third of the complex threads for 2000/01 (9/27) and 2002/03 (12/31) had a substantial element of exploring good practice. This could be defined as a pragmatic qualification of simple compliance to W3C defined standards. It was ambiguous whether this was a locally developed understanding or derived from elsewhere and only promulgated on the list. One individual's (BK) messages often seemed to be deliberately designed to educate the audience about potential issues. Reading some threads of August 2002, a position seems to be emerging as attempts to enforce WAI standards in practice find contradictions. Reading the thread one has a sense that the list is learning what compliance can mean.

> As you know, I'm not nitpicking. I'm trying to ge [sic] a feel for whether the WAI guidelines should be implemented rigourously (even if one's users complain) or you can choose to ignore some guidelines. (October 2002 #88)

Although one individual had been influential in bringing up best practice issues, a number of voices are heard putting forward views. That individual has himself seen his position change (BKI21). Even if the vision was being promulgated by one individual, it had also had to be improvised in response to new problems and changing contexts. The list and its flow of questions and issues was needed as a context into which to develop underlying ideas: one could argue that the view of best practice emerges out of list activity. On a more practical level advocacy of a position, in small instalments, in reaction to specific concrete issues and problems would be likely to be more persuasive, understandable, and educative than simply stating a position in abstract. Such a defence in open debate, in response to a variety of problems was also more challenging to its proponent.

4.4.2.3. Information, knowledge and learning

Several parts of the questionnaire explored participants' perceptions of the list and which elements of information/knowledge or learning were most important. Question 13 was about how respondents viewed the list. Most of the suggested descriptions were in terms of people, eg "experts in web development", "other learners" etc. In fact, the highest scoring answer was to see the list as a good information source. So WS was seen as a source of information before

it was seen as a group of people. This suggests that the emic perspective of the list is to see it as for information, and aspects of behaviour such as shortness of answers suggest that the efficient exchange of information may be an underlying value that governs list activities.

One of the principal questions in the questionnaire asked respondents specifically why they valued the list (Question 4). Given the response rate to the whole survey the answers should be treated with some caution; however, there was not a very great variance across respondents, even though they included new and old members. No question got above 3.5 which would have implied strong agreement across all respondents, but a score above 3 implied quite strong support and was received by seven options. "Answers to specific questions" was the best supported answer. Only one person disagreed 95% agreed or strongly agreed. This fits well with the Q/A genre. Note however that this was the first proposition in the list, so may have scored better because of this. "Best practice discussion" was also a high scorer. Also receiving strong support was the answer "A feel for what is going on at other institutions." One respondent commented:

> Generally finding out what other people are up to. This helps put your own work into perspective and to show those higher up in the food chain what isbeing [sic] done inother [sic] institutions - good evidence! (questionnaire comment)

This could be seen as a variation on the notion of awareness (Andriessen 2003, pp.15, 76) especially peripheral awareness in CSCW (Liechti and Sumi 2002). This could be general or specific, eg if there are lots of questions about ASP (from institutions like that individual's) it shows who is using this technology.

Another strongly supported idea was "realising others are struggling with the same issues," which can be linked to the sense of support already discussed. Also, two specific forms of information were mentioned: new legislation and evaluations of tools.

Another possible use of the list might be as, in effect, a people or expert finder. Direct contacts between individuals is central in the community of practice concept, and would accord well with recent Knowledge Management stress on connecting people (sometimes through technology) rather than building systems in which to deposit knowledge. The literature of engineers information preferences shows them (like many information seekers) preferring informal, oral contacts. Although the option in Question 4, "to find people to collaborate with" was weakly supported, "access to experts" was supported and there was some contrary evidence from the questionnaire. Question 14 asked respondents how many list members they had met face to face. There was quite a range of variation in answers to the question. Twelve respondents knew more than 10 other people on the list. Most of the rest knew less than five (16 respondents) or none (11). This suggests a division between people

who had a network of contacts which includes other members of the list, or at the very least know quite a few other people on the list. Others had no real contacts in this area (except through the list as a whole). Question 15 asked "how many useful professional relationships have you established through the list?" Although around 50% said they had made no collaborations, a third said they had made one to five links. Two individuals said they had made more than 10. Yet the evidence is ambiguous. One individual who said they had established over 10 connections did not agree with the proposition in Question 4 about the list being about finding people to collaborate with. Equally another individual who strongly agreed that the list was a means of finding people to collaborate with (493) said they had not made any collaborations.

The responses to Questions 14 and 15 imply some limited network building was taking place through the list. Question 20 explored this further by asking respondents whether they had ever used the archive "to see who might know the answer to a question and contact them direct." With yes scoring 1 and no 0, the mean score was 0.14. This suggests that the archive was rarely used to find people; only six people said they had ever done this.

Less well supported was the notion of the list as a place to find out about new developments, as in Burnett's (2000) concept of information neighbourhood. Agreement with the option that WS was good for "first hearing about new developments in the field" was relatively low.

> This is a public forum where new and interesting ideas spring up (maybe not as much as the hyperjournal of yester year...). I don't want the ideas being limited to those supported by a lone company. (March 2003 #102)

Yet another interviewee complained bitterly about the lack of new ideas on the list. This is supported by the low occurrence of discussion even about technical state of the art developments.

Looking at responses at the other end of the scale, a score of between 2.5 and 1.5 implied neutrality to mild agreement. The lowest score was received by the option "making friends". 40% of people disagreed with this proposition (17 individuals) and a similar percent were neutral (19). Two strongly agreed with the proposition, both were core members of the group, and three who agreed also posted fairly frequently. The other propositions that got weak support were "letting off steam", "light relief" etc. So the respondents were reinforcing the image of it being a business-like list not primarily for social or emotional purposes, as the genre analysis has shown.

Question 21 was an attempt to investigate the issue of the value of the list in a more open ended way, by asking respondents to relate "one good experience" they had had from the list. The response rate was moderate (14 no responses, 32%), but if a respondent felt that Question

4 had allowed them to say what they wanted, they may have chosen not to answer this question. Of those who did relate a specific experience (28 individuals), 12 referred primarily to something related to getting answers to their own specific question, which confirmed this as the major value of the list. Two respondents referred to being helped to identify software quickly. Two referred to receiving encouragement and support, or gratitude for help, not simply factual help. Most other answers were only suggested by one individual, but there is a sense of a diverse range of uses, including having their own expertise recognised, finding experts or receiving thanks for help, amusing incidents, finding work. Interestingly in response to this question no one referred to learning about best practice or reading interesting discussions. The high score for this in response to Question 4 might indicate that this was felt to be something politically correct to say, but not actually greatly valued.

The emic view of the list is further explored in Question 7 which asked about what factors had made respondents post to the list. This suggested that having expertise and a sense of retrospective obligation ("generalised exchange" Hall 2003) were the predominant motives. Expertise implies that all things being equal if one knows the answer one will simply give it. There was some sense also of professional obligation as a motive, a factor which was stressed by Faraj and Wasko (2001). "Wishing to be part of the group" was acknowledged, but not strongly supported as a motive, but the reply is ambiguous, since the respondents may have felt part of the group without needing to participate. Instrumental motives such as expecting to get better replies if oneself answered questions did not get much support.

Participants denied the motive of wishing to impress specific others on the list, though this wording does not exclude the possibility of trying to impress everyone. It is difficult to believe that this motive was not at all present, though it does, for example, correlate to the low score for seeing the list as including potential employers in Question 13.

4.4.2.4. Varying use

The fact that many of the propositions in Question 4 got some support shows that the list is seen as having multiple values and it would be misleading to confuse the relative narrowness of discussions with narrowness of potential private usage. The range of uses to which list activity could be put can be illustrated by examining the evidence of two low posters who were interviewed in depth.

I2 had quite a strong sense of the list's character and a strong sense of its value, even though she had only posted three times to it in three years. Several times she said it was "very useful". This is consistent with the work of Nonnecke (2000) and Nonnecke and Preece

(2003) on lurkers, that they *can* value discussion lists strongly even if their apparent level of participation is low. She valued it, yet when asked for her "best experience" she said only that she had learnt a seemingly small thing about ASP coding. Perhaps this answer should be read as an example of the type of thing that is useful, i.e. she discovered that something she had "coded round" did have a systematic, "proper" answer. It implies that the value of the list was bringing her up from hacks and work rounds to good, professional code.

It was clear, however, that she saw the list as primarily as "tips" and "how-tos", as she put it. She used the word "tips" a lot, and she never mentioned the more discursive interactions on the list. Yet she emphatically agreed she had *learned* from the list.

She attributed the value of the list to:

1. Access to people's experience.

2. The fact that some sorts of knowledge can be difficult to track down, or the canonical account is itself inherently unclear.

3. Seeing answers to questions she had herself wondered about.

4. She had found lots of links through the list, and built up her own list of best sites. There was a sense that she stored up answers to questions on the off chance they might be useful, perhaps primarily to support her own expertise role. The phrase she used - "So if you asked ... I..." could answer - constructs the situation of people coming to her to ask questions. However, she did not refer to actually having been asked about such questions. It is interesting though that collections of links are seen as valuable, i.e. access to some other source that gives the answer, not building up immediate expertise.

5. She talked about seeking answers to specific problems in the archive, but did not give an example of that, perhaps this is more like what she thought she ought to do.

6. She found it useful in relation to SENDA legislation.

7. When pressed by the interviewer, she thought she had heard about new things on the list, but could not think of an example.

As well as informational values, more social factors came into her valuation:

8. She was happy when her off list posting was found to be "impressive". The contact was with one of the heavier posters. So there is a sense of seeking approval of valued peers through the list.

9. There was a sense of fellow feeling, when others were seen to be having the same problem as oneself.

10. There was perhaps a sense of exclusion from the community: she recognised that it existed, but she did not feel part of it, and her anxiety about sending a wrong or misleading message suggested this too. Yet such a feeling did not diminish her commitment and satisfaction with the list.

I3 saw the list being for "background knowledge". It was not time consuming. He (probably wrongly) saw the list as mostly for people who run web servers. He saw it as peripheral to his own interests and knowledge (in mark up). His answers in the interview were short and clipped, expressing, perhaps, a desire to distance himself from comments on a list on which he felt "peripheral", as he put it, in case they were seen to imply a claim to membership.

He did seem to value the list, however,

1. "Just" to see what is going on

2. For access to one particular individual as an expert and for access through that individual to W3C. The ordinary web creator would not normally have any channel of communication to the Web's governing body.

3. Again there was a sense in this interaction in the pride of BK's praise for his questions of seeking approval from valued peers.

4. He acknowledged that he had heard of new things through the list; when pressed, he saw it more as like overhearing others' conversation.

There was a strong sense of it all being peripheral and not really his thing, useful tangentially and not time consuming. He never used the archive. This discussion points to the variety of private uses of the list material, which do not seem as easily categorisable as Kotamraju's (2002) stress on "keeping up to date" or Barley and Kunda's (2004) notion of "scanning" for the next hot topic.

4.4.2.5. Low frequency genres and topics

Arguably, WS was most clearly defined not by what types of message were common, but by probable behaviour that was absent. Thus one way of thinking about the character of the list was to ask why certain genres that occurred occasionally on it (and are common on other lists) were not more common on WS. It was linked to the evidence from the subject analysis,

which points to the range of potential discussion areas that are not covered. By definition this is a somewhat speculative approach, since it focuses on something that does not occur. The following genres of activity were identified in small numbers, but were uncommon:

- Simple announcements, including course announcements and job postings
- Resource announcements
- Formal evaluations of tools and reports
- Generalised questions about how things work - the focus is on meeting immediate needs not reflection or learning
- Newcomer questions - questions tend to be posted from a level of reasonable competence
- The state of the art - a probable focus in a techie group
- High level strategic thought
- Information on a topic, as opposed to an answer
- Questions about hardware
- Requests for sources of content
- Reviews of member's sites
- Warnings
- Explicit attempts to make contacts or establish relationships
- Personal introductions or exits
- Expressions of emotion, feeling etc. both positive (empathetic) and "negative" emotionally charged messages (such as rants or flames) - the tenor of the list is cool
- Banter - the focus is on being business-like
- Netiquette
- Metadiscussion – what should the list be about

- Professional issues - suggesting that the members of WS are in no sense a unified occupational group

This points to the list being quite selective about which available genres are used, at the same time as tolerant of other forms of interaction.

It is also noteworthy that an analysis of a sample of one month's posting on uwebd (Table A3.27) showed that on that list there was:

1. Much more reference to marketing/alumni issues
2. Greater focus on higher level systems choice, far less on bug fixes (though these existed too)
3. More discussion of professional issues, such as salary
4. Several discussions of policy issues, and also organisational arrangements

This points to WS being significantly a more low level, purely technical list. It can be argued that of particular significance is the absence of three types of message/discussion:

- Human and organisational issues
- Creative improvisation
- Narrative

The following sections consider why these are not part of the list genre system.

4.4.2.6. WIM

One explanation for topics not being discussed would be that there are alternative spaces in which to do so. It is significant therefore that there were a number of other jiscmail lists in web related areas, but none had significant levels of activity. The most interesting list was WIM which had attained a significant level of membership, but was not heavily active in terms of messages sent. It was a particularly significant list since this was potentially the space to discuss managerial, human issues of web design, topics not touched on by web-support. In fact, of 25 substantial threads (over 10 messages) up to February 2003 a large proportion (10) had been essentially technical discussions, and a large proportion of the others were about legal issues (seven). In a sample month (November 2002) 10 out of 26 threads or 51 of 78 messages were on technical issues. It is possible that they were discussed at a

different level from WS, but on first reading there was no reason why they could not have been posted to that list.

4.4.2.6.1 Human and organisational issues

Orr (1996) stresses that the war stories that the repairmen in his study tell are as much about "fixing the customer" as about the technology itself. An analysis of a long discussion (in 1999) on WIM, found that the key problems for web managers in HE were seen to be:

1. Lack of resources
2. Lack of support of senior management
3. Spread of responsibilities, managing the web team
4. Many cultural issues, such as attitudes to technology etc.

It is not unreasonable to see such factors as relevant to most posters to WS. If the key issues are of this sort, it requires explanation that WS rarely deals with the human, social, political, cultural or managerial aspects of the challenge of creating an institutional web site or web development. Rather it is "narrowly" focussed on essentially fixable technical issues (and to a lesser extent legal issues). These problems are complex, difficult, minute, but they are essentially solvable. They are not the intractable, essentially cultural problems that are arguably the key challenge.

There are a number of reasons that could be given to explain this significant absence, two stand out:

1. The public nature of the list. Many political issues cannot be discussed in a public forum without causing embarrassment or offence to individuals, or bringing potential disrepute to the organisation. In a sense, the list lacks a backstage.

   > The last thing you want to say is "we are having a big problem with this: help!" if it's something that affects the way people are going to perceive the institution. Because there is a certain - you are always aware - that a lot of the people on the list, come from competitor institutions. (I7)

2. Technical limits. Media richness theory argued that lean media like email is poor for discussing soft problems such as cultural aspects of using computers. It is good for fragmented issues and detail, poor for building up a nuanced picture of a complex problem.

> In my view, those types of issues are often too particular and specific to each institution and therefore convey poorly via a mailing list - there's rarely simple answers to those kinds of questions. (I10e)

> And some of them are just too complicated to ask, if you are discussing things like how do I support a member of staff with x problem, erm you are really talking about quite complex institutional management issues, that erm that would make for some quite long and involved emails (laughs) and sometimes its best just to talk to people at a conference. (I7)

Yet this does not seem to hold in other contexts, there are other lists that explore complex issues (eg Baym 2000). A number of explanations are available, then, about why the list seems to be relatively narrow in its focus. Yet, on balance it does seem significant that non-technical issues rarely surface or are acknowledged on WS. In Schein's (1996) terms this preference has the hallmarks of reflecting an "engineering culture", with a stress on puzzles and problems, pragmatic perfectionism, preferring people free solutions, over-designing for safety (in this context perhaps absolute accessibility). Granted, Schein's is a rather simplistic view of a complex culture with lots of variations in reality, but it is suggestive. Partly this might reflect that for many, technical discussion is simply enjoyed for itself. In a sense the list is comforting in focussing on the mechanical aspects of fixing code or servers, or disputes over open source against Microsoft, rather than facing the more intractable political issues. This view would see the list as a retreat from the world, into easier problems. A later interviewee talked about "burying oneself" in the technology (IM17).

An alternative way of looking at what the list does is to note that for professional technologists to construct the "problem" of the web as a technical problem requiring complex technology and professional approach is a powerful position. By defining the problem in this way, it means that the web is "their" problem, more, say, than those who generate content, but have no idea how to put it on the web. There was a "common sense" of the list saying that the web is a technical issue. This was a political claim to own the web "problem," effectively a symbolic act of social closure.

4.4.2.6.2 Creativity and collaborative improvisation

In Brown and Duguid's (1991) formulation of the community of practice concept, leaning heavily on Orr (1996), a particular stress in defining a community of practice's activities and value is on collective improvisation as a means finding novel solutions to practical problems. Creativity is an ambiguous, controversial concept (Shneiderman 2000, pp.116-7) probably best understood as activity capable of creating novel yet appropriate work (Sternberg and Lubart 1999, p.3). It is revealing to ask how creative or novel WS is.

Although in the question and answer genre, answers given tend simply to be a correct answer to a relatively closed question, interactions do have an improvisational feel, because short,

apparently hasty responses are given. However, the stress is on the authority of having done something oneself, so there is not necessarily much room for novel approaches to emerge from these interactions. Collaboration implies more than putting a question to a number of people, one of whom may know the whole answer. Rather it suggests collective work on solving a problem, with a number of people playing different roles and that each stimulates the others to perhaps say things they had not thought before or challenge unspoken assumptions.

Examples of such collaborative interactions can be found such as a thread in May 1998. A simple question is posed (Friday at 12.18), which is immediately answered, using HTML (13.34). A second respondent posts a solution using javascript, asking why a solution using javascript should not be appropriate (14.06). Two respondents point to reasons why, for example that javascript may be turned off in the user's browser (15.23, 17.12). This leads another to ask one of the list experts whether it is possible for the server to detect which settings the browser has activated, so it could deliver appropriate content (Tuesday 14.30 - the Monday was probably a bank holiday). The idea of content negotiation is explained in the response (15.13) and the theme is taken up in other threads later in the month. This not untypical interaction has something of the character of a face to face conversation which skips from one idea to another, even though it actually occurs over a number of days. Another example of creativity in May 1998 was in a discussion of ways to combat an email harvesting robot, which produced a range of imaginative solutions. Some of these were not offered entirely seriously, but most were proposed in terms suggesting that this was not something the authors had thought of doing before.

These two examples are of relatively low level creativity stimulated by interaction. Of particular interest is the subliminal images thread (January 2001), as summarised in Table A3.29. This exchange of 27 messages was by far the most creative exchange in the list in all the sampled data. 17 different contributors suggested six different approaches to achieving the desired outcome. Two of the approaches were developed voluntarily to the level of small demonstrations, though in contrast others explicitly limit their level of engagement (eg saying that they have not checked the documentation to see what it says). Interestingly, several types of solution were not pursued in depth, eg the possibility of using Director (a heavy duty multimedia authoring package), suggesting that the skills base of the group was quite narrow. The messages were compressed into a narrow time span, most were unusually short. Ideas were bounced around, and flow in the flitting style of an oral conversation.

What this discussion does show is that the technology itself is capable of supporting rich interaction and a level of collaborative improvisation. It is significant in this that the list

works by inviting responses on list, rather than encouraging members to send answers to the questioner, who then summarise to the list (another common practice on discussion lists). In a way this is less efficient, because everyone sees lots of messages, and definitive summaries are seldom produced for the list archive. On the other hand, it does open up the chance for collaboration and for ideas to spin off from chance thoughts, creating a possibility of collaborative improvisation. Yet the subliminal images discussion is almost unique. In the sample months, long discussions are usually not about fixing a problem but about issues of controversy or a concatenation of short questions or discussions. These are clearly creative at one level, as explorations of aspects of a problem, but do not produce very new knowledge. The culture of the list prefers quick answers to closed questions; this is not favourable to elaborating answers. People are helpful but do no expend a vast amount of effort helping others: they are busy, paid to do something else. They have not got a highly valued joint enterprise.

4.4.2.6.3 Narrative

Collaborative narrative or storytelling is often seen as a primary means of exchange in communities of practice, because stories allow non-canonical accounts of how things work to be developed, values to be shared, and identities to be developed. Examples of extended narrative on WS were rare, most questions and answers are shorn of detailed context and discussions are abstract. In this sense the list would appear to lack a "narrative infrastructure" (Davenport and Hall 2002). This could be seen as a limit of the technology, for example, because it does not have the flexibility and ambiguity of spoken speech. However it seems more convincing to look to the culture of the list for explanation. Conventions about message length foreclose on elaborate narrative. Most important, the focus on getting work done seems to proscribe the possibilities for developing narratives. Thus in a sense it is not professional, expert to tell stories. This contrasts with Orr's (1996) findings in particular. There are exceptions: for example, JM commonly posts questions with a considerable level of detail about the background of the problem and this permits a degree of identity work.

As a point of reference it is useful to consider Eley's (2003) description of how an electronic community supporting the bereaved use categories of narrative (as defined by Fine (1995) cited Eley). She showed how they move from telling horror stories (to explain joining the group and war stories (to motivate and encourage) through to happy endings (as a way of leaving) (Eley 2003). WS seemed to have neither the first nor the last type of activity. Thus, unlike many other lists, there was no tradition of introducing oneself, when members delurked or joined. Neither was there a strong tradition of saying thank you when leaving. Only on a handful of occasions members do sign off in such a way.

Boje has pointed to the fragmented nature of real world storytelling (1991). In this sense many of the Q/A postings could be seen as fragments of a narrative, a form of Fine's (1995) war story. The poster has encountered this or that problem, or needs this or that tool. Occasionally explanations of the context of a problem are offered in more detail, which is one strategy for eliciting sympathy and support. Most elaboration of the essential question is about excusing or justifying why the questioner needs to resort to the list. The story continues with list values being reinforced by images of people incurring effort to try and answer a question. Sometimes the original poster replies saying thank you when they have received an answer that fits their purpose, more often this is implicit in the lack of further correspondence. This is more a story enacted than told.

Clearly this is a very simple form of collective narrative, at the most general level of the form: someone ("the hero") has a problem or information need, people offer a variety of help, the poster receives an answer and is happy. It is a story with a happy ending. In a simple way this conveys an image of the community as responsive and helpful, perhaps significantly more helpful than local support resources. Implicit also is the idea that the list has been resorted to because other methods, including local support have failed. A community where people acknowledge that they need help from others and where that support is freely offered, clearly offers a form of implicit moral support (unlike more explicit empathic communities, such as explored in Preece 1999).

4.4.3. Repertoire

A feature of a community of practice is said to be its creation of and concern to "steward" (Wenger, McDermott and Snyder 2002, pp.104-8) a repertoire of knowledge, which embodies practical knowledge but also stories as embodiments of values and identities. Being discussion list based, the communications in WS were automatically archived, so a record existed of group work. Compared to a face to face community, this was accomplished without effort on members part and was comprehensive.

The data service hosts provided the researcher with statistics of searches relating to WS, for 2001 and 2002 (they took over the service at the beginning of 2001). This gave a global figure for all use of the archive, including by non-members. The figures include numbers of searches and numbers of accesses of pages, see Table A3.30. Note that the archive could be browsed as well as searched. The figure for searches seems fairly low, given that membership of the list was probably at least 750 for most of this period. Clearly it was not a very heavily used resource.

Other evidence supports this sense of it being little used. Of low posting interviewees, two (I2,I5) said they only checked the archive prior to posting to the list, to check whether a question had not been answered before. Another denied ever using the archive (I3). Again the results of the questionnaire suggested a lack of concern with the archive. Respondents were asked how often they used the archive (Question 19). Twelve persons answered that they never used the archive (27.9% of respondents). Sixty-five percent (28 individuals) said they used it a few times a year. Finally, it is relatively rare for posters to make reference to previous discussions or even make passing mention of having checked the question in the archive for answers. There are only a handful of instances of reference to the archive, even though it is possible to hyperlink to previous topics. It is particularly characteristic of the list not to look back, and for a thread to finish quickly. This suggests a disregard for the archive of past material. In one sense this feature lowers the threshold of entry for new entrants, but does not suggest a strong sense of community concern for collectively generated knowledge.

It is possible that other methods of storing messages were in use. For example, later interviewees, FM and HF (FM102, HF96), stored emails locally and searched them. However on the whole the findings were that interest in the "repertoire" of the community, or using past knowledge is low.

Low usage could be linked to specific problems with the search software that discouraged use or interface design issues. Or it could be because going to the archive means opening a web client, when typically users were reading mail through another type of client. One respondent thought the search results from the archive poor because so much of the content was similar, so it was very difficult to arrive at an effective search strategy (I4). Overall, however, it does seem that the community lacked a great interest in "stewarding" the repertoire. This is slightly surprising given that most respondents to the questionnaire scored the quality of the postings highly (Question 5). The quality of messages was seen as good, though not very good. Nine persons rated postings as very good. Only five rated posts as moderate, none as poor or very poor. This hints that the quality of information is linked to timeliness or relevance rather than depth.

4.4.3.1. "Friday afternoon"

One theorised feature of a community of practice is the creation of in jokes and unique shared reference points as an outcome of a history of interaction. As has been argued the character of WS, if it is distinctive, is so only through its specific selection from a range of very common email genres. One of the few relatively distinctive cultural objects developed by the list was the concept of "Friday afternoon."

References to Friday afternoon play on the end of the week being an opportunity to relax somewhat, and rhetorically seek indulgence for a departure to discuss light, off topic matters. Clearly, then, the concept fits closely with the pressurised, brief question and answer pattern of most list activity. In fact, many of the discussions under the Friday afternoon subject line are perfectly serious and could have been asked at any time and it is used with considerable ingenuity, thus it was used:

To simply to elicit participation.

eg "It's a Friday afternoon so I hope I'll get lots of responses ;-) " (April 2002 #73)

To pre-empt potential criticism for going off topic or relative triviality, craving indulgence:

"A bit of a silly problem/question for a Friday, I guess... " (July 1998 #69)

To hedge an answer:

"Sorry, but that's the best I can come up with on a Friday afternoon 8-)" (June 2001 #68)

To take edge of apparent criticism of other:

"Just Friday afternoon thoughts...not meant to be a criticism... " (July 2002 #119)

To comment ironically one's own behaviour as absurd

"Is it Friday already? Too much ranting. " (May 2001 #237)

An expression of boredom, wishing it were Friday

"Is it Friday yet? " (May 2002 #167)

To refer to negative behaviour

"Friday afternoon rants" (survey response)

To invite an imaginative approach to a problem

"I can see Friday coming." (June 2002 #13)

Used with some ingenuity, the Friday afternoon idea is almost the only "unique" reference point the list has. There was not a rich locally developed genre, as has been seen. Several of the interviewees described in Chapter 6 referred to Fridays, using it in a way to claim familiarity with the list as insiders. Yet, it is significant that it emerged that the notion of Friday afternoons was not specific to WS. OF thought that the reference was something to do with the practice of not doing major installations on a Friday because if they went down over the weekend no one would be there to fix them (OF148-50). A search on Google suggests that the idea of having some spare time on Friday was quite a common practice, perhaps particularly in the computing world - though it is clearly marked as an employee rather than contractor or enthusiast practice (both the other groups might actually see Friday afternoon as a key time to activity). Ironically VM referred to Friday afternoon as a bad time for silly emails on the *marketing* list he was a member of (VM124). Thus the concept of Friday

afternoon is not unique to the list. It would seem the list's uniqueness lay wholly in configuration of familiar elements, not invention of new ones.

4.4.4. List development over time

Overall WS seemed to be more stable than is suggested by Wenger's idea that communities of practice develop over time, eg in the genres in use and subjects discussed and the basic scale and size of membership. It is unfortunate that the first four years of activity are missing from the archive, but when the initial study of the list was completed during 2003 the conclusion was to recognise it as essentially very stable, both in activity and membership levels.

Although there are marked monthly fluctuations in activity (Chart A2.1), it seemed difficult to tie these to outside events. For example, one would expect some sort of immediate ramifications of the bursting of the dot-com bubble, but this does not seem possible to detect. This might suggest a group relatively insulated from a wider job market. Certainly, though, specific sample months had a particular character, themes which seemed to run through a number of threads, which suggested some sort of general concern surfacing.

To further examine these observations based on the archive, Question 18 in the questionnaire asked whether respondents thought WS had changed or developed over time. The response rate was very low: 23 people made no return. Two simply said they did not feel qualified to comment. Only a couple of replies extended beyond a sentence. This implied that respondents had difficulty of thinking about the issue, perhaps because the list has only a limited identity in their mind. The list itself rarely reflects back, even to a question asked the week before, let alone on its own history, therefore there was no sense of historical development articulated on the list. The low response might also be linked to purely technical factors, such as it being an open question, towards the end of the survey and that respondents' patience with the survey was being stretched by this point.

Such answers as were given did not seem to be very clear, apart from the no responses (which could be interpreted as implying no sense of change) three respondents explicitly stated that WS had not really changed. Some felt that it was not as good as before (with three complaints about ranting and showing off) – some felt that it was better (five seeing it as more informal). Four thought that topics had broadened. On the whole this set of responses again disconfirms the idea of the community developing over time.

One of the interviewees (I2) commenting on whether the list developed over time neatly summarised it:

> No I wouldn't really say so. I suppose, I think some of the members, names you see dropping out, and some new ones recurring. But other than that I wouldn't say it had changed.

What were clearly not seen were signs of development towards a more "mature" level of collaboration, such as:

1. Collective action: such as to form face to face groups locally, spin off projects, one off meetings, collective action (perhaps on licences, Intellectual Property Rights issues).

2. Expansion of a clear core membership

3. A strong call for a move to more sophisticated technology, which could support richer interactions.

In updating the analysis for the period up to February 2005, there was clearly a change to be noticed: a decline in posting and of membership, a greater concentration on a few core posters, fewer authors. There was a shift towards more banter. Membership was falling. A probable cause of this may be sought in the decrease in BK's own participation, which evaporated after January 2004. The list becomes much more like a friendship group for a few active posters.

This seemed to reinforce changes already observed in October 2003, and partly captured in three statistics comparing May 1998 and October 2003 (Table A3.31). The level of posting was roughly the same, but:

1. The total number of posters in the month had fallen by two fifths, so significantly fewer people were posting, but they were posting more often.

2. Although single posters continued to be posting at about the same level, the contribution of those most active had risen dramatically, so that two thirds of messages were posted by those posting over five messages in 2003, compared to just a quarter in the earlier sample. Many of the longer threads were mostly sent by a few people interacting quite intensively, as opposed to a lot of people putting forward a view (though the statistics do not represent this difference very well).

3. The length of messages had increased from around 85 to 106 words, by about 25%.

In qualitative terms one could express this as being analogous for the May 1998 sample to a rather large group of people, many contributing more than once but fairly briefly, something akin to a meeting room full of people talking in shifting, small groups. In the second sample month, there is a significantly smaller assembly of people, dominated by a few voices, talking

quite intensively to each other, disagreeing (even squabbling) and joking loudly, with everyone else relatively quiet. Inevitably the second was more personal, more interactive - but also more exclusive. What seems to have happened is that both the background of short questions had declined (by October 2003), perhaps because of the multiplication of sources to solve such problems on the Net as a whole, and the lack of many sector specific issues. Further, through the withdrawal of BK a whole level of activity was removed, being substituted by more active bantering exchanges between the remaining core group members. Ironically although more friendly and interactive, the list seems to be in decline.

4.5. Participation

This section returns to the question of participation, the first dimension in the COPT derived model. One way of exploring participation in WS was to consider the levels of posting. Another approach was to explore whether there was a core group of participants, or at least continuity over time.

4.5.1. Continuity of participation and engagement

The number of different individuals posting in a year showed a marked decline after 2000 (see Table A3.5). Increasingly in the last years a small group of individuals became central to all the group's activities, but this seemed less true of most of the lifetime of the list captured in the archive.

The snapshot of list settings data from May 2004 was the best data for continuity of participation. This showed that of the 724 members at that date, 411 (58%) had had their membership transferred from Mailbase and so were shown as joining on 26 November 2000. This suggests relative stability of membership. Although accurate these data may be somewhat misleading, eg the list owner was shown as having joined in January 2004. So there could be various reasons for date of joining changing other than "real" joining and leaving. Thus the figure of 58% probably underestimates the proportion of continuous members. However, it was also significant that a large proportion of these long lived members had their account set to nomail, 146 individuals or 35% of the group.

Another approach used to explore the issue of continuity was to see whether those who were active on the list at the period at the beginning of the archive were still members five years later. This again suggested that there was a core of active participants (see Table A3.14). Of 144 posters in the early period, 53 were still identifiable as members of WS in March 2003,

five years later. Thus a minimum of 7% of the current membership was on the list five years before (i.e. 53/760).

4.5.2. Participation and demographic groups

Comparing the membership levels, participation rates, and posting totals for different groups is quite revealing (Table A3.6). For non ac.uk members of the list they were slightly over-represented in posting, but this was largely attributable to the fact that the lists' leading poster, who himself sent 10% of all messages ever sent, was from the non ac.uk group. In contrast, although around a quarter of list members were women, they were only 20% of posters and they sent only 10% of posts (see below Section 4.7.1).

4.5.3. Low participants' activities

Although a community of practice is defined by sustained mutual engagement, the notion of legitimate peripheral participation has always been important in the theory. This points to the potential value of marginal activities, as a part of learning and a prelude to fuller membership. The notions of multi-membership and boundary work also imply the importance of the non core membership.

An examination of postings by people who only posted one message in the whole month of March 2002 is suggestive of the character of peripheral participation (Table A3.24). In this month, low posters contributed substantially to question and answers, both asking and answering questions, but particularly asking questions. It is a significant feature of the genre that questions and answers were heavily populated by low posters. In contrast, for example, a high poster such as BK rarely contributed to answering simple questions and almost never asked them. By also attempting to answer questions low posters also contribute to the defining practice of the group, rather disconfirming the idea of learning in peripheral practices. This could either be because the practice itself was somehow peripheral or because the simple practice requires little time to learn, so does not offer the learning challenge that community of practice theory expects. Low posters also contributed to netiquette type threads, i.e. issues about how people should behave on the list.

On the other hand, low posters' contribution to the longer, more complex threads was low. This could be partly an artefact of the analysis, in that complex threads tend to draw out multiple posts by an individual. However it does suggest that the more discursive, potentially more heated interactions are less populated by low posters.

The pattern is somewhat less clear in July 2001, though broadly it seems to confirm quite high levels of postings to simple announcement and Q/A threads. Low posters sent a lot of questions relative to answers in both cases, since questions and answers are in a ratio of about 1:3. Among single posters it is more like 1:1.

In fact, the range of contributions by low posters is impressive. Overall there is a sense of the diversity of contributions of low posters, even though they typically only post around one fifth of a month's messages. Asking questions is an important resource to the community. The more evaluative debates, however, are led by the higher posters.

4.5.4. Reading

Reading is as much a form of participation as posting. The nomail setting from the subscriber setting data was revealing here. Of the whole membership at the time of the sample (mid 2004) 183 (25%) had their account set to nomail, meaning that they were receiving no mail from the list at that date. Thus a quarter of all subscribers may be considered not to be active members at all, though it is possible that this reflected the general decline of the list and was not representative of what would have been the case earlier in the list's history.

A further 53 had their account set to digest meaning they just got a daily summary of all messages posted. This would clearly impact on their participation. Five were receiving only an "index" message, meaning they just got a list of subject lines of postings.

Most respondents to the questionnaire (Question 3) said they either read over 50% of messages (21 or 48% of respondents) or 26-50% of messages. Only one person said they read less than 25% of messages. Nine persons claimed to read all messages. This evidence of active engagement was also confirmed in the answers to a question about the habits of reading (Question 2). The only common responses were "all the messages as they come" and "when the topic looks interesting".

4.5.5. Time patterns in posting

4.5.5.1. Annual cycle

Monthly fluctuations in the level of posting were very marked, with dramatically different levels of activity (Chart A2.1). There were relatively consistent monthly trends (Chart A2.2): April and September are months commonly with fewer postings; February, March and May are relatively busy. The first six months of the year (i.e. January to June) tended to be

somewhat busier than the second. This was probably because July-September is the main holiday period in academia.

Comparing the pattern of posting to global figures for Jiscmail it seems that WS had a relatively distinctive shape (Charts A2.2,A2.3). Jiscmail wide postings have the pattern of a quiet period in July and August, building up to heavy activity in September and the first few months of the academic year, a trough in December, a peak in May then a slow slipping away to the quieter holiday period again. This echoes the shape of the academic year. In contrast, for WS the pick up was later after October, actually peaking in the spring.

4.5.5.2. Time of day of postings

Most messages were posted on work days in working hours, certainly between 8.30 a.m. to 6p.m. (Table A3.2). In the sample months the only exception to this was January 2001 when the variation was largely due to a high level of postings (21) from one individual in a different time zone (six hours ahead). In this month there were low but significant numbers of postings at the weekend and after 6p.m., UK time. August 2004 also saw a significant level of activity outside core work time. Generally however most postings were in working hours, and very rarely at the weekend (only 3% of all sample messages) or outside 9-5. Uwebd showed the same pattern of weekday posting.

Looking at aggregate data, peaks of postings occurred, very broadly around 9.30-11.30 a.m. and around 4 p.m., but the precise timing of the peaks varies through the sample months (Table A3.2). The lunch period always sees a dip. This broadly echoes Jackson, Dawson and Wilson's (2001) findings about email reading/sending patterns.

These patterns also confirm that responding to the list is treated as a work related activity. Postings are rare even in lunch hours, for example, let alone before or after work. In a sense the time stamp is part of the message. This both reinforces a sense that the list is integrated in work, but also that enthusiasm for the issues discussed does not extend to out of hours activity. However, it does implicitly establish that a question is work related, because it was posted in work hours. This justifies time spent on it responding in work time.

Responses were commonly within a few hours, most threads being complete within one day or two days at a most (Table A3.2). Email was in fact used semi-synchronously, in that to get off a message one has to send quickly or somebody may have got an answer in first, or the conversation will have moved on. In this sense it resembled a face to face conversation, if somewhat slowed down. This may be linked to broader habits about maintaining an image of urgency/responsiveness (Tyler et al. 2003). Very few of the requests seem to be urgent in

themselves. Typically at any one time, only a few threads were maintained. This may be linked to it being confusing to sustain more than one "conversation" at once. Long intense threads tend to drown out attempts to start other threads. It was relatively rare to return to a previous conversation after an intervening discussion.

Thus although email is seen as asynchronous, this is only relative to a phone call or personal conversation. An email list can be quite time bound, as here:

1. Quick responses were seen as of value, even though strictly speaking few questions seem particularly urgent in themselves.

2. If an active thread started and was getting responses, other potential threads would be drowned out, since the list tends to maintain just a few threads at once.

3. Posting outside of weekdays and working hours reduced the likelihood of responses. Where it occurred it tended to indicate contributions from non ac.uk members, such as those in other time zones.

4. Almost all threads were brought to a close by the break of the end of the working day, and most conclusively by the weekend.

5. Old postings were forgotten; it was very rare to go back to a question from some time ago, even if it was not answered at the time.

6. Even if a theme was returned to, little mention was made of previous discussion.

This gives the list a quite specific pattern which must be known and understood to successfully contribute, yet was closely tied to "normal" work patterns. This does not particularly chime with Wenger's idea of rhythms of interaction, however, as he stresses that the group itself has or should have its own distinctive rhythm (2001, p.48). It is also a very immediate form of participation, with little sense of history or continuity.

4.6. Identity and community

This section moves on to the third community dimension, addressing the question of how the group members see (and present) themselves: to issues of identity, but also sense of community, groupness.

A small number of people posted a significant number of emails to WS, such that they could be said to express or construct an individual identity. Prominent would be the 13 people who

sent over 100 messages. Four leading characters come out quite clearly: FM with his short, frequent apparently off the cuff messages, often waspish, often venting; TM, playing with words, sceptical, cynical, humorous, luddite; JM, with his down to earth coding questions (but perhaps with a little of the tone of the grumpy old man); BK, serious, consciously informing an audience (with closely referenced comments). The power of simple text to convey individuality is apparent in how their contributions are differentiated simply visually: FM's one line paragraphs and use of emoticons; TM's long discursive messages; JM's long paragraphs using the full width of screen; BK's narrow paragraphs, supported by careful citation of relevant URLs.

However, a list based community would, arguably, not support many more individuals expressing themselves, since a high level of postings would be confusing and time consuming for members to read. Whereas much of community of practice theory is concerned with individual identity, therefore, WS seems to offer only a minute proportion of its membership any opportunity for such extended identity work. This seems to cut against Wenger's stress on identification, suggesting that in networks of practice individual identity is not a key issue at least for many members.

4.6.1.1. Community identity

The evidence is ambiguous about whether there is a community identity on WS. During many of the interviews there was a sense that interviewees were talking about general list behaviour, and could not think of WS specific answers. This might suggest that individuals think in terms of their email list activity as a whole. WS messages are not very clearly identified and the web site for the list looks exactly the same as every other Jiscmail list. (It could be customised, but has not been. Uwebd, for instance, has its own web site, with FAQs and lists of resources). Yet the ability of respondents to name fairly exactly when they joined the list and to answer many of the questions in the interviews and questionnaires implies that the messages from WS are differentiated in members' minds from other emails. Previous discussion of what types of message are posted, what is not posted and matters of style all indicate that the list has a relatively clear identity. In fact, although WS and WIM are rather similar and if email list activity were seen as one, it would be expected for there to be quite a lot of erroneous postings, mistaking WIM for WS, this is rare. It was noted that a few times WS conventions such as Friday afternoon are sometimes mentioned on WIM. On balance the sense is that list members can differentiate WS from other lists: the list has its own identity.

The questionnaire explored aspects of the identity of the community. Question 13 offered respondents a number of possible descriptions of WS, inviting them to select three. There was

wide agreement in seeing the list as a good information source (though there were still nine people who did not choose that option for one of the three propositions they agreed with), and also in seeing it as a diverse collection of experts. A diverse range of experts implies something different, perhaps, than a community. This perception may be influential in suppressing discussion of professional issues. Clearly seeing the list as an information source, is to see it as something other than a group of people. Eight people did see it as a clique. Only one person saw it as "the competition."

Few acknowledged that they had no clear image of WS, further supporting the idea that the list has a clear identity. The low score for the option of seeing the list as potential employers is interesting, suggesting that the list is seen as too detailed and technical for those in managerial positions to participate in. This is significant for the list would surely be very different if it were seen as a place to compete for jobs.

4.6.1.2. Sense of community

There is an ambiguity about whether a community of practice has a sense of community, but it is an important issue. Several parts of the questionnaire addressed the issue of whether there was a sense of community on WS and why. An open ended Question (16) addressed it directly. Nine respondents did not answer the question. Of those that did respond, five thought WS was not a community.

> NO, more like an email alert - too many emails at times
>
> No, it feels like a clique (same small no people posting most of the time)

Of these, three did not give their emails in the form (out of a total of seven who did not do so). There seemed to be an association with these individuals, who thought it was not a community, fearing ridicule for their postings, or seeing the list as quite waspish. There was also some correlation with seeing it as a clique or "all the techies" in Question 13. Thus 11 persons thought of WS as "all the techies". Only three of these thought it was a community whereas 23 people did not select this option, and seventeen of these thought it was a community in an unqualified way. One gave an undecided answer.

Of all responding, 28 thought it was a community at some level (46% of all respondents, or 58% of all people who answered the question). Of these 20 asserted that it was a community without qualification. Of the other eight, four said it was a bit of a community, four thought it was a community for some, either for core members (in one case seeing it as a bit of a clique). One respondent thought it was a male only community. Reasons given for it being a community tended to stress shared context, issues, problems (10 responses). Six people

mentioned seeing core posters' messages as making it feel like a community (but did not seem to say it was therefore a clique). Four people mentioned helpfulness and support as the source of community feeling. This was a surprisingly low figure, given that the list constantly sees helpfulness enacted. One person mentioned in jokes.

Some comments were:

> A bit - everyone seems to be in the same boat and that helps give a sense of a community - especially when web work can be quite isolating.
>
> Yes. There are "in jokes" (eg it's Friday) and everyone has roughly the same concerns / problems and so a shared understanding.
>
> Because regular posters seem to know each other.

Only one of the core group saw it as only a bit of a community, as opposed to asserting that it was one without qualification. There was some tendency for male respondents to assert more that it was a community without qualification, but this was partly because the core members are all men.

So a substantial proportion of respondents did agree that WS was a community, in some sense, though note that the research had been presented as about virtual community, which would tend to encourage such an answer. The main reasons were shared context, seeing relationships between others, and helpfulness. Communities often define themselves against other groups. This was found in some archive analysis, but was not mentioned in responses.

As both Baym (2000) and Blanchard and Markus (2002) argue the existence of dyadic relationships may be important in constructing a sense of community. Thus both the individualistic styles of a few members and the banter between TM and FM create a sense of community, even if most members do not participate in it. There is a tension here, in which too much banter or sense of behind the scenes contacts could create an impression of a clique, which would feel exclusive, repelling many possible participants. Yet at the same time, some sense of other connections helps people believe they are dealing with something like a "community".

One low posting interviewee (I2) commented:

> I suppose there is [a sense of community], because I'm sure, some people, as I say, some people do know each other. I wouldn't say. I'm not part of it! But yeah, I think there is some community there.

This individual also linked sense of community to linguistic community, i.e. in jokes. She commented:

> I suppose there are jokey bits. There are some that are a bit jokey between themselves. They have their Friday afternoon crazy thing. Sometimes. [inaudible] something like you know how's the weather in France this afternoon and that sort of thing.

However many of the complaints in the questionnaire were about such joking and asides, which by convention would be expected to be off list. From those outside or on the periphery, signs of community can be irritating.

The results of Question 13, inviting respondents to chose between descriptions of the list, support some of this argument. Few saw WS as a clique, but the most common answer, that it was an information source, implied that it was primarily seen as something other than a group of people. To see it as a "diverse group of experts", another popular response to Question 13, does not suggest a community in the ordinary sense, since that concept tends to stress sameness. Answers to an open ended question about the best experience people had had with the list (Question 21) also stressed the value of the information, rather than sense of community. If Millen (2000) is correct in seeing concern for the archive as a feature of community spirit, again, WS seems weak in community concern (see above Section 4.4.3).

4.7. Climate and governance

The final section of analysis looks at the fourth community dimension, in essence looking at the working of power within the group. What is the climate of interaction, and how is this achieved? How are interactions governed and led?

One obvious area where one would look for the exercise of power is through list rules and conventions. Power struggles would likely be fought out over what is considered correct behaviour or which subjects the list should discuss. The concept of legitimate peripheral participation invites us to look for the core members of the list as having a role in legitimating participation by others in some way. Thus, at one point FM consistently attempts to enforce an aspect of netiquette, and this could potentially be seen as an attempt to "usurp" the list owner role in enforcing rules. In fact, that would be far fetched and the behaviour seems to simply arise from (justified) personal irritation. There was little debate on the list over what was relevant to discuss.

Participants' views of the climate of the list reflect on this question of whether the list was a place where power and conflict are present, showing that different people saw it differently, for some saw it as a neutral power free space, others as hazardous.

One low posting interviewee said of WS:

> It's just a general friendly, 'how do I do this, well I've got a few ideas' sort of list. There are. It's the sort of list where you quite often get messages posted with the sort of title Friday

> afternoon. Someone posts something amusing and start a general discussion. It's relaxed. It's not a very high volume list. (I3)

Another described the list as "friendly" and thought that people who did not like "sniping" should simply not be on the list (I4). He enjoyed the sniping. Another, though, obviously saw posting as quite a risky business, and was very careful about it. When asked how long it took her to compose a particular message to the list:

> I think it was a while. I think, I think yeah. It was. Because I needed something quite specific. I took quite a lot of thought over composing it...Yeah. I think it's just the fact I didn't want to be made a fool of. (laughs) (I2)

In contrast, another asked about the care he took in posting messages said:

> Not particularly, I mean. No more than one is in any normal polite email conversation. One is certainly not walking on egg shells. But one is not care-less either. (I3)

Another saw taking care in writing a message solely as about removing ambiguity (I4). It may be significant that the males (I3, I4) found this public list as comfortable; I2 was female.

In response to Question 22 of the questionnaire, which asked respondents to comment on what could be improved about the list, five respondents wished the list culture to change: but that was as often about reducing (or in fact increasing) the amount of chatty emails as about any intimidatory tone. One did comment:

> Everytime you mention MS, you get flamed. Many institutions (particularly colleges) use a large number of MS products & would like the questions answered objectively. I think that's why a lot [sic] of people reply off list.

Probed about her response she seemed to retreat from this perspective slightly, saying such negativity toward MS would only be off putting to new members. No one else made this observation, though people used a number of the questions to comment on irritating behaviour. For example:

> some users use it for ranting useless facts to try and show off

Answers to Question 11 about why people posted off list did not emphasise fear of flames (see above Section 4.3.1.1).

Overall, then, the perception of the list "atmosphere" is difficult to gauge; opinions seemed to vary somewhat. Conflict and frustration, expressed through flames and ranting, was not apparently a major problem. Of course peacefulness is consistent with the effective exercise of power. Power lies primarily, perhaps, in the genre system to define what is felt to be relevant.

Another approach to this issue was to examine archive material. For this purpose the two samples of long postings were reexamined. In the longer threads 2000/01, most discussions had no real signs of disagreement, or frustration and venting. One or two had a strongly

positive feel: by virtue of demonstrations of helpfulness the subliminal images thread (see above Section 4.4.2.6.2) or the initial poster's big thank you for help finding a Quark converter. For most threads the message is indirect: simply through the act of helping another a sense of commonality and groupness is built. There were some more ranting or flaming style postings, but only seven of 27 more complex threads in the year had any trace of such messages, and these were usually one or two within all the messages of the thread.

To a large extent more heated messages from this year long sample were ranting about various common frustrations, which probably built agreement rather than cut across group feeling. The level of flaming is low. Ranting is more common, but usually directed towards common external targets. Dissatisfaction with MS is an easy common ground, but may be double edged. When they did arise, questions of netiquette or professional reward did generate emotion, but such discussions were rare. Conflict is significant, then, but more for building groupness and offering support to isolated individuals.

In the second sample year (2002/03) conflict was concentrated in a number of large scale disputes, primarily about OSS and MS. There is also some disagreement about the nature of standards, with one individual attacking W3C several times. These were debates about ideological matters, then, but seemed also to express tensions between FM and TM as a dyad and BK.

Typical conflicts were amusingly summarised in pseudo code:

```
input email with question
if response >0 then read
...
...
if input contains "microsoft" OR "IE" then
  load heavy mob
  load LINUX fanatics
  load pedants
  //load NN4.x users
  beat_up(input)
  WHILE (fight_amongst(remaining)Not EOF) (End of Fight)
    add_random_subjects()
    stir(remaining)
  LOOP

elseif input contains "CSS" OR "accessability" then
  total_people=activemembers+lurkers
  $array_of_opinions=Split(total_people)

and i wouldn't have it any other way. :-)
```

(Sept 2003 #53)

In fact, although there was some conflict between the main participants, on the whole WS could be seen as a power vacuum. If the list determined best practice in some formal sense, say, or produced something specific it would be worthwhile to try and control it. However, it constitutes little more than an opportunity to influence general opinion, so there was no strong motive to control it. Equally most participants were perhaps not overly concerned with their reputation among the group. They are not, for example, seeking to move between universities, so there is no incentive to develop a distinct reputation in an occupational community. It *is* a backstage list in a sense. The result was that there was not a strong motive to try and control it, except for a few people who have roles to influence the sector, generally JISC funded roles and in fact their attempts are relatively benign, eg to persuade people of the merits of open source or recognise the importance of disability. This contrasts with what has been found in organisational communities, such as inside corporations, where inevitably organisational politics are played out in the community (eg Hayes and Walsham 2001) or is likely in communities with a dominant presence of contractors (Barley and Kunda 2004), since reputation is important to getting work. In WS there is less at stake, there is little contracting work in the technical field, ultimately what is said on the list determines nothing. As a result the space is relatively free of struggle and politics.

If this is right then one specific quality of the list was its apolitical character, and this might be part of its appeal as a purely technical space relieved of besetting political and human conflicts that govern local activities. It was a created non-political space. As such it was potentially attractive to computing people who find institutional politics a strain. (Of course, they are not the only ones to do so.) However, this peace was dependent on it not really being significant, not having any collective outcomes. Thus some of the value may have been in not being political, but equally that was premised on it not doing anything very significant.

BK's activities were clearly often consciously intended to be educational, explaining new issues and seeking pre-existing experience among members. Equally he never totally dominated proceedings, eg he did not participate in many of the short Q/A threads. This means that there was not a sense of the space being dominated by a particular individual. This could contribute to sense of community.

Another aspect of the climate was the inactivity of DM as list owner. His low visibility may have contributed to the sense that WS was not an owned space, permitting greater participation at the cost of clear identity and purpose. Overall the list owner's apparent level of activity was remarkably low (though this ignores his off list posting). He posted 128

messages in the first five years of the archive[9]. Twenty of these were about the rules of the list, mostly announcing the move of the list to a different host and reminders about list commands, particularly suspension of account when on holiday. A couple of times he intervened to assert decorum. On one occasion this was just to ask for a discussion to cease. Another criticised a poster (a student) for a lazy question. These could be construed as acts delegitimating participation, but they were rather rare. Other messages are forwarded job postings or event announcements and on a handful of occasions (25) a non member's question or he made regular contributions to the list. Thirty were initiating or participating in a thread initiated by himself, and 53 simple responses to someone else's thread. Thus the list owner rarely acts as owner, often simply participating in discussions with other members. Although many authors see online communities as needing a lot of facilitation (eg Bradshaw, Powell and Terrell 2002), WS seems remarkably self sustaining. This could be partly because it has clear, relatively "low level" objectives.

4.7.1. Gender

Having said that the list is a power vacuum, there was one aspect of the list that clearly showed the operation of power, at some level. The list reflected forces which tend to exclude women, for not only were the great majority of list members men, participation rates by women are lower than their membership rates (see Table A3.7).

It can be argued that technical expertise is itself a masculinist discourse. This is not to say expertise is essentially a masculine role, since masculinity is not an essential phenomena (somehow conditioned by human nature), rather understanding of masculinity, or more correctly masculinities, is constructed socially. An interest in technology has historically been seen as masculine (eg Woodfield 2000,2002), whereas topics such as content fall more obviously in areas where female dominated professions operate. The role of offering authoritative answers, as opposed to support, may be less appealing to women (Tannen 1990):

> I feel more comfortable, certainly, when I perceive myself as 'just helping' than when people are looking to me for expert guidance! (I7)

Yet as has been argued the list tended not to produce highly expert statements. On the whole classic techspeak as identified by Shortis (2001 unit 3) was not very typical of the list, though examples could be found.

Nor has the language of the list historically been coloured by the sexist or scatological imagery that some critics have seen as an aspect of computing culture alienating to women

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[9] The analysis was limited to the first five years. In fact, his activity in the last two years was very low.

(Herring 2001, p.4) - though the amount of "sexy" banter did seem to be rising in the last year.

As a (male) interviewee commented:

> There is, however, a more jokey, satirical vein to the list (particularly on Fridays), which seems to appeal far more to the men than to the women on the list. (I10e)

One factor in play may be that if we see the list as embodying a sort of cool, professionalism this could be seen as "masculine": eg in its suppressing of "irrelevant" emotion and with a concern for things rather than people (Kerfoot 2002). If this is the case, the key Q/A genre is gendered. Certainly the neglect of empathy and human story could be seen to both reflect and reinforce the masculineness of the space.

Overall there was some sense from women respondents of being marginalised, though this could be exaggerated. One respondent to the questionnaire said she wanted more women to post. Asked about this she described the list as "Yes, mostly - techie talk - for those in the know." (I9e), implying, perhaps, that a particular sort of showing off is a particularly masculine behaviour pattern and that in the real world more technical jobs are in the hands of men.

She commented:

> I think it's related to UKOLN and "the big boys" perhaps - also women are busier than men - women in the list (or at least was my perception) only posted when they had no-nonsense answers, it's a British list rather than American, let's not forget. Sensible, no frills. The Marks and Spencer of the lists for web support. (I9e)

She continued (at first paradoxically):

> You are focusing too much on this "man's thing". Men and women are judged differently at work, men have more power to control and take decisions. Women are channelled to being generalists, and punished severely if they want to specialise. Very few IT men take instructions from women (also the pages they generate are full of mistakes, spelling, wrong emails because of typos, etc. But to pay attention to detail is a "woman's thing" – no value attached to accuracy of content). (I9e)

This suggests that the whole occupational area is riven with gender issues, which may not be obvious from a surface reading (particularly to a male researcher), but bulk large in readers' interpretation of postings.

Another commented on whether the list was available equally to women as men:

> Bit of a personal political issue for me, this. I think where there is an open forum your use or otherwise is often down to personal assertiveness. It's certainly not as testosterone-fuelled as some techie forums I've seen. [...] The subject matter itself isn't "man's talk". As a non-techie the reason I don't join in is that I don't know enough not that I am intimidated. (I7)

On balance, it does seem that this is a male dominated list, partly through sheer numbers, partly through topics and style of activity. This is all the more powerful because working through apparently neutral discourse the process is unseen, unconscious, unplanned. It is one of the costs of the informality of the list that such trends can go unchecked, since no one is responsible for the list as such.

4.8. Summary

Sections 4.3 to 4.7 have explored the nature of WS through the four dimensions derived from COPT. This section summarises the findings of the chapter (with links to some of the propositions that emerged from the literature indicated) and then presents an overall assessment of the implication of the divergence of WS with a community of practice as a model.

Although efforts have been made to test impressions using quantitiatve measures, the outcomes of these are often ambiguous. Whereas it is relatively easy to arrive at a convincing account of an interview as a coherent, if co-produced, text, the fragmentary nature of list behaviour makes telling a clear story difficult. Yet some themes do emerge quite convincingly.

As regards the dimension of participation, overall the membership of WS was very large and inclusive, encompassing both people in central web teams and many whose primary role was probably not the web, and also many who were located in departments. It was amorphous in membership in the sense of not being obviously a group of people who are the same in a narrow sense (eg Perl programmers or even librarians), as in a professional or occupational community. It was not the local and immediate and intense network that one would associate with a community of practice. The group saw themselves as a diverse group of experts, again suggesting multi-professionality. This would make WS effectively a boundary community: bounding some of the various occupational groupings that work in the web area. This may explain the relatively low direct discussion of identity and professional issues. Huysman (2005) suggests the difficulty of creating distributed groups which integrate multiple occupations. Yet this may be less true if the professions are themselves not clearly defined and have shared issues.

Partly because of its size, there was a level of fuzziness and uncertainty in perceptions of who the group were, an ambiguity which can be a resource for those who do wish to see it as a community (agrees with P11). The failure of WIM - a list dealing with managerial issues - is clearly significant and reflects a failure to form an elite professional group with social closure

(cf. P1). Rather, interaction was focussed at a rather low level of technical fixes and on certain standards issues, and was inclusive of all technical groups.

A few people predominated in all the postings. Yet, participation was even for them fragmentary and fleeting. Many participants seemed to post to the list and then disappear, implying a sense of the list just being an informational resort. A large part of the potential membership were not subscribers at all. However, it would be wrong to see the list's character as a contingent outcome of the "chance" that a few people have chosen this place to express themselves or pursue their particular agenda, except at the end of the period. Overall, it is argued that there is a background character to the list, which was sustained by the mass of participation.

The list showed an intermediate level of interaction. On the one hand the total number of messages sent to WS was relatively low, compared to many bulletin board groups or usenet communities or even the US listserv equivalent, uwebd, at, on average, just around a 100 a month. This indicates a low intensity of engagement between participants (cf. P14). Also, interactivity was relatively low, eg thread lengths on average were short and could be best characterised as reactive rather than interactive. Topics were returned to, but rarely with reference back to earlier discussions. Overall the space was somewhat cacophonous, particularly in the earlier years, with multiple different agendas and conversations being pursued, snatches of conversation. There was a lack of coherence or build up of meaning. This fragmentary and inconclusive character would not be pleasant to read but because posting was relatively varied, and also sparse and episodic the experience was bearable.

Yet it was rare for messages to go unanswered, and the reactive level of communication produced useful material, eg answers to specific questions. Common themes did often emerge when reading a month of posting at a time, giving a sense of a mood of the times, though there was relatively little sense of an evolving collective view of anything. Overall postings did have an improvisational feel. For example, it was relatively unusual that classic expert behaviour of posting a comprehensive answer occurred, rather people put in their "two penny's worth" - generally a short, quickly composed, heavily hedged stab at an answer. This gives the reader a sense of a variety of views being proposed, each apparently grounded in experience, which may not feel like a very definite answer (a deficiency in purely informational terms), but did have the quality of maintaining an egalitarian feel to the group.

Generally messages were not posed from a position of total ignorance, rather they suggested a relatively expert person having to work on a problem or area that is unfamiliar, and wanting immediate help getting started or open up possible approaches. This suggested the flavour of

a community of experts leaning (lightly) on other experts in adjacent areas of expertise. It is implicitly understood that in the area of the web local support is not always available and one had to tackle unfamiliar things, as part of learning new skills or simply because one may have to tackle tasks one is not skilled in. These were quite specific assumptions that mark the values, the common ground of the list. It is easy to imagine contexts where people would be advised to leave it to experts, for example.

As regards the dimension of enterprise and repertoire, relatively rich genres of interaction, which have been seen as important to the creation of knowledge and social processes (eg identification) and that would be expected in communities of practice such as creative improvisation and narrative, were quite rare. The list was also characterised by a limited development of a local repertoire of in-jokes, stories etc. Even the most distinctive cultural reference point, "Friday afternoons", was a borrowing. Participants talked the same language, but it was not invented here or appropriated in unexpected ways (Baym 2000, p.24). There was evidence of a lack of use of the archive, which again suggested a rather throwaway resource. WS lacked a strong sense of history or interest in itself, eg reflexive discussion was low.

The topical focus of the group was narrow in the sense of only addressing issues relative to technical aspects of web site management (compared, for example, to the rich account of work uncovered in the interviews discussed in Chapter 6 or the relatively broader scope of uwebd). It is possible that this is an effect of people who like computers liking to use computers to share knowledge about computers, while managers and marketers enjoy this less (agreeing with P13). The genre, the practices of the group - which could be somewhat simplistically be identified as fixes, how-tos and tool recommendations - and discussions of best practice were familiar technical ones and in that sense the group's activities were marked as technical. This confirms previous propositions that technicians like to share "know how" informally (Finholt, Sproull and Kiesler 2002, Bobrow and Whalen 2002) (agreeing with P4). WS members shared expertise, not facts and reports (agreeing with P9). The topics were mostly low level, detailed immediate concerns, dealt with quickly. The genres were derived from practical computer usage more than computer science (as an academic discipline). At the same time the scope of discussions was quite broad within technical professional concerns, encompassing subjects of interest to web page editors (mark up, interface design), developers (database connectivity), web masters (server maintenance). In this sense it was multi-professional, boundary spanning community, as has been argued. The recurrence of discussion of browser capabilities, may reflect that this was a particular issue shared by all these groups. In this sense WS can be said to have the useful diversity advocated in the

community of practice literature. An added level was given by BK's forays into exploring "best practice" and educating the audience. This was the nearest it came to explicit learning rather than "merely" sharing information.

Having acknowledged limitations, WS was a genuinely useful, valued (if not mission critical), information source, confirming Armstrong et al.'s (2001) evaluation of "webmaster's" pattern of usage of email lists. An examination of the character of Q/A exchanges reveals that by definition they are likely to be relevant, timely and current, and able to be accurate, because artefacts like code can be easily included by copy and paste. Certainly it is a low cost source of information. It is less clear that it is unique because the number of sources for practical help with web issues is very large. There are also issues of depth and completeness, and perhaps also coherence, because of the brief and fragmented nature of email threads as communication. Authority is unclear because the respondee is unknown; it can only be judged by the content. (All this partly agrees with P8). The mass of information is presented as about solving immediate problems or exploring best practice but was also useful in seeing what is going on in similar institutions, more than keeping up to date (Kotamraju 2002) or scanning for hot topics (Barley and Kunda 2004), though there was evidence of it being used privately for such purposes (cf. P2). It is the diversity of the list as an information source that is striking (confirming P7).

The list was perhaps primarily seen by participants as an information source, rather than any sort of social group, though it had some role in seeding network creation (cf. P5) and in offering implicit social support. This is itself professionally marked, in the sense that it is distinctive of information professionals to value mutual help through exchange of "information" with other interactions treated as "noise". Such a concept of communication also exists in wider society, but, in contrast, marketers, for example, might value different forms of interaction than sharing information. Librarians might share information in a different way (posting announcements as in lis-link, see Table A3.25). Communication is not usually evaluated as about efficient transfer of information.

The list seemed to have a support function, but this was accomplished implicitly; i.e. it was enacted that people had common problems and these were addressed helpfully by others: rather than through explicit statements of solidarity or concern (cf. Preece 1999). The climate of interactions was polite and cool, not friendly at a personal level (uwebd was somewhat the same). If there was a narrative infrastructure (Davenport and Hall 2002), it was this very skeletal one of someone who has a technical problem asking for and receiving help, a story enacted more than a story told (unlike the suggestion in P3). The trajectories of involvement identified by Eley (2003) did not seem to take place.

As regards the dimension of identity and community, there was also a sense of community, for some, generally more active participants (compare with the distinction in experiences between active members and periphery made in the literature, i.e. P10). This seemed to be the outcome of processes, some quite superficial, such as:

- A level of reactivity in which questions are responded to voluntarily and in a helpful, disinterested, spontaneous way, though not that much effort was being expended by any individual
- The accomplishment of a climate of politeness, partly driven by fear of flaming as a well known risk, perhaps also by the lack of complete anonymity: ac.uk email addresses do reveal who a person is and there is the possibility of being identified
- The egalitarian character of off the cuff, contributory answering
- Discussions with like minded professionals
- The common ground implied by ac.uk email addresses and many quite specific but implicit assumptions/valuations, yet also a fuzziness masking difference, from lack of physical presence, ambiguity of job titles etc.
- Little sense that someone is in control or "owns" the list or there being a list politics, the strength of no ties
- Lack of strict rules, so that many exceptions to usual activities reinforce a sense of a tolerant voluntarism
- Limited traffic so that there is more space for a few to express themselves, and more people read all the messages
- A few people taking time to express themselves and create recognisable characters or "net.personalities" (Baym 2000)
- Glimpses of interactions between people who do know each other (Baym 2000)

Although a claim of community can summon up an image of a strongly knit group, it can also be a weak claim, merely a light assertion that there is a relatively polite, helpful, supportive group with a common ground of issues and values, partly almost premised on there being nothing at stake in their interaction. Some rather superficial processes such as a minimal level

of helpful reactions are enough to identify the space as in some vague way social, therefore as "community".

A key question, as framed by COPT, was whether there was a sense of member or group identity, or was any sense of list style "just" an outcome of a narrow topical focus combined with "technically determined" features of interaction such as lean medium and lack of limits to who could join?

To develop a distinctive voice, rather than creating a repertoire of unique genre WS is selective from the range of common genres found on email discussion lists, choosing ones echoing genres from the disciplinary system of computer studies. By being drawn from a familiar repertoire, the genre system selected gave WS a specific style and climate, but one which was at the same time immediately understandable to new members.

WS had a less easily definable style than many more narrow topic orientated lists, because it seemed to lack clear boundaries and *strict* rules. This made it hazy in character, but also accommodating to lots of different activities. Yet overall there was arguably a typical way of talking on the list, features of which were:

1. Questions were generally put from a position of relative expertise and professional competence, rarely framed as "newbie" ones
2. The focus was on detailed technical problems
3. A particular range of subjects, especially browsers were addressed
4. Privileging of know how, practical experience over theoretical knowledge
5. Some preference for answers over referencing sources to find answers
6. An action orientation, i.e. focus on getting things done, fixing problems rather than reflecting on experience, for example
7. Rapid fire interactions, with threads of short duration
8. Activity primarily in work time
9. Polite but impersonal tone
10. Deprecation of verbiage, though some banter
11. Lack of concern with assigned status

It is clearly debatable whether this constitutes the construction of a member identity (with which individuals have to conform to participate) or a group identity, since it never seemed to be marked as identity work as such and could be seen as the outcome of features of the technology, low bandwidth concerns, fear of being interruptive and the specific character of problems being discussed, among other factors. However it has been argued here that though choices may not be deliberate; they do express implicitly an identity, which could be characterised as having a qualities of:

- "Professionalism" implying coolness, politeness, competence
- Technicality (computer related)
- Expertise

This stable, collaborative identity enactment is somewhat in contrast to most studies of identity on the Internet (eg Turkle 1997) which focus on the malleability of identity and individual identity play exploiting the opportunity of anonymity. These behaviours were not apparent.

The picture was complicated by a surface level of chatter and banter that had increasingly emerged, cutting against the cool tone. This suggested the gradual emergence of dyads of relationships and a real network, but also risked cluttering the channel with comments irritating to others, as they were not informational and were gendered. This is to reflect the sense that the more a group become solidary friends, the more a barrier is created with non-members. There seems to be more behaviour emerging of an expert-novice structure.

Certainly the group was tolerant of multiple identities, it had no really powerful forms of governance; such controls as existed were never exercised, with the exception of the non-response sanction. However it is concluded that there was some sort of implicit identity work being performed here and it may effectively exclude some that do not wish to talk in this way.

The significance of the style of interaction does seem clearer when one considers that the most obviously available public image of computing, the "hacker" identity was *not* being enacted. The behaviour of one list member, FM, had all the hall marks of the "hacker":

1. Fascination with pure technology, a concern to "pass" as a cognoscente through using certain key jargon with a studied form of casualness
2. Complaining ("ranting") about Microsoft and intensely ideological, waspish condemnation ("flaming") of those who choose not to agree

3. Use of obscure emoticons and net speak

4. High rate of posting, often joking and banter

5. Referencing of certain seminal sources, eg slashdot

FM's behaviour stands out because no one else responds similarly; he often got little response. This seems somewhat significant in that most of the literature in the study of the Internet (and media coverage) regards the hacker or nerd as the typical techie online. In fact, WS members were not nerds in this sense.

Despite quarrels between some of the most active posters (couched in terms of computing's religious debates) the climate of most list activity was peaceful. Indeed the lack of specific outcomes from the group may make it not worth controlling and therefore an arena pleasantly free from politics. However, there was a sense of the list being quite marked in gender terms, even though it did not enact the hacker identity (which clearly is very marked). The level of participation by women was lower than their membership rate, for example. This may be related to the stress on information and the treatment of any pathic interactions as noise plus the public nature of the list (supporting the arguments of Herring 1993,2001). In a sense the informational stress is a classic instance of the cool professional image that was less available to women.

At a fundamental level the very activity of WS implied that the key things about the web, that can be discussed were technical, a characteristic it shares with IWMW (see next chapter). Just as the community Baym studied symbolically subverts social deprecation of a female interest in TV soap operas and the emotional concerns traditionally associated with women (Baym 2000, p.46), so such online communities may be defensive of "nerdy" interests in obscure technical matters. So WS may have had some symbolic role in marking out the web space as essentially technical, precluding more content orientated perspectives.

4.8.1. Fit with community of practice model

This section returns to the core definition of a community of practice to draw some conclusions about WS. WS did not "feel" like a community of practice primarily because there is no sustained mutual engagement in the joint enterprise. From this flows, arguably, "failures" of knowledge creation and evolution, for example.

WS had a joint enterprise (set of practices) part of which was asking and answering questions about technical aspects of web development. This was indigenous, in the sense that it was not

a formally imposed task. The development of a notion of best practice was introduced as a central concern by one member, but that person never had power to impose this on the group. Conventions of behaviour and norms may have been appropriated from other sources, but such rules were voluntarily accepted. It was not an official, formal group.

The group did have a shared repertoire: a shared discourse, genre system, identity. This was continuously reenacted/negotiated, and reified as an email archive.

There was some sense of mutual accountability, implied by the sense of identity: to be helpful, not to generate noise and so on. However, the formal governance of the list was very weak, eg the list owner is relatively permissive and peripheral and the sanctions available are weak and rarely used and equally informal governance by the group itself was low, eg netiquette issues are relatively rarely raised.

The real variation from the core definition of a community of practice was that although there had been sustained engagement, it had occurred at a low intensity, and it tended to have been between individuals and the list as a whole, rather than between individuals, as implied by Wenger in his concept of "mutual engagement". The whole point of a community of practice is that it is itself built around a joint enterprise that is greatly valued by some participants (even if peripheral participation is also significant). WS was only a resource for peripherally supporting the local work that was participants' parallel valued enterprises. Only glimpses of these enterprises are seen, when there was a technical problem or dilemma. WS was a valued resort, but not a joint enterprise in itself; it was too unfocussed, intermittent. It would need a more specific joint project to evolve into a community of practice, but that would make it less open to the concerns of all. Overall WS does not produce creative interactions such as narrative or creative improvisation, as individual investment was too low. Much of the community of practice/Knowledge Management literature privileges forms of dialogue, whereas WS may be significant as much for how it is used in private as in observed interaction.

WS could be regarded as a network of practice, and does not reach the depth or intensity of a community of practice. This is not in itself a bad thing, WS was a rather valuable information source and clearly had value to a large group of people. It should not be assumed that the members want or would be able to sustain a community of practice. To be a community of practice was not really an appropriate aspiration; rather WS had the following values:

1. Less time and commitment was required to participate and coordinate it, making it at least partly self sustaining.

2. The group was able to be more inclusive. The whole community was large, with a small core and a very large periphery. This maximised potential resources, it also maximised the support value. This reflects the fact that the natural constituency of the group is large. No false barriers were put up thereby limiting it to numbers at which intense engagement would be possible.

3. Less of a boundary was set up between those inside and those in other communities.

4. If power conflicts are a feature of communities of practice, the finding for a network of practice is that political tensions are weaker.

5. Whereas there is a logic for a community of practice to evolve rapidly, and after a highly creative period, die, the network of practice may be longer lived and more stable, even if it does not touch the heights of creativity.

Nevertheless the limits imposed by technology should be acknowledged. The total order of information exchanged is not vast or mission critical. The informal has its costs, for example, in failing to protect more vulnerable groups such as women. These characteristics suggest more the flavour of networked individualism than a community of practice in Wenger's (1998) sense.

4.9. Conclusion

Although complex, the community of practice model was found to be a good starting point for understanding this looser knit form of "network of practices": because it is holistic, to a certain extent encompassing information and knowledge perspectives, it also directs attention to symbolic and ideational processes. The next chapter carries forward the same approach into the different context of the face to face IWMW conference series.

5. The Institutional Web Management Workshop

5.1. *Introduction*

The previous chapter looked at how the "online community" WS works: who is a member and what they do, as well as the boundaries and limits on what is accomplished; how they see themselves as individuals and a group; the climate of relations and how the group is governed. The chapter explored how far WS can be seen as a community, using COPT as a starting point to understand what this might mean. In this chapter the thesis turns to the second major cross organisational space in web production in UK HE, IWMW.

An annual Institutional Web Management Workshop (IWMW) has taken place every year since 1997 (UKOLN [n.d.], Table A8.1). It is the only regular university sector specific event in the web production area. Relatively small (150 delegates in 2004), it is held on a university campus and hosted by a local web manager but run by BK and the "national centre of expertise in digital information management", UKOLN. Most of the speakers are web managers themselves or experts from within HEIs working in secondment in JISC services. This helps give it a specific character as a peer to peer exchange.

If, as at least one key participant claims, there is a web or web management community this must be a key institution.

The aims of the chapter are to examine IWMW:

- Enterprise and Repertoire. Define the enterprises of IWMW and examine the repertoire that is produced.
- Participation. Determine who participates in terms of numbers and demographic characteristics, taking into account the potential for different levels of participation or non-participation and to examine where possible change over time.

Because the data are more limited for IWMW, the chapter cannot address all the dimensions from the COPT model, and focuses on an aspect of dimension 4:

- Climate and governance. A specific instance of an attempt to create a sense of community, as an attempt to mould the climate of the event and lead the group.

To a certain extent issues of sense of community and identity are returned to in the next chapter (see sections 6.3, 6.10).

IWMW is a different type of space to WS: it is discontinuous but a physical reality not an exclusively technically mediated space, one which is more formally organised, observing different probably more familiar conventions. It is inherently a more multi-level event with ordered public presentations but the occasion of multifarious informal contacts. Equally the data available are different: rather than a complete record of all interactions as is available for WS, for IWMW only powerpoints of papers, some evaluations and researcher observations from two years are available. Thus there are more fragmentary data on a potentially richer, multileveled event. The chapter begins by briefly exploring the nature of the data sources available and the methodological approach taken.

5.2. Method

The sources available for use in this part of the study are:

1. The conference programmes and powerpoint presentations from the whole series (UKOLN 1997-2004), including published summaries of delegate evaluations and conference reviews (Kelly 1997a,1998a, MacNeil 1997, Hume 1998, Stanley 2004, Wood 2005).

2. Direct observation of the 2003 and 2004 conferences (primarily of the publicly delivered speeches).

3. Analysis of delegates lists from 2003 and 2004, which listed names, job titles and institutional affiliation. Although fundamentally reliable, these have limitations:

   - They are not complete or accurate, especially as there were some attendees not listed
   - Job titles are very variable, and are not necessarily a good indication of what people do
   - There are some missing job titles

   A concordance of terms used in delegates job titles was created using Antconc, see Table A8.8.

4. Interviews of the organiser, BK (conducted May 2003; March 2005).

The availability of an archive of messages in WS allows an exceptional level of access to WS as a communicative space. Although it is potentially deeper and more varied in communication terms than the email list, the data about the conference is actually thinner. There is a comparable snapshot of membership data (speaker and delegate listings), but rather than an exact and full transcript of activity, there is only an archive of papers publicly presented and a limited amount of evaluative material. Even the papers are invariably

recorded only as sets of powerpoint slides; there is no full text record of what was said. We lack much data about audience reaction, we certainly lack anything like a full transcript of all the interactions, informal as well as formal that arose from the papers. In the sense that WS is helpful informal chatter, the informal contacts around the conference would be the most comparable data. There is, however, at least one third party report of each conference; and until 2004 a summary was published of conference delegates' evaluations of the event. The researcher did attend the 2003 and 2004 conferences thus supplying another level of useful observational data. However, clearly there is less access to IWMW than WS, partly because of its richness and complexity, yet brief timescale. In this sense it was less possible to do a full ethnographic style study of the conference series than WS. Because the conference organisers already collected and published evaluation material it was difficult to imagine how to persuade them to allow the researcher to perform another form of evaluation. There were also commercial considerations in their wishing to control knowledge about the delegates. Yet their own evaluation forms were inherently limited since the person filling them in knows that it will be returned to the organiser and the reports are only in summary form. As a consequence of these factors the analysis in this chapter is shorter than that presented for WS. There is also less material on the questions of sense of community, identity and climate of the group, all of which would have required more direct access to data directly from participants. Nonetheless studying this face to face interaction is a vital part of the study, revealing much about the nature of cross organisational ties. Direct observation of continuous activity is in some senses easier to make sense of than fragmentary interchanges on email.

5.3. Enterprise and repertoire

5.3.1. Character of the conference

IWMW has a number of features that frame its nature as an event:

1. It takes place on a campus of a university, generally one that is associated with a prominent figure in the community.

2. Most speakers are from either an HEI or JISC services run for all HEIs. Commercial speakers and attendees were rare.

3. It takes place in early summer, usually June or July.

IWMW sessions can be analysed in terms of genre. Without inventing new ways of interacting (though BK imagined the impact of having a wireless network for discussions during talks in a paper at IWMW2004 (BKII219)), the organisers have used a wide range of

ways to organise contacts to stimulate different forms of interaction and learning, and experimented with these in different configurations. The main genre in use at IWMW are listed in Table A8.2. The event can be seen as a mix of plenary talks which seek to set or comment on technology fashions and identify "the next big thing"; parallel sessions focussed on developing more in depth understanding of "the issues" or developing a skill; discussions focussed on setting an agenda of action for JISC; an exhibition.

The configuration of these elements, none of which are unique, in addition to the specific subject matter, give IWMW its precise character. IWMW is somewhat more collegial than the typical technical conference because the speakers are colleagues, because there is a stress on the social events and on between talk networking and because the event closes with conclusions from the discussion groups. BK stressed the importance of participative parallel sessions over and above the plenary sessions (BKII50-2) as reflecting the peer to peer quality of the event (BKII81-85,BKI50).

The relative stress on networking emphasises the collegial quality of the event, and is familiar from academic and technical conferences (eg INET as described by Uimonen (2003a), though there did not seem to be the exchange of business cards at IWMW that was found at INET). Nevertheless IWMW does take on the form of a working conference with a focus on the papers, unlike, for example, the Webmasterworld conference which seems to be simply a massive, completely informal networking gathering set in a pub (see Table A3.25). The character of this event neatly captures the more amorphous nature of that group.

Not all peers are equal and those on the conference platform have somewhat more status (signalled also by colours on name labels). Despite the large number of workshop sessions, it is the plenary sessions that seemed to define what the event was about. Probably the defining character of the conference in 2004 was set by four institutional case studies, what Sargan (2004) calls "look what we did" talks, rather than generic topical studies.

At 2004, the debate session was dropped and there was a sense that the discussion groups had not worked well. This hints at a decline of collegiality and the focus of having more argument ex cathedra, even though BK saw the event as having become much more peer to peer, compared to the guru talks of the first year.

IWMW is also clearly marked as not an academic conference. The stress in papers is "sharing experience", rather than scholarship. There was no mention of theory as such in any of the papers at IWMW2004 and there is no citation. Papers rarely get into print, not even in UKOLN's ejournal, *Ariadne*, rather the powerpoints are posted on the web.

Interestingly also, at the 2004 conference all the stands in the exhibition were for JISC services, rather than for commercial products. Perhaps this should be seen as offering delegates potential brokering roles between centrally funded support bodies and local institutions. Often the presence of system vendors dominate the tone of technical conferences. At IWMW they are largely absent (a feature also of WS), in contrast to the American web conferences, where they seem to be more integrated (WF34). BK saw the exclusion of the commercial speakers as partly due to a danger that they would not understand the issues from a sectoral position (BKII127-9), but also specific contingent events. At the 1998 conference he had booked two commercial speakers who had simply not bothered to come (BKII53-75):

> And in a way it helped it was a good bonding moment. Because we then realised that those commercial guys were so untrustworthy and we were the hardworking - you know conscientious people. (BKII70)

Although there was a hint of irony in his tone of voice in making this comment, there was a true sense of a discovery, proof at that moment of a critical difference of outlook. The boundary with the commercial world is an important one, but also complex: in later interviews, commercial experience was often also evoked as more of the real world than academia.

5.3.2. Content of IWMW

To clarify the development of the conference a subject analysis was performed on the first two workshops (1997,1998), and the two latest within the timeframe of the study (2003,2004 - the seventh and eighth in the series) based on archived presentations, conference summaries and observation. The subject analysis, supplemented by the listing of titles of papers and short summaries give the reader an immediate sense of what the coverage of these events were; it is presented in Tables A8.3-7.

5.3.2.1. The early workshops

The first event in the series, as the name suggests, was in the form of a workshop, with talks but also a series of exercises to develop particular skills. Later meetings, though retaining the name of workshop, have evolved away from that format towards a series of talks and discussions typical of a conference.

The first workshop very obviously focussed on briefings on technical issues as such, particularly server maintenance, networking and security. This may reflect a sense of participants' concern about potential gaps in knowledge in technical areas - network security, for example - rather than seeing them as necessarily central to the job. So the workshop was a

briefing exercise deepening understanding of secondary areas which are background to the role.

The organiser himself saw the themes as clustering around the interests of systems staff, application support staff, information managers and content specialists (Kelly 1997b, slide 5). He also reports that most of the 90 attendees were from computing services (60), and to a lesser extent the library (10) chiefly systems administrators, application support and web editors. Only 10 were designers. At this stage it was not (seen as) a managerial role, and there is surprisingly little even about policy. MacNeil (1997) is critical that it was very ambitious in scope and did not do enough in depth.

At the 1998 workshop the commonest theme among talks seemed to have shifted to web enabling databases. Certainly technical papers dominated. Hume's (1998) commentary identifies the major themes as "information management within the institution, designing a good web interface, and examples of database/Web integration." However, it is interesting also to note that BK's own report records that the most popular papers were first a legal/policy issues paper, followed by a paper on an accessibility service, then a warts and all description of web service and finally his own new technologies talk. This points to the fact that the programme only tells us what the organisers believed were most relevant; the audience itself may have had other opinions. It certainly suggests an interest in policy and legal issues above pure technology emerging at this stage.

5.3.2.2. The later workshops

By 2003 the conference was a larger affair, spread over three days with a mass of 25 optional "parallel sessions". This conference seemed rather unfocussed as an enterprise with a diversity of topics, some falling outside the classification scheme. E-learning and support of research were major themes, but are somewhat away from the core of managing an institutional web site. It seemed that the whole conference looked widely at the broader environment at things that could impinge on web production: in a sense this could be seen as a boundary spanning activity. CMS was a more directly relevant major theme. There were also more activities beyond technology, and there had been a shift in level of technology to big level systems choice, as opposed to aspects of server maintenance or database connectivity. So the conference had moved toward a more strategic level treatment and away from practical implementation. Ray is surely right in pointing to this level of activity as having far higher status, linking it to the brokering rather than buffering role of the technician (Ray 2001).

The 2004 event seemed more focussed, with a dropping away of secondary issues. All the plenary papers had a strong emphasis on particular technologies, but tended to link them to business or management issues. Thus the opening plenary addressed both technical issues (rejecting the idea that a particular class of software, CMS, were always an ideal solution) but also strategic matters. The following talk was about implementing an e-commerce system, but focussed on the organisational restructuring the success of the project had brought about. So the focus was on choice and implementation of technology as a strategy, and especially portalisation (though the introductory material for the conference steadfastly did not mention the word portal). There was a sense of the potential power and centrality of the web reflected, as Stanley (2004) comments, in the way the conference sub-title "transforming the organisation" pointed to "how the web is transforming our organisational and working practices and changing every aspect of our professional lives". Four of the plenary papers could be seen as setting this agenda. On the main conference web site the brief summary of the event said that it:

> [...] addressed the issues of how the Web may be transforming our institutions and how our institutions' working practices and organisational structures may need to be transformed in order to make best use of the Web. In addition many of the more mainstream issues facing Web managers were addressed. (UKOLN 2004)

This statement seems to contain a techno-determinisitic bias, i.e. construing the web as an agent transforming organisations, rather than saying that the web enables people to do things better or better things, so themselves transforming the organisation.

There was a sense of the penetration of commercial logic and language in some of the paper write ups. Quality assurance and concern to maintain quality and metrics suggest a maturity of approach. Subsidiary concerns were accessibility, e-commerce, different forms of communication media.

5.3.2.3. Conclusion

Overall there was a shift from an early concern directly with the nuts and bolts of technology to, in the later conferences, high level technical choices with an impact on organisational change - strategic level activities. There was a long running concern with aspects of interface design and accessibility and, to a lesser extent, usability. However, it is clear that in one form or another technology is the core of the conference. For example, although topics such as taxonomy and metadata do arise, they are treated precisely in those terms, primarily in IT terms, rather within an understanding in librarianship. Non technical issues were distinctly secondary, even legal matters.

Without having definitive evidence, it seemed that IWMW was a source of diverse and unique forms of information. It might help identify "the next big thing". In exploring "the issues" collectively the diverse group could produce a rich account of the factors involved in specific practices. Informal contacts might be a source of more privileged knowledge, such as about what does not work. IWMW seemed also to be a place to develop sophisticated arguments that valorise the central role. For example, at IWMW 2004 the accessibility talk sought to chart the complexities of the concept and argue against there being a checklist of things that could be done to simply achieve compliance. This effectively created a new pocket of expertise. The conference gave participants a head start in spotting future trends and issues, so giving them power when they returned to their local institution. Contacts made with people at central JISC services offered them powerful bridging roles.

The major absence from the agenda was the marketing perspective, which was represented in the whole history of the conference (not just the sample years discussed here) by only one talk/parallel session (in 2004). Given that historically the web editor role has resided either in IT or marketing/communications offices, the absence of any discussion of the problems of this division is notable. MacNeil's (1997) complaint that the first workshop was far too ambitious does suggest that part of the answer lies in the inability of one event to coherently address all issues - the scope is already quite inclusive - but it does seem significant that the marketing view was excluded.

5.3.2.4. The discussion groups at IWMW2004

The sense in which potential participation was narrowed in terms of professional domains is captured quite neatly by the story of the discussion groups at IWMW2004. Although anecdotal this narrative is suggestive and chimes with conclusions from the subject and delegate analyses considered later in the chapter.

Part of the workshop programme was a number of discussion sessions, for which delegates enrolled at the conference desk during the first day. The remit of the groups was, in the first session, to identify the top three problems in a particular area, and in the next to think about solutions. Each group was then given a five minute slot at the end of the conference to report back their findings. The fate of these groups illustrates some of the unacknowledged limits of the "community". The proposed groups were:

- Technology
- Management and strategy
- Usability and accessibility
- Information management
- Staff Development

- E-learning

There was never proposed to be a marketing or "communication" group. So this important aspect of use of the web had no voice. The staff development group was officially disbanded because only one person had signed up on the first day. When it came to the report back session someone shouted out that the e-learning group had disbanded itself. The reason was unclear, but its failure to meet did seem to show that although central to HE's use of the web, e-learning found no voice here. Thus three possibly important approaches to the web, each of which could be associated with a particular professional group working in the area (the marketing professions, staff development/Human Resource Management, learning technologists), were not represented.

The information management group met for its first session and produced a long list of problems which resolved themselves to information classification, information quality and legislative issues (data protection, freedom of information). The information issues were very much ones that are associated with librarians; it was symbolic therefore that it transpired that the group had failed to meet up for the second session to identify the solutions. So one could say the problems had been identified but there were no librarians there to offer potential solutions.

Only three of the original groups, then, gave a full report of issues and solutions: the usability and accessibility, management and strategy, and technical groups. The usability and accessibility group's three problems were: finding users for testing, the need to be pragmatic and accept inaccessible formats and the need to find ways to build testing into everyday practice. This suggests that it was still not a main function of participants to do user testing, and the notion of formal usability testing is only gradually being brought into everyday practice. The inability to find users to test on, though reasonable in one sense (how does one identify people with a disability who are willing to be tested?) was also ironic, suggesting a continuing gulf between services and their end-users.

The management and strategy group identified their three problems as, firstly, university structures being unsuitable for creating a coherent strategy, rather bottling up things in "silos", and creating conflicting bottom up and top down drivers of strategy. The second problem was being clear what a strategy should be like, how it could relate to wider information or departmental strategies. Finally, the group asked how best to compete for resources to effectively pursue the strategy. This seemed a reasonable, if pessimistic statement of a problem of conflicting forces characteristic of highly distributed organisations. The proposed solution, cross disciplinary teams, was prefigured in one of the first day plenaries which described the experience of forming a multi-professional team, including

technical people and facilitators, but located in IS, to do IT projects collaboratively with customer services. This shows how ideas from the main conference programme were influencing the rethinking of practice within the discussion groups.

In contrast to the self doubt that seemed to mark the experience or thought of the other groups, the final group, the technical group, declared that most of the technical issues had been solved. The main problem was "politics", the proposed solution to which was better training in communication for IT people. The group also identified a need to update and enforce existing policy.

Overall, then, the discussion groups process seemed to show the effective absence of many potentially relevant disciplines: marketing, librarianship, learning technology. Web teams were still poorly connected to users, but struggling to reach out to do this through user needs and usability. At a management level the situation about determining strategy was quite confused. In pure IT the community was very confident, simply needing to communicate more clearly. Symbolically (if also anecdotally) this shows the conference to be professionally focussed on IT.

In terms of professional boundary work, it is interesting to contrast the exclusions of certain professional groups in this process with the way Management Information Systems (MIS) people were treated, within the main body of the conference. MIS is the unit, generally located in the IT department, responsible for maintaining core back end systems such as student record systems. The first plenary speaker caricatured them as working with proprietary systems, reluctant to share their data and living in cupboards[10]. He showed an example of a very user unfriendly error message from a web enabled MIS system to illustrate their lack of user focus, which he contrasted unfavourably to that of web people. Two of the subsequent speakers identified themselves as MIS people and responded. At the end of the conference BK welcomed MIS to the conference, saying that they were the first MIS speakers they had had. So this process had the flavour of a symbolic welcoming of MIS into the fold, or some sort of boundary ritual. The background to this is perhaps the growing importance of "institutional portals" in which MIS controlled core institutional data is integrated at the presentational level with more familiar forms of information that web producers would control. So a theme of the conference was to perform boundary work with other communities. Inevitably such a process is partly about self description.

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[10] Compare with Zabusky's (1997) point about IT people being placed in physically marginal spaces.

5.4. *Participation*

The main data for who participated in the conference was delegate lists and speaker lists. These data are fragmentary. It is possible also that these years were not very representative: BK thought he first noticed in 2003 that there were fewer old faces, more new people recommended to come by people who had been in previous years (BKII117-123, cf. AM33).

5.4.1. Delegate lists

The total number of (listed) delegates at IWMW2003 was 159, at IWMW2004 147. Almost exactly a third of delegates were women (55 delegates in 2003, 34%; 50 in 2004, 34%). This is a higher proportion than are members of WS.

5.4.1.1. Institutional affiliation (2003)

In terms of institutional affiliation, FE was underrepresented in both years with only five delegates, as were smaller HEIs. BK talked about there being around 160 universities, which is true, but this ignored the 50 smaller institutes that are listed as HEIs by HERO (2005). There was a reasonable number of delegates from the "new" post 92 universities (12%, 20 in 2003 and 15%, 23 in 2004). In 2003 there were delegates from 72 different institutions (including new universities), meaning that only a proportion of institutions were represented. It was notable that there were very few non-ac.uk (five and eight), non UK (one in both years) people present.

5.4.1.2. Words in job titles

There was a very wide dispersal of job titles, with some quite idiosyncratic ones such as "webkeeper". Lack of standardisation of job titles presumably reflects a lack of commonality of how responsibilities are divided across organisations. It suggests a rather diverse group, perhaps not an occupational community in a simple sense.

In 2003, there were a few clusters of job titles: web developer (seven), web development officer (five) webmaster (seven), web editor (11). "Development" and variations on that term, tending to imply work connecting databases to the web and programming, were common.

Terms that were notable for their rarity included: library (five in 2003, three in 2004), learning technology (eight, two), marketing (one, two), implying that people from these areas were in small numbers. As regards marketing a number of titles including phrases such as

new media or publications implied a marketing role, but still less than 10. If anything learning technology was less represented in 2004.

The name of the conference implies the existence of a group of people called "web managers"; many of the delegates in fact had job titles that did not suggest they were in management. Although manager is the top term in the concordance, terms such as officer, development, developer and editor all suggest technical specialist or junior posts, and the 2004 figures showed a decline in the term manager.

Unfortunately the data did not indicate where in the organisation delegates were based (i.e. what department). The data suggests that it is an IT conference with managers, perhaps primarily IT managers as a second main group. However it is not simply a professional group or an occupational community. It seems more like a cluster of groups, which would make IWMW in some sense a boundary community, and of course it is a sample of the total population. A point made at the 2004 conference was that increasingly it was members of the team that were coming not the head of the web team.

5.4.1.3. Geographical reach

A large number of 2003 delegates were from institutions in Kent, where the event was held. Participation was less from more distant locations (Scotland 8, Northern Ireland 6). So the conference reaches a particular regional audience each year, as well as the national grouping.

5.4.1.4. List membership

Looking at the overlap between list membership and participation in the conference as delegate (Table A8.9) there seemed to be a stronger relationship in 2003 than 2004. In 2003 most of the delegates were on at least one of the lists. They actually constituted around 10% of list membership, more on WIM than WS. In 2004 the majority were a member of neither list, and constituted a smaller proportion of list membership.

5.4.1.5. Return visits

One indicator of there being a community in some sense, would be a rate of reattendance. Forty-five percent of delegates in 2004 were returning from the previous conference. It is also interesting to note continuity over a longer period. The researcher did not have access to delegate lists prior to 2003, but there is one for the Professional web management conference held at Kings College London (KCL) in May 2000 (Professional web management 2000). Of 97 delegates at this event, 71 were from HE. Twenty of these names reappear in the 2003

IWMW delegate list, 18 at the 2004 conference. In fact, it is not precisely the same group on both occasions, so that 26 different individuals were at both the KCL event and one of the later IWMW conferences. This shows relative continuity: certainly quite a large proportion of those at the KCL event were still participating in a similar type of event a number of years later. Clearly a precondition of this is relative stability of employment itself.

5.4.2. Conference speakers

A second approach taken to examining participation was to analyse the affiliation of speakers through the whole IWMW series, see Table A8.10. The analysis shows the predominance of older HE institutions. Thus of 190 sessions run over eight years (row 1), only two have been by someone from FE (row 4), only one by someone from a small HEI (row 7), only 11 (around six percent) by people from a new university (row 5). Curiously, there has only ever been one speaker from Wales (row 6). The community is in some sense narrower than would appear, therefore. The probability is that this pattern is linked to the technical focus of the conference which is on home grown development of solutions. Smaller institutions with fewer resources would tend not to develop novel applications, relying on bought in solutions. FE and the new universities and smaller institutes also have a marketing orientation, therefore do not do work within the area of what at the conference is seen as innovative or "good practice".

Only four speakers had come from outside the UK (row 3), only 11 (6%) from the UK non-academic sector (row 2). This gives a sense of quite an inward looking community. International developments would seem to be an important part of current awareness about the web, so it seems surprising that so few speakers have been from outside the UK. The commonality across the public sector of issues also makes it seem strange that more speakers have not been found for example from government departments. What this limit does do, however, is reinforce a sense of community by many of the speakers being colleagues at other institutions, rather than outside experts. Commercial partners have been a very small proportion of speakers, this reflects a focus on locally developed solutions.

The position of women, however, seems more representative. Although few of the speakers in the first four years were women, the proportion is much larger since 2001, and the average over the whole series is about a quarter. This equates quite well to the proportion of email list subscribers, though is less than the proportion among delegates. The organising committee has always contained a significant proportion of women: eleven out of a total of 46 (40%) different individuals who were involved.

5.5. *IWMW as community: climate and governance*

The main purpose of this section is to contrast claims made about the community and the reality indicated by patterns of participation that have just been uncovered. Surfacing the limits of the community is not to deny the workshops' undoubted value as a professional meeting place and role in collective interpretation of problems. Its value is evident:

1. The programme was very apposite, often apparently breaking fundamental new ground in the domain. For example, 2004 conference speakers challenged several prevailing orthodoxies, such as that content management systems were a complete solution to problems of organising content and that in accessibility there could be standards, rather than, as originally formulated in the field, guidelines.

2. Feedback published by the organisers (up to 2004) is positive.

3. Most of the interviewees were strongly positive towards the conference, citing it as a key place where they had met others in similar roles (see Section 6.3 below).

4. Anecdotal evidence cited by BK (BKII25-51) suggesting the conference is highly valued.

5.5.1. The construction of community at the IWMW2004

The purpose of this section is to analyse how the workshop is constructed as a "community", chiefly through comparing the rhetorical strategies of the organiser during IWMW2004 to the evidence of the speakers and delegate lists as indicators of participation. Without doubting the value to attendees of the workshops, the rhetorical claim to community is shown to in some sense mask some of its actual limitations.

The central figure in the 2004 conference was the organiser himself, BK. He used four main (public) opportunities to claim that there was a community:

- An opening "optional" session for those new to the conference (Kelly 2004b)
- His opening presentation to the main conference (Kelly 2004a)
- A presentation on new communication technologies (Kelly 2004c)
- His conference closing speech (Kelly 2004e)

The introductory session was an innovation for the 2004 workshop, introduced because there were so many new people who would not understand jokes, references, acronyms in common use, BK stated. This very claim implied the existence of some form of in-group/community and a need to pass on history, stories of the group to others. It also reflected a perception that a new generation of participants was coming to join the conference.

His talks provided the main public meta discussion. In a sense they could be seen as mere rhetorical flourishes, but the thrust of the argument developed here is that the claims served to construct the conference in a particular way. They represent a very rich picture of what one actor meant by perceiving there to be a "community" - as well as what purposes such an assertion might serve.

Throughout his speeches BK used the concept of community freely, and reiterated on all these occasions that there was a community. Thus the first presentation was billed precisely as an introduction to the "web community". Later he referred to it as the "web management community." In his closing speech he said "quite clearly we have a community". As Finnegan argues often community is "a claim or exhortation to observe common ties" (1994, p.210). It exists because it is claimed to exist. Only one other speaker evoked the concept of community in a marked way.

Interestingly BK saw the community as having specific purposes. He said the community was "for sharing best practices, sharing institutional case studies, learning about new initiatives and new technologies".

In the introductory session, having asserted that a community existed, BK then attempted to define it in a number of ways, by: outlining some of the fields it covered, asserting their importance, listing typical roles of those who were part of the community, raising some common shared problems, evoking historical events in the life of the community and key personalities, defining key relevant technological dilemmas, and defining the means of communication within the group. The rest of the section critically examines these claims.

BK's first point was that although originating in HE now the community also included people from Further Education (FE), because JISC's remit had expanded to cover it (Kelly 2004b, slide 5). It was patently a political necessity to rhetorically include FE as part of the community. Later in the proceedings, in the main conference opening, he asked the audience by show of hands where they came from. It was apparent that very few delegates were in fact from FE, the vast majority were from HE, with a handful from HE services (such as the funding councils or central services provided to the whole of the sector). The analysis of delegate lists confirms this. The claim to include FE was more, then, an expression of goodwill or an aspiration to include this group, than a direct description of current reality.

BK's second point in the introductory session was to define "the scope" of the areas of activity included, of which he said there were four: information (external and internal), e-learning, e-research and electronic communications (ibid., slide 5). Of these information does

seem to be the core of what the participants were involved in. The inclusion of other areas seemed to be more an aspiration than accomplished. E-learning was mentioned as not an "initial focus but now of growing importance". While it is true that in 2004 e-learning was a primary area of web development (also stated by BK in a later part of the talk, slide 17), it did not seem that many of the participants were from that area. Learning technologists have their own conferences and "community" whether e-learning is conceived as a profession (Oliver 2003) or an academic discipline (Conole, Ingraham and Cook 2003, Conole 2004). When he asked the audience for a show of hands again few people agreed that they were learning technologists. There were no talks on e-learning in the conference programme. E-research is a new element in the agenda, and current at the time after a series of formative workshops three or four months before (Cox 2004) and a call for proposals, a "town meeting" for which was happening at the same time as the workshop. So although a potentially very important area this was relatively novel, and in fact though addressed at IWMW2003, it was not really an issue at IWMW2004. There were no talks related to this topic. Finally, a fourth area of activity BK referred to was electronic communications, which he himself went on to define in a later plenary session, framing it as an underdeveloped area.

So his proposition about the scope of the domain contained the core area, one area very poorly represented, but strategic to organisations, and two new areas which he could be seen as trying to add to the scope of the conference/ "community". Thus his apparently passive definition of the community makes several expansionary claims.

An underlying purpose of this expansion of the domain was to stress the importance of the subject matter of the conference: for, as it were, it to be worth having a community about. This was reinforced by the claim made in the sub-title of the conference (and taken up by many speakers): "transforming the organisation". This was both interesting for the bold claim of the impact of the web, but also a shift in language in using the word "organisation", not the more typical "institution" implying perhaps a switch towards a more business view of the domain.

The next step of definition was to propose a list of typical roles that members of the community had (Kelly 2004b, slide 6). They are summarised in column one of Table A8.11, linked, by the researcher, in column 2, to a second list BK proposed later in the main opening conference session (ibid., slide 4). With this list he also asked for a show of hands to see how many of each group were represented, and the numbers as he reported aloud as he looked at the audience are noted, confirmed with delegate listing data already described.

Several things can be observed about these lists. First is a level of inconsistency and fuzziness about who is included in the putative community, even though there does not seem to be a reason why the community and the audience should be different. Several groups appear in only one of the listings; significantly, for example, web authors are seen as part of the community but not expected to be at the conference. This implies that the conference is for those in central teams who are trying to influence part of local communities. It was claimed in the first presentation that all the groups listed were part of the community, but this would make it very diverse: including people who have other communities (learning technologists) or are at a very different hierarchical level (senior managers). Secondly, it was apparent from the show of hands exercise that two groups were actually predominant in the audience: "techies" and managers. In both listings techies are given priority, confirming the sense that BK wishes to see this as a technical focussed conference. The other groups were not heavily represented at all. Looking at the content of the programme this seems to be a valid representation of who the community are, rather than the other slightly inflated rhetorical claims.

Having read his second list BK asked the audience if there were any groups he had missed. Someone called out "marketing". BK joked that "Oh yes the web is used for marketing too" which was received with some amusement. He made a dismissive comment about people in suits, a common term used by computing people about "the other", usually managers. MIS people were also construed as suit wearers. Again there seemed to be few marketers there, from the show of hands.

Having considered the participating groups in the introduction to the community session, BK called on the audience to identify their key challenges. He then showed a preprepared slide on which he had listed what he saw as the key problems (slides 7,8). Table A8.12 summarises this interaction.

Broadly there seemed correspondence here, and this part of the talk seemed to be received well. However one might feel that BK's listing put less stress on political aspects, such as buy in and resourcing and more on technologies, compared to his audience. Immediately after this he got a good response for a slide which contrasted the ideal resourcing of a web team (ironic laughter) and a worst case (slide 9).

Another rhetorical strategy in the introductory session was to evoke past seminal moments (talks) from the conference: talks by Aird which had questioned who should control strategy, Browning advocating content management systems, Agarwal challenging the audience about whether they had a user requirements gathering method, Slater saying that web managers

needed to understand the strategic perspectives of senior managers. For BK, these were seminal moments in the development of understanding of what it means do be a web manager (Slater) and how it should be done (Agarwal). Making these references created a sense of collective history. Also the naming of particular individuals and the personalisation of ideas both reinforce a point perhaps mnemonically and construct the arena as one of particular characters. When BK later in the talk invited newcomers to develop a specialism, he was inviting them to become a known figure with a reputation in the community. This is paralleled in power in the perception of community online of noticing individuals as personalities: communities need personalities (Baym's (2000) notion of net.personalities is about this). It is interesting the way the history of the community/domain is identified with the history of the workshop. The conference is portrayed as central in defining the agenda (which is probably true) and creating community by reiterating key dilemmas and themes.

In his next talk, the main conference introduction (Kelly 2004a), the force of history was evoked again with a listing of previous conferences, showing how they had expanded - implying the growing importance of the subject. BK framed a historical movement in the workshops through three eras. An initial stage was of people networking, "discovering that they were not alone" and working as a self help group. "But then we moved on", he said. The second stage was listening to gurus who suggested a strategy which was claimed to solve all the problems. The third, current stage was where it was acknowledged that there were no such easy answers. This justified the event on the grounds of "supporting peer to peer learning". This succession of consciousness was presented as historical stages, again tying the development of the understanding of the domain, "the community" and the conference into one. Yet, in fact, all the stages seemed to continue to be present: for example, BK was essentially presenting himself as a guru in some of the later presentations. The balance of contribution from the platform to the audience (eg only five minutes allotted to reporting back on discussion sessions) suggests a continuing belief in gurus. Equally the element of discovering "you are not alone" was evoked several times by speakers. By trying to solidify stages of development the "community" is given more tangible, clear shape, even if reality is more complicated.

The introductory session also included a long section on technologies. This may have been intended as a clarification of common issues and values, such as the importance of XML, open source. It certainly asserted the techno-centrism of the treatment of the web in the conference, at least in BK's own mind. Interestingly, the discussion did touch on areas which are current on WS, but were not a subject in the conference, eg browser compatibility issues.

This makes the discussions on WS seem more central than it otherwise might. Surprisingly a key issue, portals, were not mentioned.

The next section of the introductory session focussed on a key challenge, "what about our users?" and the failure to engage with them. The risk was, BK argued, that in pursuing their passions (which he construed as technical) web managers would forget users. This was rather in the manner of upbraiding the delegates, presenting them with a challenge: it raised the community to the level of ethical issues, moralising the whole field. This same movement is apparent in professionalisation.

A particularly significant act made towards the end of the talk, was BK's call to delegates to participate in the community in a particular way: to become experts in a topic and share their expertise across the whole group. This is an interesting interpolation, because, in fact, most individuals' responsibility was primarily to their own organisation, and, if an IWM, as a manager, i.e. not really in an expert role. The call effectively constructs the community as an expert community, not a professional one. So the demand made on the potential participant cuts against both institutional loyalty and managerial aspirations. BK himself epitomises the position in that he is an expert whose role is in the cross organisational space, but he is relatively unique in this. JISC does fund a range of services which give general advice across the sector; conceivably delegates might see working for these services as an aspiration and therefore a conflicting loyalty is created. However, this call does not seem to first the audience naturally.

The introductory session ended with BK outlining sources of support, eg various local and national bodies to support training. He stressed the "strong culture of sharing" in the web community, so reinforcing the friendly, supportive nature of community values. Mostly these were HE organisations, run by JISC. In this stress, many other potentially relevant organisations (eg HEIST or various pseudo professional organisations such as the guild of HTML writers) were not mentioned. He talked about the possibility of institutionalising the community further by providing a continuous series of seminars through the year run by UCISA. This would mirror the CPD structure that exists in formalised professions. However it is significant that UCISA is a "computer services club" as he put it, so again he construed the community as essentially a specialism of IT. He also mentioned various regional self help groups for those interested in the web. Curiously he seemed to be unaware of the demise of the London group three or four years before, suggesting a lack of interest in self organised institutionalisation of the domain. He mentioned the mailing lists as a form of support among many others, but qualified this by suggesting that email not a rich enough communications infrastructure.

This theme was taken up in a plenary talk he gave later in the conference (Kelly 2004c) and in the closing session (Kelly 2004e). His point in the plenary talk was in part simply to say there were many other new communication devices being used by users: SMS, Instant messaging, blogs, wikis etc. that posed new issues of support for universities, which did not seem to be being addressed. Most of his focus was on the implications for support services of users changes in communication patterns away from email. However, he also saw the technologies as usable in the conference setting itself: he invited the audience to imagine if there was a wireless network so that groups could communicate or surf during talks (cf. Shabjee 2003). Also wikis could be used to record the outcomes of workshops. There was a promise to experiment with these technologies at the IWMW in 2005. In the same theme, in the final conference wrap up he continued the invitation to participate in FOAF (friend of a friend) system which was mentioned in the delegate packs and in an introductory message sent to delegates. FOAF is an RDF based technology for declaring information about oneself and who one knows so that social networks can be visualised or surfed (Kelly and Dodds 2004). The driving force here seemed to be technology, and BK explicitly acknowledged that this was a return to a theme from the previous year, the semantic web, which had apparently puzzled and annoyed people. At least one interviewee picked out talks about the semantic web as proof of the overly technical nature of the conference, linking it to why they did not wish to attend in 2004 (PM103). Although the semantic web was being presented in the form of a useful application, it still felt like a cutting edge technology in search of a practical application. Self maintained profiles would solve the data protection issues raised by other forms of delegate listings, BK argued, but it seemed improbable that most people would maintain such things. The paper supplied to the conference (Kelly and Dodds 2004) failed to convince that there was a compelling reason to wish to surf other conference goers' interests.

The only speaker other than BK to explicitly define the group as a community was Hartland, in the last plenary talk (Hartland 2004). He opened his talk by stressing the importance of the web, through the conference theme of transforming the organisation, saying that the web was touching every aspect of institutional life: external relations, teaching and learning, research, management information systems, library services, departmental intranet, student support, documentation, e-commerce. Thus he stressed the importance of the whole area, like BK, ignoring whether the people at the conference were involved in all of this, in an attempt to construct the community as a significant one. Towards the end of the talk he referred to the group as powerful, attempting to evoke and channel it towards collective action to improve training through HE on web matters. As representative of a training service he was careful to avoid an accusation that he was simply promoting his own service, by inviting others to lead the initiative. He asked BK if he was still WS list owner (he never has been) and asking if it

would be agreeable to him to pursue the campaign to address web education through the email list web-support, or whether a new list should be formed. BK responded sceptically referring to email as "so twentieth century" (greeted with groans) but overall welcoming the proposition that something should be done. Hartland consistently talked in terms of "we" even though he was not a web manager. It is interesting that both he and BK wanted to use the word "we" to mean the cross organisational community, when neither were web managers.

5.5.2. Summary of the rhetoric of community

BK made the claim that there was a web community. Note that this is not a claim that it is a professional group as such. He did not necessarily advocate professionalisation. Further his claim is not that the conference in itself is a community, rather that it stands for a community. In contrast, WS might appear in itself to be an "online" or "virtual community". To summarise, the following rhetorical strategies were used to evoke a sense of community, primarily in the introductory session for delegates who had not attended before:

1. A simple assertion that there is a community. "We" becomes the group represented at the conference, not one's local employing institution. The group is given a name: the web community or the web management community.

2. A rather hazy and inclusive definition of what practices and job roles are included, appropriating areas of activity which everyone will recognise as important and of growing importance, so asserting the importance and dynamism of the area. This is slightly misleading because many of the most dynamic areas were not really within the scope of the conference; yet having acknowledged this there was a rich programme that raised many live issues, but perhaps in a narrower and less politically charged area than claimed. The claim was also coloured by political correctness, eg the inclusion of FE.

3. Interestingly no negative boundaries were explicitly drawn in the planned talk, but in response to audience reaction there was exclusion, and at other points in the proceedings certain groups, eg marketing, were excluded. The benefits of defining a common enemy or "other" are perhaps outweighed by the risk of unleashing voices that challenge the collegial tone. This suggests that part of the process of claiming that there is a community is to try and influence the climate of the event to be helpful, friendly and supportive, or claim that it is, because communities are considered to be like this. This might be as much about maintaining decorum in the conference as some bigger objective.

4. Evocation of common challenges, particularly the common problem of under resourcing. This is partly a claim of an area of commonality with the assumption behind it that the web is an important thing that should be well resourced.

5. Definition of a common set of technical issues, essentially defining the field in technical terms, construing it as an IT specialism. This seemed overly technical, rather than acknowledging the management aspects; it also did not seem to focus on the technical issues raised at the conference, and in fact seemed closer to WS discussions.

6. Moralising of the issues, as an ethical challenge, perhaps in a way linked to an underlying model of professionalism.

7. Evocation of a history of the conference tending to elide its history with that of the claimed community.

8. Evocation of particular star individuals and personalities (including BK himself as a figurehead), at the same time as asserting the importance of a peer network. So there were dilemmas in terms of constructing the space as a community of peers and needing to identify star personalities.

9. A description of key communication systems for the community (including a proposed new one, FOAF), in a sense saying "where" the community is.

10. A call to be involved through the process of oneself becoming an expert who can contribute at a high level to community understanding of a particular issue.

Of course, to surface the way that this sense of community is evoked rhetorically is not to deny the truth of the claim; indeed community is often a claim, an accomplishment, that must be evoked, although it is characteristic that for Wenger (1998) community of practice does not necessarily have self consciousness and it is does not have to be explicitly evoked: it is a "real" community. To be effective a rhetoric must be coherent, accord with known or apparent "facts" and appeal to the interests and values of the audience. It fits in with expectations about what a community should be, a discourse of community. It is interesting that no such evocations occur on WS, where the sense of community arises more from acts of sharing and helpfulness than explicit commentary. Even the occasional metadiscussion about the quality of the list is rare (compare with the praise of uwebd by members in a thread of

March 2005[11]). This must be partly about the nature of the two entities as events. As a workaday list WS does not offer occasion for grand claims that being on the platform at the close of a conference almost demand.

An immediate question to ask is why did BK try to construct the group as a community? In the first place, there is every reason to suppose that this is how he sincerely feels it to be (BKI21,**BKII90-96**). As the next chapter shows he was not the only person to experience it in this way: he was articulating a common thought. He saw the community as arising from the commonality of working in education (**BKII90-104**); the role of the IWMW to be to offer support and connect to peers as sources of best practice in the absence of professional organisation (**BKII34-52**): "What I think its really done is to help develop the community in a consistent manner" (**BKII34**), so there was a sense of trying to regularise and order a potentially divergent sector. His own role had shifted from guru to being "more of a coordinator, facilitator, erm and knowing where examples of best practice are" (BKI51). He repeatedly used the concepts of best practice and the metaphor of a peer to peer network.

The sincerity of this belief does not fully explain the lengths he goes to delineate the group (as opposed to simply directly addressing specific issues of knowledge to be discussed). The requirement for an introductory session had not been there before. In an event for a more established and recognised profession, it seems reasonable to argue that less effort would be needed to assert common ground, or it would be done in different ways. Partly such an evocation seems to reinforce the event, making it difficult to ignore and also making the audience more tractable in some way to persuasion as a collectivity. It may simply increase delegates' sense of significance and increase the chances of their returning, though to see it merely as a way of recruiting delegates for a conference would be far too cynical. BK has a need to construct a cross organisational space, for that is the level at which he works. It is not self evident that there should be such cross organisational contacts. It is important that relations are friendly but it is even more important that such a space exists in the first place. Politically construing the group as a "community" also gives potential leverage to its leaders. Hartland described the national web managers community as a "powerful group" and called on it to flex its muscles politically. Generally, though, it does not act collectively, arguably making it more available for BK to talk on its behalf, in pursuit of his "passions" (open standards etc.).

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[11] Part of the initial message read: "When was the last time I told you folks that you are the very best email discussion list on the Internet? Together, you are the most talented community, you have the calmest most professional discussions, and we all have the constant knowledge that since we are on

Theoretically a potential resource to make sense of this set of claims from the literature of community of practice is Callon's (1986) theory of interessement, borrowed to explain the working of power by Fox (2000) and Swan, Scarbrough and Robertson (2002). One can see how BK's definition of "the problem" is both inclusive and places him as central, possibly as an "obligatory point of passage". Anyone from the outside wishing to know about web management would in a sense have to consult BK because of the way he uses the conference to construct the whole space. What we see in action is one step in the process of recruitment; we do not see beyond this step, eg his possible attempts to try and activate local web managers to work collectively in support of his objectives. We can guess that this might occur, eg in putting forward proposals for projects people in local institutions might go to him to find partners, and equally he would be seen as a source of authoritative judgement on what research was needed by the obvious funders (JISC). Callon's (1986) description does not seem to do justice to the rich discourse of community in use here.

5.6. Summary

Sections 5.3 to 5.5 have explored the nature of IWMW through aspects of the four dimensions derived from COPT. This section summarises the findings, and the next section presents an overall assessment of the implications of the divergence of IWMW from a community of practice as a model.

This chapter has looked at the role of the annual workshop as a focus of inter-organisational contacts. The first section considered the character of the content of the conference as an enterprise in generic terms, showing how this marks the event as having a particular character. The next section looked at the evolution of the content of the conference, but particularly at the way perspectives from IT and management were privileged, and other perspectives, notably, those from the professional domains of marketing/PR/communications were marginalised. The third section examined participation: affiliations and demographic features of delegates and speakers. This confirmed that the event is skewed towards technical and managers, and other groups are under-represented. The chapter then examined BK's public claims that it is a meeting of a community and his assertions about the nature of that community.

Whereas for WS there was a transcript of interactions over time (and which constituted to a large extent all the interactions that there had ever been) for IWMW we only have a summary

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UWEBD we are connected as well as anyone can be." Note the interesting construction: "calmest most professional discussions".

in powerpoint form of the public speeches, supported by some direct observation of two of the conferences and a second hand report summarising delegate evaluation forms for most of the rest. These are more limited types of data dealing primarily with public, general activity and capturing only a small accidental sample of the many individual scale, informal interactions that actually take place: audience responses to a talk (laughter, applause, silence, whispering), people chatting over a cup of coffee in an interval or long conversations on the train home. As a consequence of the differences in data the dimensions cannot be addressed in the same way. Rather than fully examining identity, community, climate and governance, the focus was rather on a specific public claim of community serves to construct the community. This topic can, however, be treated in considerable depth.

In subject terms IWMW as an enterprise was much more diverse than WS, and increasingly concerned with the big issues of technology choice and implementation, far more than the minutiae of answers to technical questions or standards discussion that were the core topics of the mailing list (cf. P2). Yet practitioner concern with knowledge based on experience (agreeing with P4) and "keeping ahead" (as in P2) is evident.

In terms of participation, the attendees were somewhat similar to WS in terms of job roles (techies and managers, not marketers). Indeed potentially the same with a significant proportion - though far from the majority - of list members coming to the conference, and a significant proportion of attendees being list members. However, it was not simply that WS was the online equivalent of IWMW. In theory WIM should better fit this role, but this list has a low level of activity. Not all the dominant voices on WS were present at IWMW. Equally, whereas WS had a significant proportion of departmental web authors, there was a sense that IWMW was for central web teams. Because IWMW was a paying event, attendees need permission from their employer to participate, whereas WS was available to anybody who is interested. With as many as 700 members it would be difficult to accommodate everyone from WS in a single event. There are hierarchies in both spaces (high posters, speakers), but it was not always the same people who had higher status. WS is more immediately accessible to all; just through sending a message, and anyone can potentially offer an answer. There is no stage.

In character the climate of the two spaces was quite different: WS was a workaday activity whereas IWMW was inevitably more of an occasion, treated as significant or trying to be significant. WS was a continuously available help space, IWMW a once in the year moment to adumbrate and prognosticate on the "big issues", the mood of the time and to discover the "next big thing". IWMW had a history of evolving understanding and a repertoire of significant talks given by individuals evoked by BK as key personalities. In contrast WS,

though it had its net.personalities (Baym 2000, p.143), it had no real history of evolution, no valued self-generated repertoire. Papers were inevitably more significant reports on extended work (such as a long term intranet development project) and invested with much personal significance to the presenter, whereas short email messages tend to reflect immediate problems and off the cuff answers in which little is at stake and through which bigger issues are only glimpsed. Though the two spaces were potentially linked, the form of treatment of a topic is likely to be different (cf. P6). Because the conference is filtered through a selection process to produce a coherent themed event (at least in the plenary sessions) it has a clearer character, in comparison to the unfiltered interactions of a large quite amorphous group. Informal personal contacts enabled by the conference were very important however (confirming P5) and the vigour of the conference was evidence of an interest in developing wide contacts (cf. P7). For BK at least, IWMW poses moral challenges to reinvent itself, whereas WS seems much more caught up in day to day work. As an occasion in a physical space, populated with recognisable "events" (speeches, meals, a disco) IWMW is much more palpable (and therefore memorable?) than the rather fragmentary episodes on WS that exist only as a sort of ever present small detail of background for the individual subscriber (save when they choose to participate). This is ironic given that more of the total interaction was available for WS, but may be linked to the dispersal of the online interactions over time, the difficult to interpret patterns of activity, the difficult to understand make up of the membership.

Certain attributes of the conference: its small scale, campus base, cast of speakers drawn from the group itself favour a community feel. These are not *very* unusual features, but there is clearly an intention to present the event as collegial, different from a conference run purely for profit. Whereas a community of practice is inherently a community through strong direct relations, other communities have to be explicitly constructed as communities. BK's continuous use of the rhetoric of community sets this tone. Some evidence that there was a degree of reattendance supports the claim that it is in some sense a community, as does the overlapping of membership between WS, WIM and IWMW delegates.

On the other hand problems with the coherence of the community claim have been explored, as well as the match between the claim and the seeming reality. Although the claim is that IWMW represents FE and HE, there is a distinct focus on the larger, more prestigious universities (particularly among speakers) and lower participation among FE, smaller HEIs, new universities, more marginal geographical areas. Marketing perspectives were actively excluded. The diversity of job titles hints at quite a varied group that is difficult to see as representing a very coherent occupational community; perhaps is better seen as a boundary

community. Further there is little evidence that the group members have come to act collectively. This may reflect the fact that the principal organiser is not himself a web manager. IWMW as such is a meeting point rather than a community with a common purpose. Although a relatively intense event, the scene for many face to face encounters and that valorises the whole field as important and that could have an important role in creating a sense of community, this is an episode evoking an imagined multi occupational space. Amit's (2002) notion of such episodic events having a role in creating an imagined community seems highly relevant, more than Wenger's (1998) stress on direct mutual interaction on a joint enterprise. There is a common ground in parallel enterprises pursued in parallel contexts that is recognised tangibly in the conference (and in the interactions on WS - which are immediately recognised as familiar).

5.7. Fit with community of practice model

Although it would be surprising to see a conference as akin to a community of practice, sometimes such a claim is made (eg the introduction for delegates to ALT-C 2003 toys with this thought (MacDonald 2003)). Clarifying exactly the difference does reveal something about the nature of the event.

IWMW has its "domain of interest", though a somewhat different one from WS. It has developed a set of practices, though these are not emergent but rather draw on very familiar forms of interaction and have been been directed by a few individuals, notably BK. The enterprise, although somewhat hazily defined, is something to do with defining the nature and importance of web production: to define good practice in the sector and perhaps also help identify "the next big thing". BK certainly claims that there is a shared repertoire of a history, characters, jokes, part of which is captured in the online archive of past papers and part of which he tries to convey in his session for first timers (we lack data on how far this was used).

IWMW is a face to face event in space, like a community of practice, but unlike WS. However, though it is smaller in numbers than WS, the scale is still too large for each member to interact significantly with all the others, directly. It is an episode, not a continuous entity like a community of practice (and like WS). It is an annual event, and though probably a relatively intense experience on the individual level, this is not simply through mutual interaction. It is possible that a core group of organisers (BK himself) or clusters of attendees, particularly those who return year after year, experience it in this way, but the mass of participants are not bound together directly through mutual interaction. Rather, a large group is exposed to common media (mediated by classic conference technologies such as microphones and powerpoint), and has a range of intermittent interactions with other

delegates. The conference goers already probably have a rather common ground with such other delegates, having parallel roles (they perform the same tasks, use the same tools or are in a chain of production with such individuals), parallel experiences (a web server crashing), parallel pressures (their organisation wants them to achieve similar goals) and media exposures (they read the same online sources and react to them in the same way). Chatting to other delegates quickly reveals the extent of the common ground. This is really a realisation of occupational community as defined by van Maanen and Barley (1984). This latent force is reinforced by BK's deliberate attempts to evoke a sense that there is a community, though the desire to recruit widely to valorise the domain perhaps reduces the coherence of this appeal.

The idea of a community of practice is a small intense group that invents itself through interaction. The conference is much more diffuse, relying on parallel experiences, structures, exposures and deliberate rhetorical strategies to realise latent common ground.

A conclusive difference is that even if one claimed that "doing the conference" was a joint enterprise, this is quite separate from the local practice (building my web site) that is the core valued enterprise for each individual. The purpose of attending the conference is not for itself but to gain material to re-invent the local practice.

5.8. Conclusion

In the last two chapters the thesis has been concerned to analyse the nature of two of the main cross organisational spaces in the web production area. It has examined both the character of participation and the nature of the activities involved. It has looked at how the participants present themselves and how they see the community. It has also been concerned to examine the climate or interaction and forms of governance.

The next chapter refocuses the enquiry away from the collective spaces to the individual, to examine the springs and limits of participation in cross organisational activity. It uses interview data to explore the nature of individuals' participation in the various forms of network activity, including WS and IWMW, its pattern and the relation of this to local responsibilities and positions.

6. Community, diversity and division

6.1. Introduction

The two previous chapters have built up a picture of how two cross organisational spaces work as communities. One is a continuous, low level, helpful and supportive email list. The other is a more obviously significant annual gathering which helps define fashions in technology, attempting to recruit new entrants to a collective understanding of the issues, but is episodic, perhaps more directed to a general political agenda and part of a deliberate strategy to create an inter-organisational space.

Chapter 6 refocuses on the individual level, to look at different personal patterns of participation in such cross organisational spaces and to explore the springs of activity, as a way of trying to understand why they are the way they are. Thus the main objectives of this chapter are to:

- Chart the pattern of individuals' cross organisational activities
- Explore how this pattern relates to aspects of their local context such as their specific set of roles, resourcing and the local culture
- Explain how these influences shape the character of the cross organisational spaces

The main theoretical starting point is the theory of the professions, in particular the bases of professional solidarity and the balance of benefit and disadvantage to the organisation and to the individual of formal professionalisation.

To pursue these objectives 21 in-depth interviews were conducted with IWMs, both those who participated in IWMW and those who did not, and some of the leading characters in WS (some were both). The chapter begins with a discussion of the methodology employed to collect and the analyse data. Sections 6.3 to 6.15 examine springs of activity in IWMW to show a complex web of interconnected factors. In a shorter discussion in 5.16 the examination returns to consider the springs of participation in WS.

6.2. *Method*

6.2.1. The sample[12]

Given that the question at issue was partly the nature of the group's boundaries, the sampling method for choosing interviewees had to be itself purposive rather than strictly representative (Patton 2002, pp.45-6). The intention was that the sample should encompass activists, the more passive participants (and "lurkers") and relevant non participants (akin to "non users"). The list of potential interviewees was continuously reviewed during the interview period, with individuals being added or promoted in order of suitability as understanding of the issues developed: especially through a growing interest in the marketing perspective. Direct suggestions from interviewees about who were important people or institutions to contact were canvassed and taken into account (i.e. a snowballing technique).

The main criteria for choosing interviewees as it emerged is indicated in Table A11.3 and reflected the following principles:

1. To obtain a diverse set of opinions: from those at the heart of IWMW (eg conference organisers, speakers etc.) and those active in WS, or both (column 2).

2. To deliberately seek out the more interesting vocal, high profile characters, either on WS or in the occupational community, even though clearly they might not be representative (eg IM).

3. To represent standard strata in academic institutions: old, red brick and new universities, small HEIs and FE; geographical areas (column 4; Table A11.1).

4. There was also a concern to capture perspectives influenced by use of different technologies, especially CMS and portals (column 6).

5. To encompass people in different structural positions: in MIS and external relations, for example. The core of the interviewees were people who would claim to be the principal person in the university responsible for the front facing web site. Some of these could easily be identified through WS and IWMW (see Table A11.8 below).

6. To include more marginal, less visible positions, such as several from new universities, one from Further Education, one who was a faculty web master, one out and out

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[12] The quickest way to get a feel for the character of individual respondents is to examine Tables A11.12, A11.16, A11.17.

marketing person (column 4). The final sample was inevitably very selective, eg there are hundreds of FE colleges and thousands of people responsible in individual departments for their bit of the web. As the research developed, focussing on the new university perspective emerged as a possible interesting angle as well as the divide between a marketing and an IT approach. Several interviewees were found through the HEIST awards listings (HEIST 2004), presence on which obviously implied some sort of public profile and willingness to be seen, so it is possible that they are not representative.

7. To have at least a representative proportion of women, if anything aiming to somewhat over-represent the group as it appeared to be present in the population (column 5). The WS questionnaire results (and the literature) suggested that there might be interesting gender issues, some of which could work to reduce the number of women who participated in cross organisational spaces. It was therefore justified to seek something like 40:60 respondents female:male. In reality it proved difficult to identify sufficient females, since the most active and visible people are largely male. All but one of the females interviewed was a little hesitant to agree to an interview. Perhaps there were issues with the interviewer being male. Ironically the out and out marketing people (PM, QM, VM) were all male though its argued here that this is in some sense a female dominated profession.

8. To select persons for whom there was another source of data, such as a response to the WS questionnaire, substantial contributions to WS, published papers, blogs, home pages etc. (column 7). Because they were fragmentary such data were difficult to use, but they enabled the interviews to start from a level of pre-understanding.

9. There were two other interviewees. BK, as the principal organiser of IWMW and major participant in WS, was interviewed both at the beginning of the research (May 2003) and at the end (March 2005). WF was an American web manager who ran a conference in the USA which attempted to integrate technical and marketing concerns.

Surprisingly every individual approached agreed to be interviewed, mostly without hesitation, in itself suggesting some sort of "community" spirit.

6.2.2. Type of interview

Being an exploratory, qualitative study the interviews were semi-structured, based on open ended questions, though using a script rather than simple headings, since the precise wording of questions was deemed important. For example, the word professional was removed from the question about the individual's background, since it cued the use of the word professional,

when the centrality of the notion to informants was itself at issue. They were in depth interviews, that is, encouraging informants to "tell their own story in their own words" (McCracken 1988, p.34), and lasting between 50 minutes and 80 minutes, producing transcripts of between 5000 and 11,000 words (Table A11.1). All but one were face to face, the odd one being a phone interview (the respondent lived in Nantes). Interviews were conducted in the interviewee's place of work, often in their own offices, increasing the relevant context and cues (Mason 2002, p.64).

6.2.3. Interview design

The questions (Appendix 4) explored two broad areas. Firstly they investigated the nature of the individual's job. Some of the questions in this section were based on those asked in the questionnaire and interview stages of the Heinus study (Armstrong et al. 2001, Appendix 4 and 5) and also, more broadly, the concerns explored by Oliver (2002) in his study of learning technologists. Many of the specific questions emerged out of enhanced understanding through the interviews themselves, meaning that overall this aspect of the interview data are well grounded in emic perspectives. Such themes were pursued for two reasons, partly to build up a picture of the concerns of individuals to compare with those dealt with in the communal spaces and partly to explore how the characteristics of the job influenced levels of participation/disinterest in these spaces, just as Baym stresses the importance of "off line context" to participation in the virtual community she studied (2000, p.201).

Questions encompassed:

1. Their inward path into the job and outward trajectory beyond it. This was a concern because the group precisely lack a collective socialisation process as occurs through professional education

2. A self description of their job

3. General aspects of their job, eg job title, whether they had a web team, their position in the organisational structure, the existence of policies, their overall role in the web

4. Their view of their own role, how they define their occupation

5. Key boundaries with other groups

6. Generalised values such as professionalism, creativity, their view on the major trends in the web - and on specific practices such as accessibility or usability, partly as a way of exploring the values of the group to see if there was commonality

This was quite a broad set of questions because it was unclear what the variables might be. The second area of questions explored specific aspects of informants' relations with others doing similar jobs, in particular the value they placed in the two cross organisational spaces explored in the previous chapters. Some of the informants had been particularly active in a specific area so more questions were asked about this. The intention was to try to get as concrete answers as possible. Questions were influenced by the knowledge sharing literature, and virtual communities literature.

The interview questions were trialed with two respondents (AM, BM) in March 2004.

The script evolved in the course of the series of interviews, for a number of reasons:

- Throughout the process the questions were reviewed in the light of their success in previous interviews, initial analysis and some continued background reading and thinking. On the whole this did not lead to questions being dropped, rather the questionnaire accreted new questions as issues became visible.

- It was a natural process for themes to emerge from several interviews, and then it made sense to ask subsequent respondents about the same issue for comparability purposes.

- One concern was the failure of the initial set of questions to capture some basic facts, eg how many were in the web team and the qualifications of the person.

- Initially it was considered that the questions should not be leading questions; rather they were designed at such a general level that if an interviewee regarded something as important it was likely to come out in the interview, and that if a topic was not mentioned that indicated that it was not important to them. Several experiences suggested that topics such as usability and accessibility should be addressed directly if they did not arise naturally in the course of the interview.

These factors produced a certain level of inconsistency between the interviews, which would have been of concern in a hypothesis testing study, since it reduced direct comparability. However, to exclude emerging issues simply to increase comparability would have been inappropriate in this essentially exploratory research.

6.2.4. Data collection and preparation

The interviews were conducted primarily in May, June and July 2004, at a rate of roughly two per week (Table A11.1). This proved to be quite a tight schedule, especially given that respondents were all over the country.

All the interviews were taped on analogue audio cassettes. There were a few technical hitches resulting in a few minutes of two interviews being lost (FM,HF) and two others having some impairment to audibility, due to being recorded in large open, noisy rooms with an omni-directional microphone (BM,IM). Apart from these minor problems, the recordings proved usable in every case.

Each interview was usually transcribed immediately afterwards in MS Word, and a fairly detailed initial analysis made, prior to moving on to the next interview. Immediate transcription was thought to be important to reinforce memories of the actual interaction (such as non-verbal cues to the interpretation of responses, never captured on tape) while the memory was fresh and to build on an initial understanding in performing the next interview. Some time for reading of relevant sources was found during the same time period to start to bring major issues into awareness.

The focus in the transcript was the sense of the interview, with concern to note precise wording and phrasing, because hints derived from this were used in the analysis. A relatively simple transcription convention was employed (Appendix 10), eg excluding pauses or length of pauses since it was not intended to do detailed linguistic analysis of such elements (as would be captured in the Jeffersonian method, Potter and Wetherell 1987, pp.188-9), for example. The researcher did not have the skills to apply this level of analysis (ibid., p.166). These conventions are more appropriate to conversation. As it was an interview overlapping speech, for example, did not occur very commonly, for the interviewer always deferred to the interviewee. By excluding such elements the transcript was made more readable and since the point of a transcript is to make available the words of the interviewee clearly, readability is a prime criterion.

6.2.5. Data analysis

As well as notes recorded in Word, summaries were developed in Excel. This was useful in establishing baseline "facts" and summarising the characteristics of each individual, comparatively. 170,000 words of transcripts (and around 30 supplementary documents) were imported into Atlas-ti and coded for themes identified by the Excel analysis, and that emerged from re-reading. This facilitated navigation through the large body of text (Potter and Wetherell 1987, p.167). Antconc and Atlas-ti's wordcruncher function were used to generate concordances, such as word frequency lists, as part of the analysis. InfRapid Search and Replace generated KWIC lists for search terms. So when a word of interest was found the researcher could search across all the transcripts producing a list of number of hits, in context, with a hotlink to the text and the search term highlighted in context. This was found to be

preferable to word frequencies, because it showed context, and linked to full text. It was good for exploring use of language and similarity and difference in use of terms, metaphors etc.

6.2.6. Analytic approach

The range of respondents and the small size of the sample make it suitable data for exploring individual accounts in depth, rather than producing generalisations from representative numbers. There was only one interviewee from FE, for example, and only two departmental web authors in the sample. These stand in for very large actual populations, so can only be really suggestive of part of a bigger picture. The nature of the sample and the diverse nature of the interviews militated using quantitative methods of analysis.

The data also only support suggestions about how individuals connect to the network, not an overall sense of the shape of the network as a totality. This would have required more formal SNA. One problem with the SNA approach would have been that it would have been difficult to predetermine who should be sampled. SNA works best in a bounded group (such as all the members of a team or formal organisation). The question in this thesis was more or less precisely what the boundaries were and why. The scale of the potential group would also create problems and there would have been Data Protection Act (DPA) and privacy issues with collecting SNA type data. These problems combined with the relative superficiality of network analysis led to the choice to focus on a more qualitative approach.

Being individuals' accounts of their roles, as opposed to observation of actual behaviour, for some purposes the data are limited. The respondents' ability in the heat of the interview to remember what they do in detail and accurately describe it is quite low. Certain types of self reflection are particularly difficult. Eraut comments on the poor quality of interviewees' attempts to reflect on informal learning, for example (2000, p.119). Furthermore if one were concerned to examine "theory in use" as opposed to "espoused theory" (Eraut 2000, p.123) there would be poor data, compared to observation of behaviour. However, the argument here is that espoused theory is important, particularly in the case of roles where legitimation has to be won through talk, and is not simply ascribed by formal structures. Espoused theory, reflective talk defining the role, is part of the activity in the local public space that Eraut identifies as one aspect of professional knowledge (Eraut 1994, pp.30-2). In fact, because so much of the role of web manager is talking with other professionals, this is more relevant to professional practice than for the group Eraut was studying, school teachers.

The interpretative approach used in this study to analyse the data acknowledges both the importance of the "interview as local accomplishment" (Silverman 2001, pp.104-5) that is

constructivism but also sees it as offering, if handled well, a level of access to informants' authentic beliefs, expressed in their own words, that is to say, emotionalism - as well as "facts". The general philosophy of the analysis was to treat the interviews both as discursive but systematically linked to real world facts and structures.

The concepts of "interpretative repertoire" (Potter and Wetherell 1987) or "discursive resources" (Watson 1995, p.816) are useful points of reference in theorising how in talk individuals draw on a set of common reference points to construct identities and seek to authorise actions. For example, in this case, such identities as techie or marketer are available as reference points, against which the individual defines their own specific position. Similarly well rehearsed arguments about how to do the job, legitimating control or centralisation and expertise represent a common stock, as do more socially dispersed resources such as the notion of "professionalism". Billig shows that such common sense "does not provide a unitary discourse, for it overflows with numerous bits and pieces, creating and recreating endless 'ideological dilemmas'" (1996, p.15). Hence individuals tend to both reference valued aspects of a resource, and at the same time find ways to hedge or distance themselves from elements that are less useful. Such hedging is situational, constructed on the fly to address the immediate needs in conversation. This results in the typical weaving, qualifying, contradictory rhetoric found in everyday talk.

For certain of these common discourses such as "professionalism" it seems reasonable to treat them as purely discursive resources, since their definition is distinctly hazy. Yet it would be misleading in general to characterise much of the repertoire drawn upon simply as free floating resources usable, say, to legitimate a position willy nilly. Granted all are aware of the need for professional self presentation and to sell themselves and their service. However, such arguments are not merely cynically or pragmatically recruited to produce self justification. Rather they can also be somewhat persistent ("genuine") beliefs or values of the individuals concerned, which limits what they care to try to legitimate. Equally to be convincing it is necessary to walk the walk as well as talk the talk. One can probably not simply use accessibility to justify one's actions without actually developing some practice of accessibility.

In the analysis of the data it is taken that local organisational needs, the precise location in the organisation and personal and institutional ascribed resources influence which strategies seem sensible and possible to pursue. Such realities influence the use of discursive resources as well as the immediate conversational situation. Thus an analysis must consider a balance of constructivist and emotionalist positions.

The argument here is that an interview, though influenced by the process of its production, still yields accounts that are consistent with how individuals speak in many contexts. Interviewees were clearly in many cases pursuing well rehearsed arguments, their very eloquence is testimony to this (especially BM,EM,GM,IM,KM,QM). The marriage of form and meaning in many of the interviews was quite profound (Table A11.17). How people spoke and the broad approach to their job was closely connected, suggesting more than a superficial engagement with what they were saying. It is not that they always talk this way or do not act differently than they talk, they do both those things, but it does suggest that it is one important relevant way they talk.

While some answers may have been influenced by the interviewee's perception of what the interviewer wanted to hear or who he was (librarian, techie, rapporteur on e-research), on the whole, the argument is that they both spoke freely and tended to use arguments and self identifications developed in the course of practice. Several interviewees drew a parallel between the interviewer's visit and that of other colleagues (EM72, QM off tape) so that there was a sense that the interview interaction was very much akin to the professional networking situation itself, which was an object of study.

At another level, there was little sense of interviewees' inhibition or restraint in expressing "authentic" thought. The style of questioning was permissive to allow the interviewee to answer in their own terms. The question framed areas of interest by using rather broad, vaguely worded, open ended sentences. SF was an especially good interviewee because she was clearly reevaluating her career and that made her wish to talk, as part of thinking through the issues for herself (SF199). PM was not very open, but this perhaps reflects being relatively new to the job. There was a slight breakdown in the MF interview and occasional "lapses" where evaluations implicit in how a question had been asked that probably produced defensive answers (RM80). The interviews with VM made less sense because he was so far from participating in relevant forms of cross organisational activities that many of the standard questions seemed "odd". However perhaps only in the case of OF was the interview in sense mishandled; it seemed relatively cagey throughout. There was a sense that her disidentification with the job made the interview structure and its implicit evaluation of the job as interesting and worthy of discussion inherently hostile to her perspective. Another interviewer (eg a young woman) might well have got a different, more frank interview, without denying that the wariness was a consistent aspect of her stance that could have been observed also by another.

There were no off tape admissions that seemed discordant with what was said on tape. Few of the interviewees commented on the presence of the recording, or seemed inhibited from

expressing their views by this. Often interviewees referred to experiences which were known to the interviewer from other sources.

The overwhelming sense was that the interviewees were pleased and interested to share their views and did so openly, and that their views represented their often rehearsed ways of talking in live professional situations.

The main problem was perhaps that the respondents saw some of the activities discussed as relatively unimportant. For example, there was a consistent problem differentiating claims about actual behaviour on WS from beliefs about what people *might* do or general email list behaviour. Actual data about behaviour, such as what is achieved by networking are far thinner than identity work and evidence about evaluative repertoires.

6.2.7. Validity

A certain level of validity is obtained by including full transcripts of the data as an appendix and also by the clear and honest reporting of methods used. To increase the accessibility of the transcripts key passages were identified and reproduced in Appendix 12. This reflects a philosophy of letting informants speak for themselves through the study, as well as making the analysis as transparent as possible by supplying further context to some key passages.

Another validation strategy was of attempting to provide a comprehensive account that incorporated all the data. Tabular presentations are useful in achieving this by extending a thought about one individual to every interviewee, rather than picking and choosing examples.

The poetic fusion of form and meaning in how interviewees spoke (Table A11.17) was also considered to suggest a certain level of validity, showing that the speech was authentic, reproducing arguments that they used across multiple situations.

The strategy of respondent validation (Silverman 2000, p.233) was pursued to a limited extent by re-interviewing BK after the analysis was complete and by such activities as talking to people at IWMW2005. It was considered that the major conclusions could be expressed in terms which were both comprehensible and interesting to respondents (cf. Silverman 2000, p.236). Data triangulation (Table A11.3) (Silverman 2000, p.233) proved less valuable than expected due to the fragmentary nature, and contextual issues with the material (p.235).

The analysis

6.3. The claim of community

Of the interviewees16 (AM,BM,CM,EM,GM,HF,IM,KM,MF,OF,PM,QM,RM,SF,UM,VM) could in some sense be considered to be "institutional web managers" (hereafter IWM). These were all individuals with a primary responsibility for the web in the institution, especially the front facing web (or in IM's case he had had this role previously). Given this common ground it would not be unreasonable to expect them to represent a latent occupational or professional community.

Indeed, it has been shown in the previous chapter that BK makes a claim that there is a web community or a web management community (though not a professional one as such, necessarily). IWMW is a vigorous series of conferences, and arguably key to how HE has come to understand how to "do the web". There is evidence for a stable population (perhaps a core) of attendees.

Many of the IWM interviewees evaluated the conference positively (AM,BM,CM,EM,HF,IM,MF,RM,UM) and were involved in the organisation of the conference (EM, HF,IM,MF,RM), speakers (all except HF,UM) or frequent attendees (Table A11.4, A11.5, A11.8). EM could perhaps be regarded as the most central IWM, since he was host and keynote speaker at IWMW2004, and also been a keynote at IWMW2003. IWMW was a key reference point, eg for BM who mentioned it in his answer to the first question in the interview. When asked if they knew people in "similar jobs", most informants assumed that what was intended was others working in HE.

> I know lots of other people at different institutions, throughout the country, I think that's largely down to [BK] - the Institutional Web Management workshop - it's a fantastic opportunity to meet with people and share ideas. He's kept, in a sense he's provided the only point of focus within the community for people to meet and discuss their needs and share ideas and people are very cooperative within that community [...] (BM48)

CM commented on the lack of a sense of rivalry, the willingness to share knowledge (CM52) and to admit lack of knowledge (CM54).

> Whereas as I say with web managers for Higher Education, it seems to be that we're all or most of us are kind of trying to just create a community really. (CM52)

CM used quite a lot of phrases recognisable as communal reference points from IWMW papers, such as: "gifted amateurs," (CM22) "preaching," (CM24) "cat herding" (though he says hoarding) (CM40), "singing from the same song sheet" plus WS catchphrases "two penny's worth" (CM54) and Friday afternoons (CM102). Yet he was one of the few interviewees (apart from BK) to really claim that it was a community. This suggests that he

was more strongly socialised into the group than most others, for most of whom the local is far more central.

Some interviewees were rather negative about the conference (GM85, OF86, KM174, PM103, VM84), tending to see it as too technical, or had ceased to be actively involved (SF75). In fact, several interviewees seemed quite isolated (PM89-95,QM62-3,SF75, OF61 - Table A11.6) and the regional networks were patchy. Certainly the level of integration of individuals into local and cross organisational networks was strikingly diverse (Table A11.6). There was not the sense of a ferment of cross organisational activity as captured by Beetham (2002) among learning technologists. Further it has been shown that participation in IWMW was limited in various ways. It was UK centric and focussed on HE, to the exclusion of FE, and the rest of the public sector, with which it might seem to have much in common. The conference takes a rather techno-centric view of the web and through this, perspectives from "marketing" are excluded. It had "failed" to form as a professional group.

Without assuming that greater occupational community formation or professionalisation is inevitable or necessarily good, the purpose of the chapter is to explore the factors that seemed to influence individuals' participation or non-participation in the cross organisational spaces, qua community, and how this influenced the shape of these spaces.

6.4. Influence of BK and JISC

A major influence on the shape of the community was BK, whose role as centrally funded "web focus" gave him time to spend on facilitating activity across the sector (Kelly [n.d.]). Nearly every respondent - even the most apparently isolated, OF, for example - referred to him without prompting as a personal contact, seeing him as a key figure. In a sense, though he claimed there was a web management community, it was as if the whole group was in essence BK's own personal network. The character of the space was influenced by his own IT background and interests, which he described as "web standards and architectures" (BK149). In this role he acted as JISC's agent.

JISC's focus on encouraging technology orientated collaboration, with a stress on interoperability and use of open standards (JISC 2004) was influential in the topical focus of the conference. More generally its sector wide activities and common services (eg its legal service) were clearly a major influence on how the space was defined: eg focussing on HE not the whole public sector and in setting the limit at a national level. In JISC's agenda FE is always included, but such inclusion was only slowly becoming more than an aspiration

(GM31). It should also be noted that JISC has not funded many projects directly in the institutional web area.

These activities were significant in influencing the character of the cross organisational space, yet clearly required fertile ground to have effect. In fact, there seemed to be some negative evidence from the interviewees' failure to mention issues relating to standards, for example, suggesting that locally the agenda JISC advocated was not a key point of reference. IM thought the content of IWMW had never been quite right, a failing linked to BK not being a web manager himself and his advocating standardisation, which while important there were more important things (IM66).

BK himself argued that the fundamental common ground was working in education (BKI90-104) and that he had reused models of cooperation that he had experienced at the emergence of the role of IT training officer (BKI39, BKII105-114).

6.5. Scale and time

Given the small number of HEIs (around 210 including smaller Higher Education Institutes) the group involved arguably scaled to numbers suitable to form a face to face community.

Quite a few of the web managers had been in post since the mid 1990s. In fact, some had worked for their institution far longer, sometimes several decades (see Table A11.12). Again this continuity was favourable to the formation of some sort of cross organisational network.

6.6. Professional/disciplinary pattern of organisation of work in HE

Zabusky (1997) argues that technical specialists are marginal in universities because they have a prior loyalty to their technical community. As regards the web, the position is probably more complex. Whereas many, perhaps most employees in HE do have a strong loyalty to their disciplinary community (academics)[13] or their profession (among support and administrative staff, eg librarians) (VM131-144), those working in the web area have a relatively low level of professional organisation, if one takes IWMW as the sole major institutionalisation of this. This would suggest their loyalty to an external community is likely to be less than that found in most occupational groups in HE. They are potentially more

[13] Campbell, in the context of a study of the divergence of departmental web sites from institutional standards, writes that: "It could be speculated that academic staff tend to identify themselves more with their subject area, than with the institution they teach in, and see their web pages as a way of differentiating themsleves from both the rest of the academic departments in the institution, and other departments in the same field of study." (2002, p.70)

orientated to the organisation. This picture fits better with Gornall's portrayal of the liminal but powerful "new professional" (Gornall 1999), than Zabusky's marginal information specialist.

Notwithstanding this, the pattern of professional organisation in universities offers an obvious model to web management for the formation as a community at some level, even without professionalisation. BK often referred to the web editor or manager as a new profession (BKI25, BKII40) without being clear what that meant. More directly, BM thought that in a sense the networks in the web community piggy backed on pre-existing networks (BM57). So even though not professionalised the model of forming an external community is obvious and pre-existing networks establish initial relationships and channels to enable this.

6.7. The common culture and challenge of legitimation

However, it might be argued that there is a common extra-organisational loyalty in the web domain: the web itself, as representing more than just a technology, but also, historically allied and embedded in that technology, ways of thinking and ideals about forms of sociability. Thus the web as originally conceived was a low level, open technology geared to self publishing, DIY development (BM7), mutual help, self learning, and copying or "stealing" of ideas. In so far as the technology as a practice embodies ways of thinking and ideals of sharing of information and collaboration it could act as a medium of common occupational socialisation. Yet if this is a potential source of common ground, it would be for anyone doing the web in the university, and from the beginning university web editor/IWM roles offered to cut somewhat against this culture by being about centralisation and about placing limits on the freedom to self publish. To a large extent the role of being an IWM was a role of trying to "control and influence" (BM39) web authors distributed around the organisation to conform to institutional requirements such as use of logos and conformance to official messages, legal requirements, good standards of mark up, navigation structures (Egan 2003). As such, IWMW is a potential focus for gathering arguments for specialisation, technical sophistication, greater professionalism and quality control and formalisation. All these are forces for centralisation. Potentially therefore there is scope for a tension between an IWM community and the ethic of the net. In fact, it does not seem that IWMW works in this way; rather, IWMW chimes with the collaborative ethos.

Appendix Table A11.10 cannot be claimed to be a systematic analysis of each individual's methods of influence over web authors, but what it does show is diversity of methods in use: by various technical means (SSI, CMS or templates), by seeking an agreed strategy, by

offering design services, through advice, training, gatekeeping of information or organising local conferences and web support email lists.

Sometimes controls can be forced on web authors, partly built into systems such as CMS, but often it is a matter of winning consent, "cajoling" (PM40-51), "herding cats" in a context where there is little direct formal power. The centralisation process has been balanced by arguments and pressures for decentralisation, such as the sheer quantity of information, the logic that those who originate or own content are in the best position to keep it updated, the desire of individuals and departments to express their own identity, further linked to the concept of academic freedom. This dilemma, and the attempt to legitimse a professionalised role within a space often seen as for enthusiasts and amateurs is a common challenge faced by all those in central roles, and can be characterised as one of legitimation.

The problem of legitimation is two sided, it exists both in relation to web authors, but equally there is an issue of legitimation with senior management, a need to demonstrate the importance of having a central web team and "win resources". BK commented:

> So in a way we're in that same community, we're having to respond from lack of funding, lack of support from above pressures from users from below. (BKI23)

(Note the implicit hierarchy in this statement: users are below). In neither case can well established professional standards be drawn on to say how the web should be organised or resourced so a variety of strategies are pursued to establish legitimacy. There is a common interest across IWMs to attempt to define a "good practice". This seems to be a primary basis for forming a cross organisational community: as a forum to help with local legitimation, often through discussing strategies for gaining legitimacy rather than collective action as such. It is perhaps a first step towards social closure.

Table A11.9 summarises interviewees orientation to influence or control web authors: the broad positioning in relation to influence or control does seem to relate to participation in the cross organisational spaces. The more the strategy was of influence the more salient was the community.

6.7.1. Decentralists

It was evident that the more the interviewee was in the position of "weakness" trying to influence others, the more likely they were to orientate to participation in the wider community. This might be partly because they drew less distinction between their own working on the web and that of other web authors.

Thus UM, although he was aspiring to greater control, to "regulation" (UM37) and planning the implementation of a CMS actually emphasised that his role was advisory (UM37), stressed the importance of "talking to folk" (**UM17**) and gradually winning consent (UM55). This seemed to be linked with his activism in getting people across his region also to talk to each other (UM65).

EM and MF were working in large distributed organisations, where power was devolved. EM spoke in a rather dismissive way of the local web author community (EM44), but beneath the surface his approach is to recruit them to his strategy by consent (**EM42**). He rejected CMS approach as unscaleable. His colleague ran a session on supporting web authors through a community at IWMW2004.

MF stressed that the institution was "democratic" (**MF40**), many of the departments being very large and seeing themselves almost as separate organisations (**MF44**). There were 400 web servers across the university (MF14). This gave rise to "tricky" institutional arrangements (MF104)

> Erm, broadly speaking I fit into - rather (pause) informal places within the university as well. I don't have any formal connections with other things around the university like the admin offices or the departments or anything. But I have a kind of floating role I suppose. I suppose it's a kind of ambassador for the computing service. (MF26)

Clearly this required the political acumen implied by the term ambassador. It was a personal relationship between her as an individual and others, built up over time.

> I've gradually built over the years I've built up a relationship between me and the departments and the colleges. (**MF47**)

It also implied a level of "visibility" also a theme in EM's comments on the subject (EM32,52,58).

These characteristics, operating in a context of informal influence, of personal relationships within a highly visible ambassadorial role, seem to favour participation also in the wider cross organisational community.

Interestingly, as at many other institutions, MF's local contacts were somewhat institutionalised as a "web liaison group" that met a few times a year and had an email list: the same media through which, at a cross organisational level, UK HE was organised. Within this infrastructure people were encouraged to help each other, given that within her institution web authors were, as she said, isolated and under resourced (MF46). Again this is exactly the same story applied to many university web editors, in the early years at least.

However, if her contacts with the local web authors are informal, they are from a position of power with her in the role of expert, advising others. She knows what the "right course" is; it does not emerge from the community; she is not a facilitator.

> So my strategy is to give them help and give them support. And to hopefully to be someone - somewhere where they would come when they feel they need to ask a question. And then you can steer them in the right course. I think you get much more out of people by being nice to them rather than trying hitting them with a stick [...] (MF46)

Running the web courses helped legitimate her in this role; the emerging expertise of accessibility was also significant in increasing centralisation.

Not surprisingly perhaps, she also drew parallels between BK's role in the wider community and her own locally: "[...] one of his jobs was to have - be a focus nationally like I'm a focus here" (MF68). This hints at a mental model of nested circles of support, in which there was a strongly similar flavour between national and local networks. Similarly, a participant at the IWMW2004 workshop on supporting "web editors" made a precise parallel between the support of web authors locally and national institutions to support IWMs. UM had copied the IWMW model to form a regional support group for web managers in HE and FE (UM65). BK thought that there were many local WS type networks:

> Now the web is mainstream you can get help from you know students on campus, anyone from campus, so there will be I suspect many institutional web-support type lists can carry out those initial functions. So in other words a – you tend not to get the queries how do I – you know – or I don't understand – because they can be solved in other forums. (BKI11)

So, collectively such fragments hint at the way media of support at national and local levels echo each other.

This might support Uimonen's (2003b) argument that the Internet at the highest level is itself organised through human networking sustained by a knowledge sharing culture. It would seem that within and across universities the same organisational structure and culture are reproduced. Uimonen acknowledges the limits on the possibilities of participating in the network; indeed her whole account is rather idealised. We should note Law's (2001) scepticism about networking as ideological and Mitszal's (2002) problematisation of "informality". Here too the talk of community should not disguise inequalities such as BK's or MF's attempts to place themselves as first among equals. We should be alert to the power differentials and inequalities that continue in such communities, without necessarily questioning the sincerity and value of the knowledge sharing culture around which they are built. Further, BK actually denied that such collaboration was specifically associated with the web (BKII 94-104)

CM was another individual who, from a position of relative weakness (with only one part time assistant), was trying to influence others around the institution. As part of this he weaves

a subtle discourse that constructs a general common good (accessibility) in which everyone could be working for a common cause within the institution and beyond, which both masks his more controversial role in the marketing agenda and in which he, as an accessibility expert, has a central place.

> I'm really trying to get everyone to work together, get the synergy going of if you're doing something that might be useful for the whole university, why not kind of share that kind of knowledge with everybody. Can we all not just get along kind of thing. (CM26)

Thus when asked about trends in the web, he stressed the impact of legislation (he mentions SENDA and FOIA) forcing institutions to take web publishing more seriously (CM26). His own responsibilities included protecting the institution from falling foul of the legislation (CM10). He also added as a factor a growing understanding of the value of the web for marketing. But it was as if marketing rode on the back of the accessibility agenda. CM often elides accessibility and (the more controversial) issues of compliance to corporate identity (eg CM10). This may be less to do with masking centralised control with a palatable surface, more that he is himself also comfortable with the social good that the accessibility agenda represents (it is "doing the right thing" (CM27)), uncomfortable with the commercialism of the marketer. He often catches himself uncomfortably when he finds he is talking like a "marketeer". One senses, though, that accessibility is primarily attractive as a form of technical expertise, legitimated by its social good, rather than his being directly motivated by immediate social concern. The contact with the beneficiary of improved access is too distant (compared to NF who is married to a blind man) so that problems of access become knowledge that empowers himself as an expert intermediary. The concern is with this rather than a specific individual user's issues, that they would own in a participatory design process. For, in fact, his own expertise in accessibility places him at the heart of the community he advocates.

It is significant here that such a community of accessibility has few boundaries and extends beyond the walls of the institution. It breaks down divisions in the university, one of CM's key problems. This inclusive purpose was mirrored in his very way of talking. He was distinctly garrulous (he commented on it himself (CM36-8, 114)); he demonstrated less the quiet but intense expertise of BM or the controlling persuasion of EM, producing more a meandering ("rambling", "circling" (CM25)) discourse that elided concepts, reworking ideas with inclusive intent. He is aware that this inclusivity risks being seen as too idealistic, too "hippie" (CM116).

6.7.2. Centralisers

If those who were in a position of primarily trying to influence others seemed to be strongly orientated to wider networks across institutions, it would seem equally that those who were in a stronger position of control were often low participants in the cross organisational community. Thus GM, though he made relatively little of the point, said that in his Further Education institution he and his team controlled everything that went on to the web (GM7), so there was no body of distributed web authors. A central dilemma for his HE colleagues was not present. This must partly explain a different mentality that separates him from IWMW.

Of all the interviewees QM expressed the strongest desire to control both the design and content of the web site, linked to the marketing message (QM37,**115**) and technical and organisational arrangements that made this possible. This had ramifications for relations with web authors. Each department had a web author writing content, but training was limited deliberately so that the more complex applications were done by his team (QM27). The guidelines were a satisfyingly "hefty tome" (QM37) and enforced to the letter (**QM115**). This level of control was facilitated by a very clear differentiation of his market orientated site from the staff and student intranets and VLE which were run completely separately by others (QM37). Ultimately he could pull the plug on things that he did not like, though he had never actually done so (QM43). It was also significant that he had a large team of specialists working for him. He frankly acknowledged that many people objected to the level of control (eg QM27). Such centralising tendencies could be linked to his level of cross organisational activity. Whereas MF's job of political influence seemed to require her to have a networking attitude and would encourage her to see colleagues beyond the institution as potential sources of information, QM was more obviously focussed on a regime of control, which might make networking seem less of value. Of all respondents he used the word "we", meaning his team, most frequently, implying a world centred on his own team (Table A11.7). As a centraliser QM was a low participant in IWMW, though there were other factors as well.

6.7.2.1. KM, the centralist

The analysis of non participation being linked to centralism fits KM best. A key aspect of KM's strategy was to reengineer who controlled departmental web sites: by taking the technicality out of web publishing the CMS would put control into the hands of managers rather than local enthusiasts, the "hobby farm" (**KM69-76**). He was unapologetic that this might threaten the roles that such people had built up for themselves: it was justified in terms of a form of business rationality (**KM74,76**). The conflict is a "change management process", i.e. rationalised within a recognised professional discourse (**KM76**). There is a logic that if he

was in a struggle against the local "hobby farm", he would equally be uncomfortable with similar characters in wider communities, so that influences his involvement with such cross organisational groups.

There were several ways in which how he talked reflected an attempt to construct a divide from the amateur. Like BM and EM he constructed a form of business process discourse, thus the words he uses to talk about the CMS are: "business process... controlled... workflow...authorise...maintain...business tool... regulate... formal" (**KM70**). So as an alternative to the "disparate, informal and unregulated" web he was constructing a formalised bureaucratic business system. The web is "just another business system" he commented (**KM76**). Further, his strategy was also linked together under the term Knowledge Management (a current management buzz word). Objectified as Knowledge Management his approach was more than just a contingent strategy, it is presented as grounded in rationality, underwritten by current management thinking. The essence of his account of Knowledge Management was the promise to quantify the value of the university's knowledge (KM55). UM was the only other interviewee to even aspire to this quantifying level of rationalisation (UM93).

He often also talked in terms of moral or perhaps rational necessity: this or that "should" be the case (KM35,78). Thus commenting on marketing, he said:

> But we have had to redefine the roles and help them to become aware of what their real role should be in web service delivery. (KM35)

His interpretation of what marketing's role is, was constructed in terms of being what it "should" be. This justifies his attempts to rationalise and formalise, to control others.

He also linked together professionalism and commercial experience. His own team has a solid commercial background (KM63) (actually his own was all in the public sector, though over a long period (KM7), and rather uniquely among the interviewees in multiple postings in different universities (KM9-13)). They are professionals. KM is keen to distance any connection with the amateur, and stress his team's own professionalism: their specialisation, track record, even if this is not actually underwritten by actual professional membership (points which are further explored in 5.13 below).

Again he described the history of the web as the move from the hobby horse web designers, then a marketing tool (in "some dreadful pdf type thing") then a business system (KM59). So he warrants his position as a historical inevitability.

Thus KM taps powerful ways of talking that create a sense of commercial necessity, moral/rational compulsion, professional and historical necessity. His very precise, measured way of talking reinforced the sense of certainty.

Underwriting this centralist approach, KM had a strong team, that had been together for a sustained period. This interview produced one of the highest counts of the use of the word "we" (Table A11.7). He talked of management by consensus and there was a strong division of labour in the team. He also talked warmly of relations with others parts of the IT service (KM33). It is a holistic service (compared to CM's sense of fragmentation, discussed below 5.13). So in one sense he and his team were well resourced to provide for their own knowledge and support needs. There would be less need to draw on information from wider communities.

One can see how this way of talking fits ill with the enthusiastic, still somewhat amateurish, "academic" sharing in the community, particularly in WS. Even the more management orientated elements of IWMW seem slightly amateurish in comparison. Not surprisingly therefore, KM's comments about the community were dismissive:

> **Interviewer:** Is there a particular reason why - you say you don't involve yourself in that
> **KM:** I suppose I can put this on your machine. I've got very little respect for the majority really. Blazing arrogance, but there it is. I look around at what other people are doing and most of it is diabolical. And so I'm not really interested with aligning myself with with the hobby farm people - who continue to work in this kind of stuff. So what I do is align myself more with information professionals. (KM107-108)

Yet this creation of a division is not only talk. It was apparent from the discussion of accessibility that his group have invested a lot of effort into working out what accessibility means and taken a very grounded approach based partly on user studies (KM90-103). Even here, though, the motive was less accessibility as an ideal, it would seem. The thoroughness of the approach was partly motivated by the potential threat of embarrassment, since a major study of university web site accessibility was being run by another section of their university. It also focused on documentation as proof of intent to be accessible (KM93). So it is a "professional" approach, thorough, documented, to be distinguished for them from the typical amateurish university approach, but also a far cry from NF's very personal concern with accessibility.

There are some paradoxes and contradictions in his position. Ultimately perhaps he goes a step too far into business logic, thus when KM talks about a "toned professional feel" (KM83) to the web design as part of their "business profile" (KM84), one can see how well that would play politically within the administrative arm of the organisation and within the IT department itself (if McCombs (1998) characterisation has general applicability). One wonders, though,

what students might feel about it. BM is much more careful to take the edge off the business logic with talk of user needs (BM21).

Again, it is interesting that although the web is construed in terms of a sort of business/techno rationalism, equally the moral quality of belief (the missionary zeal to echo BM's idea of gurus evangelising the web BM7) is tied to talking about being passionately engaged with work (KM210).

> And we are both very passionate about where we are going and both very passionate about getting a portal in place so that we can be delivering individually tailored information to individuals. Because I think this is really really where the future lies. (KM210)

This talk of passion, also evident in the interviews of BM and EM seems to be a strategy to offset the potentially dry quality of the rationality of their policy, yet leads to such solecisms as BM claiming that "People care passionately about [...] the benefits it can bring [...] such as efficiency savings" (BM72).

KM found that:

> You do get - exactly - you do get a strange intensity of dedication in certainly in this area. More so than I have experienced anywhere else, including the health service, you know, where people work long hours and are totally dedicated but the intensity to keep up with what's going on and enhance your knowledge is quite phenomenal certainly in web design and in IT generally. (KM154)

It is interesting that the intensity is linked specifically to maintaining knowledge, keeping up to date. For KM though this is done in a way disconnected from the IWMW and WS spaces. In a sense this dedication to self learning (KM143) and knowledge legitimises control (as much as the actual knowledge it produces). It is to be distinguished from a credentialist, professional type of claim to know abstract principles. But ironically most of those who used a similar argument that being self taught gave them a visceral, emergent connection to the technology were the type of hobby farm people KM would probably disapprove of (TM13,FM90,NF13,QM5).

There was an irony too in his perception of this dedication and his liking for the freedom of academia (KM15) and dislike of documentation (i.e. formalisation) (KM17) when he was generally dismissive of most of what academia was doing on the web and the whole thrust of his strategy was to formalise and control.

There was a sense that KM was in the most extreme and controversial position that effectively set him off from the rest of the community.

Although very like EM and BM in outlook and use of language, the possibility of using the CMS to directly control distributed web authorship seemed to underlay the distance KM

attempts to construct with a wider community, for example as represented in IWMW. In some senses this is surprising if we see IWMW as representing IWM's aspirations to become professionalised. If this were the case the centralists might be the keenest participants. This suggests that IWMW is probably more positioned in the space of preserving the first ideals of the web, than offering professionalisation of an elite group.

6.8. Common information needs

A broad common challenge and environment give rise to somewhat common information/knowledge needs across those working in web production. Thus there was potential common ground in a need to keep abreast of changing technology and legislation, for example. Kotamraju stresses the need to keep up to date with technology as a primary feature of pseudo professional spaces around the web (2002). Logically for there to be a need for sector level organisation there has to be sufficient sector specific aspects of a problem to make this level of discussion worthwhile. For many technologies it might seem that issues are the same wherever the application is, hence the strength of non sectoral support groups, eg the best place for support about linux or javascript were not HE specific. Again new legislation such as SENDA or FOI had general implications.

However, certain issues did seem to have a strong sector specific character. The CMS fashion in HE seems to be linked to the sector specific challenge of managing many distributed web authors, and the debate of buy or build (McAleese and Rankin 2003) to relate to sector specific resource issues. The portalisation movement in HE seemed also to be a somewhat sector specific development, if less obviously so than use of VLEs. Again the impact of accessibility legislation was a general issue, but there did seem to be sector specific aspects. It would seem from GM for example that a concern with issues of accessibility was a long standing preoccupation in FE, often dealing with major disabilities including learning difficulties (GM43). Accessibility in HE was often linked primarily to dyslexia; the issues were generally less familiar. This may point to some common ground across HE.

Certainly sharing information about new technology or legislative requirements were central to the IWMW. EM was central through a distinctive stand on CMS and his management of a portal project, portals being the most fashionable IT innovation of the moment. The knowledge sharing needs arising from this was the basis of many informal contacts with colleagues at other institutions (EM72). He was also being invited to speak at many conferences, more than one a month (EM74). He said that he always went to events as a speaker seeing this as the most effective way to engage with others (EM74). The other side of the coin was expressed by HF, who focussed on personal networking opportunities created by

conferences; this chiefly involved approaching someone after they had given a speech, and trying to establish a relation with them. The example she gave was of CMS:

> And ask them what the pitfalls are and what their experience was and - you know - get people's opinions about different products and things like that. You wouldn't necessarily take somebody's advice as is - but its been enormously helpful for us to have that as background to call on. (HF 41)

Innovation is a key focus of knowledge sharing, not surprisingly.

However, for EM the stress seemed to be on giving out information rather than obtaining it. They themselves only had some specific technical information needs (EM70), he had the answers to "anything" that might arise in debates about the strategy, he said (EM73). So the contacts do not seem to have been primarily premised on seeking out information, though it is clear that he is learning something, perhaps about how to sell the policy. If information gathering is backgrounded, it is reasonable to hypothesise that his community activities help to legitimate himself locally. Invitations to speak were a form of proof of the validity of what his team were doing: it was being recognised as "best practice".

If common information needs arising from innovation were common ground, there were also those whose information needs were somewhat divergent from those realised in IWMW. AM (49), MF and SF (both off tape) all expressed some scepticism about the applicability of many fashionable or once fashionable IT developments to their institutional context. Thus AM's decline in participation may be linked by the decision not to go down either the portal or CMS routes. Again, QM was not greatly involved in systems level development and implementation (QM41). He saw IWMW as for those working at that level, and therefore irrelevant to himself.

GM saw HE's whole approach to IT as different from their own. Although he had a long history of involvement with technology and had written a short history of this experience in the college, GM distanced himself from the technical aspects of the web, as such. Indeed, the point of the paper was to differentiate the pattern of experience of FE compared to HE (see also GM19).

> I love technology - but I love what you do with it - rather than what it is, for its own sake. (GM49)

He saw the web as a communications tool, whereas the people at IWMW:

> [...] predominately I would say the people there are programmers - and I don't see myself as a programmer - I've always thought of myself as a communications person - and this is just the latest tool. (GM39)

He portrayed HE's technical focus as odd and sterile. Thus the labels he used to describe their approach were: that they were mechanics (in the sense of car mechanics as opposed to

drivers), concerned with "the beauty of the technology rather than the content", "scientific", "clinical" (**GM39**). He suggested that this orientation was linked to their teaching the web (perhaps a misperception for in fact none of the HE interviewees were teaching academic courses on the web). Again, he saw WS as dealing with issues that were "a bit esoteric, they're a bit sort of aesthetic bordering on irrelevant" (GM89). His team, in contrast, were more user focussed, though he hedged this claim (**GM39**). They themselves were more authors and designers than the technicians on WS, for example. (GM91) Critically he thought the difference arose from the fact that FE just bought in the latest software, it did not try to develop its own systems (GM37). But also these arguments constructed the differences within a recognisable discourse about the general difference between HE and FE.

The very diversity of attitudes to IT summarised in Table A11.11 suggest a weakness of community, in the lack of core common values.

6.9. Liminality

Zabusky (1997) argues that technical specialists are marginal to the university because they have a greater loyalty to their technical community than organisational values. It has already been argued that actually in the web arena external loyalty may be quite weak. Also the logic of some of the involvement that does occur may be more or less the reverse from that suggested by Zabusky. Locally isolated because of where they sit in the organisation or being new in post they seek wider networks with similar isolates to do collective work with the purpose of trying to decrease their *local* isolation. Community activity is a response to isolation, directed at reducing it, not a cause of it. It is also different from Gornall's (1999) conception of the liminality of the new professionals, because it is a position of weakness, rather than linked closely to organisational change desired by senior management (p.48; see also Oliver 2002, p.245).

Thus a major factor in UM forming a regional group seemed to be the lack of knowledgeable people locally (UM69). This claim might be literally true, but also it may have been that as a newcomer to the organisation he may not yet have established ties. Further, he was not in an IT department and had just one other technical colleague. So there was a sense of isolation arising from this. He stressed the value of talking to others across other institutions even if they were "behind" what one was doing locally, the benefit of "stupid" questions (UM73).

CM was also relatively isolated, in the sense that he too was a techie orientated person in a marketing department, with few resources (only a part time assistant (**CM22**)) and the only

male in his department (CM86-8). This may explain his stress on the value of support from IWMW over information.

> Despite all the technical discussion, despite all the hints and tips and best practices, the one thing that really kind of struck me, not having experienced it before was really the kind of camaraderie if you like, just getting out there, and actually seeing people in the same position. And knowing that - again sounds very kind of - you are not alone. (CM58)

AM (35) and RM (77) also referred to the idea of feeling one was not alone. GM also seemed to be attracted to the community by a sense of isolation (off tape), but other factors repelled him. Thus the value of the connection may be less to do with sharing information than sociability.

These themes echo aspects of the role encapsulated in a speech by John Slater at IWMW1999 where he summarised the web editor position as:

- Techie, sometimes with suit
- Misfit
- Crawled out of computing, ed. Tech, a dept
- Academic qualifications - sniff
- Young
- Low management span
- Professional (Slater 1999, slide 3)

BK stressed the political vulnerability of web managers, seeing IWMW as a place to moan, for "counselling," therapy (BKII38-48, BKI25). The points also echo the concerns that AM, BM and IM remembered from the early years of web management and lay behind their creating WIM and forming a London self help group respectively (AM74,IM48, also SF85).

> The reason we started that was because I started at [Institution name] and became very aware very quickly that I was without a peer within the institution – so I was completely isolated and completely alone – I needed some reference point externally with whom I could share information and in a sense get to this thing we always talk about best practice. (BM43)

The quote conveys a sense of isolation from being the first, but also from being ahead of the field. However, he sees these as a problem now in the past, since the web had started to be "taken seriously", meaning less sense of being misunderstood and more local peers to talk to (BM7). AM seems preoccupied with local contacts now and his participation in the cross organisational community has dropped. SF too had seemingly found out how to do the job and lost interest in attending IWMW (SF85). Actually many of the interviewees now fit the Slater profile rather badly (Table A11.18). Success in winning resources had opened up a gap with newcomers and those who were still struggling in a liminal position. However, as the example of UM shows, the issue of organisational liminality remains a recurring issue, especially for newcomers, and it fuels some activity in the cross organisational spaces.

To complete the picture it will also be argued that there is a reverse logic of those who are successful locally having high status within the cross organisational community and

newcomers having low status, despite what has just been argued about their greater need for the extra resources.

6.10. Diverse roles

A major defining factor in cross organisational collaboration was the diversity of individuals' roles, organisational position and self conception. This is not in itself an obstacle to community necessarily: the diversity gives a potential richness to interactions in reworking the professional practice. However, it also creates competing professional loyalties and divergence of "occupational socialisation".

A way to explore this is to define a prototypical position of a web manager, emphasising the IT orientation, consistent with IWMW. This would suggest that a model IWM would:

- Have an IT background
- Work in an IT department
- Have a clear definition of role and strategy
- Have a trajectory into IT management
- Be a manager of a large specialist web team
- Be a manager with few specific technical responsibilities
- Work exclusively on the web
- Be successful in winning resources for largely technical innovation

Many of the individuals did not really fit the "institutional web manager" model. Only EM, KM and, historically, IM really fitted the model very well. Yet it seemed that a close fit with this tended to lead to participation in IWMW, given its IT focus. EM is central to IWMW in 2004 partly because he fits this model so closely.

Particularly critical was the diversity of technical responsibilities individuals had. In a context of lack of professional socialisation, this cut against occupational socialisation - or rather fragmented the common ground created by the shared challenge.

The underlying cause of the divergence from this "ideal" of formal professionalisation was, firstly, the diversity of HEIs themselves, and in their needs from and investment in the web

which resulted in diverse ways of organising the web. A second factor was the easiness of the web, which allows people of diverse technical ability to participate. A third factor was the very diversity and changeability of the potentiality of the web itself, which opens up multiple development paths, towards informational publishing, marketing, e-learning, reengineering of business processes etc. Doing the web is a multidisciplinary practice, practised in conditions of rapid external change, surging user demand and limited resources. Having limited resources each institution (and individual) makes somewhat different choices, leading to diverse practices. It is part result, part cause of the failure of professional organisation of knowledge in this space.

UM saw the group as on the same development path, but because of differential resourcing very spread out:

> From what I've seen of other institutions and from speaking to folk in similar roles to myself, erm the spread across the sector of what folk are doing probably spans a couple of years. So I'm six months, 18 months behind the folk at the front and there are folk 24, 36 months behind me. (UM45)

This quote implies a collossal divergence; in fact, he did not think the sector had a position (UM45). Many of the interviewees tried to construct a sector position or trend, because it could help legitimate their own policy. Thus off tape UM commented that it was useful when supposedly lesser organisations were doing good things, as this could be used as material to pressurise his senior management to give him resource to keep up. Yet it is clear that any such description was only a claim, and usually used to present the individual making it as at the cusp of development.

6.10.1. Backgrounds

In a fully professionalised space (such as medicine) practitioners have somewhat similar backgrounds (eg degrees) and go through a formal professional socialisation process (in medical school) and "organisational socialisation" process (on the job) in organisations where work is similarly organised because they are heavily disciplined by the formations of the profession. In contrast here, in a group with low professional organisation there is no explicit socialisation process (though the Netskills organisation was just beginning in 2005 to develop accredited courses, (Netskills 2005)). Informants' backgrounds, eg degree training, were diverse (Table A11.12). UM described his background as "twisted" (UM11). Again, from the way she said it, it seemed that MF expected the interviewer to be surprised when she said she was a zoologist (MF10). To a certain extent this was construed as a positive strength, linked to the very medium itself:

> [Christian name] has been part of webmaster for the [university name] Computer Service for the last (more than) five years, running the main University web site and keeping an eye on

> the other 254. A zoologist, mum and carer of ancient buildings, who worked in publishing for ten years before coming to computing, she represents the epitome of diversity that almost matches the web itself. Only cross-browser solutions are allowed! (UCISA 2000)

HF saw her diverse range of previous experience as appropriate, because the job itself was inherently varied (HF13). EM too saw his background in marketing and IT as hybrid (EM17-18).

Interestingly, if there was no professional socialisation process, MF thought that there had been a collective learning process in situ:

> **MF:** [...] things like information architecture, which is very difficult to learn. Because its hard to find anybody who can tell you about it.
> **Interviewer:** Has that been a collective learning process, or?
> **MF:** Yes I think it has. Because we've got - the UK higher education webmasters meeting that runs every year. (MF66-68).

However, only MF explicitly expressed this view.

Those in more professionalised roles tended to construe their background as highly appropriate, eg through serious IT training and long experience in pioneering internet institutions (BM17-19) or a series of roles in different sectors (KM9-11).

6.10.2. Organisational location and trajectories

On the whole in a professionalised occupation one would expect to find professionals located in similar organisational positions (eg librarians in the library). In the web domain, as Table A11.13 illustrates, there continued to be uncertainty of where the function should sit, in particular whether it is in IT or marketing (EM103). There was also a difference in where it sat in IT, for example EM and BM were in MIS, others in core IT, others still in separate units broadly under the information services banner (SF23). The fact that AM was in registry gave him a different perspective (AM25) - an ambiguous position between IT and content (AM13-17) - and may partly explain his declining participation in the community.

A commonly identified problem was that there was no career progression as such for web people inside the organisation (UM55). This is possibly a general problem in HE, because of the way it is organised as a series of specialisms (VM98). Equally it is a common organisational problem when dealing with specialists to construct satisfying, appropriately rewarded career ladders (Roberts and Biddle 1994, Petroni 2000).

Yet, as an evolving technology, the web seemed to offer to some an expanding career over time, in a way that skill in one particular computer system might not (though DM had made an organisational niche for himself through specialisation in Mac support). This seems to be how AM and BM had progressed and UM and CM hoped to move (Table A11.15). For SF

this route had dried up, but all these individuals fit Gornall's (1999) new professional model quite well and were effectively creating a career out of the expanding possibilities of the technology.

It was surprising how little movement between institutions was observable. Thus AM, QM and SF had joined their institution after university, made a career out of the web, but never worked anywhere else. GM,RM,OF,TM had had very long term careers at one institution. In a sense their role had evolved to suit them, eg RM6,32,151 or TM (see 5.16 for discussion).

Only BM, IM, KM and VM had moved much between HE institutions, and even they had only worked at two each. It is probably significant that three of these were based in London, so that a move was possible without a geographical shift of their home. This is in contrast for example with academic disciplines, where it is common to move between universities (eg Tomlinson 2002). This is partly what builds the network, so the seeming lack of mobility between institutions could be associated with the low growth of community. Low mobility could be partly connected to the failure to create a widely understood expertise that was a pool into which employers could dip; rather the role was different in different institutions. Thus there is a form of closure, without professionalisation.

PM and UM had moved laterally across sectors, but also shifting sectors. They were probably the youngest interviewees. Again only EM had himself moved departments within one university. These features suggest an orientation to the local institution far greater than to a community or space beyond the institution.

6.10.3. Occupational trajectory

Table A11.16 illustrates the diversity of occupational trajectories among interviewees.

EM or KM had a relatively clear cut trajectory towards IT management, from within an IT department. In contrast VM, PM and QM essentially saw themselves as marketers. VM was an out and out marketer with membership of CIM. PM was more at a formative stage, but was not in a trajectory towards IT.

> I was thinking about this the other day - when - I used to say I worked in PR - not for this particular job. And then I changed it - when I got this job - for working in IT. But actually now I'm thinking of changing that again (laughing) - to working in marketing. Or even sort of IT marketing or something. (PM19)

QM had no training as a marketer, but welcomed the increasing integration of the web as a technical skill into mainstream marketing (QM117-119). For him, for example, it would seem the Heist award was partly valued because others in his department also competed for it, so it

had a potential to legitimate him as a professional marketer, and break down the perception that they were "the odd people in the corner" (QM119).

CM and UM were in the slightly more complex position of being a "techie person in a non techie organisation" (UM61). Both were in marketing departments but presented themselves as IT people. Although CM had training in graphic design, he backgounded this to stress his technical skills. He was highly technically competent to the extent of claiming to advise the local computing services not just on what software to install but *how to install* it (CM4). Critically this took him beyond what he thought would be conventionally expected of a "normal web editor in marketing." Thus he puts some distance between himself and marketing. He frequently stops himself for sounding like a "marketeer". Everyone referred to him as webmaster, he said. He is happy to claim this technical sounding label.

UM also construed the job as clearly technical. Several times he assumes that the job is correctly an IT role (eg UM77). And he said of himself that he really liked "doing boring code stuff" (UM53) and having boring conversations over a beer with people who really know what they are talking about (UM17), though he had an understanding of the need to talk to people at their level, not shutting them out. While he was keen to present himself as a techie, marketing was backgrounded. So his objective is greater "cohesion", as a form of rationality. Although the need for a more coherent site was often a marketing argument, here it was cohesion for the sake of it. He often returns to the notion of reuse (eg UM35), as a form of coherence abstracted from centralisation for a marketing message. Further, he constructs this as the core of the notion of professionalism. Professionalism to him is "just" about creating a unified site, which is "nothing involved" - so a simple rational unchallengable good. He often talks in a way to deflate complexity, and present everything as simple (Table A11.17). The marketing message itself was backgrounded. He was seemingly quite surprised when the interviewer suggested that more control might mean more marketing material on the site (UM32). That would not play out well politically.

> We are not intending to put more marketing material on, but we are intending to make the marketing material that is there better, more consistent, and look to reuse it, so if it's on the web site and it's generic to external, it could appear in a departmental leaflet, it could appear in a prospectus. That type of idea, but we're not intending to go on an all out marketing assault with the web site. Folk won't like that. (UM35)

Ironically those in IT departments often spent time distancing themselves from the techie label. BM, despite his technical background and orientation (Tables A11.12, A11.11) and the continued sense that his way of talking constructed him as a "guru" (Table A11.17), was adamant about distancing himself from the label of techie (BM76). He saw this label as dangerous, in a world like academia where "perception is everything", without saying

specifically why. As he continues the argument it is generalised to a concern overall with image:

> If people get the wrong idea that's it. You've got to ensure all the time - and it's one of the things I've learned from the people here at [Institution Name] - you've got to make sure that people's perceptions are being influenced to be as close to the truth as possible. (BM76)

Critical to OF's non-participation was her disidentification with the technical aspects of the job. Thus in marked contrast to BM or FM with their claims of early involvement with the web as pioneers, her initiation is random, even threatening.

> **OF**: So I had my first introduction to web was when I was on maternity leave and I came back and who'd been covering for me had put all the staff training stuff onto the web.
> **Interviewer**: Oh right
> **OF**: And so I had a quick learning curve or a steep learning curve. And then that's how I first started getting used to the web. And then the web administrator took a secondment and I just fancied a change so I moved across. (OF9-11)

This is almost the other side of CM's story of how he joined his own institution (CM8). For OF the web is something "to get used to", rather than something she strongly identifies with; her motivation is not deeply rooted, she just "fancies a change". It was a "sideline" (OF7). She saw this job as essentially work, with little spill over into her life (**OF23**).

> But I'm not a technical person by any means. Which holds me back in some ways, but er. I'm just not interested in pursuing that side of things. (OF53)

Her lack of technical orientation was a recurring theme.

> I just don't see myself as a computing type person. I'm a non-technical person. I'm very much a user person. (OF82)

She saw herself more as a trainer and staff developer (OF183).

Equally, in personal terms, her climb from a typist without qualifications to a manager in a university was a tremendous achievement, justly celebrated on her web site set up to inspire others by showing what was possible (OF173-5). Her disidentification with technology was ironic, though, since her progress was consistently closely linked to supporting computerisation.

SF's position was particularly interesting because she had consistently resisted both being a marketer and an IT person, seeing her role as an "information" one, associated with librarianship. Thus she had refused to be in the marketing department, and did not regret that.

> [...] I mean it definitely is marketing in some things, but it's not a marketing position. Erm it bridges many things. It's primarily about the management of information in my opinion. (**SF21**)

Since a recent university reorganisation, relations with marketing were extremely strained, a problem she returned to repeatedly. She saw them as not understanding the web or understanding it only in terms of visual design. They could not be communicated with.

> I mean you can talk to external relations sometimes till you are blue in the face and you still can't get across a very simple point [...] Er and plus because they are a new department, a new directorate they are trying to make their mark on the institution essentially. So it's very much kind of a bulldozer approach to me [...] (SF29)

So the relationship with marketing was tense, with them denying her expertise (see also SF65-67), out-sourcing, bulldozing her.

Equally she resisted the identity of IT person ostensibly because IT people did not get promotion.

> I have spent most of my time trying to get out of the mould of being an IT type person...Erm but I don't see myself - and my background was never computer science. I've always tried to steer clear of that. Although I do see my job as having maybe 10 percent of IT type activity. I wouldn't class doing html as being IT to me, it's not. It's an information thing to me. (SF95)

Yet it was not clear what this actually meant in practical terms. She talked about aligning herself, being "equated with" (SF21) the library and computing, and she thought that the relevance of professional knowledge in the library, eg about copyright, was not generally appreciated (SF171). But somehow this aligning action does not work as a form of legitimation by association.

For an explanation of this we can turn to a separation BM talked about between the library and web people. The latter could themselves create information sources with few resources, whereas librarians acted as guides to pre-packaged information resources (BM78) and tended to need a budget to do anything (BM 80). The cultural difference remained (somehow), even though at other points in the interview he was claiming now to be a manager of resources himself. Whatever the abstract possibilities contained in information science, realised as the academic library they had not made it a plausible place for web to sit. The last 10 years have seen a realignment of libraries (at least in the eyes of librarians) but their image is still tied to buildings, physical books; it certainly was at the critical point when the nature of the web was being decided. RM portrayed the library as technically conservative (RM66). There was no worked out explanation of what the web as information science might mean.

Whereas she was not active in IWMW or WS, SF was, in contrast, a member of a professional body, CILIP. She volunteered the fact that she kept up links with colleagues from her library course as well as colleagues in the library service locally (SF167), whereas it appeared that she was out of touch with other web managers. She had known some in the past, but they had moved on (SF75). She saw professionalism very much in terms of CPD within the CILIP framework - even though this could be seen as quite a low level challenge, compared to her management position - and despite the fact that evidently it did not really carry weight locally:

> I didn't care so much about this institution any more, whether they recognised it, you know it was something I wanted to achieve. (SF103)

Clearly the attitude was linked to her general disillusion and the fact that she was thinking of a career change (SF53). This was accompanied by a sense of lack of energy: "I plod now" (SF85). Disidentification with the institution and with the professional community went hand in hand.

For SF, seeing herself as a librarian was not a helpful professional identity. Nor does it solve her individual problem, since her experience did not give her easy access to traditional library jobs (SF169). In fact, the story of her becoming a librarian itself seemed somewhat random too (SF13). She was in the position of having drifted or been forced away from any solid identification (SF53) into a strange limbo (SF122).

So whereas in a unified professional field there might be a range of classic trajectories, in web production positioning was more complex, often out of the specialism towards more mainstream professional positions (as QM) or cutting against their actual organisational position (as UM). This was revealed in quite diverse core conceptions of the job, values about IT or content (Tables A11.16, A11.11).

6.10.4. Seniority

EM saw himself as a manager by training and position:

> I consider myself a professional manager of the service and an IT professional in that context. (EM24)

For the interview he was smartly dressed in shirt and tie, and another interviewee said off tape that he had been ribbed at IWMW2003 about his expensive suits. So he was in classic IT parlance, "a suit" (eg Browning 2002). Portraying a sense of seniority was perhaps part of a persona that helped legitimate his strategy locally. He himself linked the dress code to being professional, business like (EM38). He had a range of specialists working for him who did the hands on work, and he continuously drew the key personal boundary as being between himself and the practitioner (EM22,24,96). In this sense he was the classic web manager of a web team. Only IM and KM were or had been in similarly out and out managerial positions. AM, BM, GM, HF, QM were in the process of working through the dilemmas posed by moving into more and more of a managerial role, while continuing to have technical roles of various sorts.

CM, MF, PM and UM had no or only a single part time assistant. Their role was not primarily supervisory. PM still talked about managing a web team, but in fact the "team" was a

committee made up of departmental web authors, over which, clearly, he had no direct control.

RM also talked about a web team, but this was a number of specialists spread throughout the IT department (RM28). They were not a team as such. He did not supervise them. Rather he was a project manager, including for the CMS, and only from that having involvement in the web. Thus even where there was a large "web team" there might not be a coordinating "web manager" role as such. This trades on the ambiguity of the concept of management and the need to present everything as managerial, as CM commented in an aside:

> I do dabble in the management side - just because you have to - in a very managed, very structured environment - if you are not appearing to be a manager you don't get anywhere. (CM64)

So success and status within the community is linked to wining local resources and moving into management.

6.10.5. Roles

Among all the interviewees there were only two who had the same job title (see Table A11.13). Almost invariably interviewees also qualified or distanced themselves from their current title as not really capturing the nature of the role (eg SF8-11) or reflected on the arbitrary way it had come about (eg MF6). Lack of standardisation of titles is common in IT, but one would expect more convergence in a professionalised space. One professionalising project IM imagined was standardising titles around web manager (IM95-7).

More fundamentally an examination of interviewees' self descriptions and of their roles shows that there was a very strong sense of markedly different conceptions of their job (Table A11.16). The more detailed list of activities mentioned as part of the job also reveals a wide range of roles (Table A11.14). Table A11.14 does not purport to systematically establish varying job content (this would have been best discovered through observation or at least more systematic questions in the interview or a questionnaire) but does show diversity. This would potentially cut against an occupational socialisation effect. Roles commonly evolved to gradually marry personal interest and organisational need.

The range is very wide from EM and KM who saw themselves as managers with a strategic role and few technical tasks, to MF who saw herself as an ambassador influencing others and having various roles such as trainer and IT documentation and CM's sense of fragmentation in many small responsibilities.

The rest of this section examines two accounts that reveal the complexity and uncertainty that continues to characterise roles in this space, in contrast to the relatively clear position implied by the concept of "institutional web manager" and embodied in EM.

6.10.5.1. BM on a complex occupational identity

Rejecting the techie label, BM developed his own rather complex and unique account of his role (**BM25**). While later in the interview he talked about members of his team fitting into relatively clearly defined, known specialisms (BM45), his own role remained a problem to define. His account offers an assemblage of elements, the parts of which, on close inspection, seemed problematic. Thus he summarised his job as combining a web specialism, business analyst (of increasing importance), editor, some sort of information specialist role and project manager (**BM25**). He did not use the term web manager.

BM stressed the need for any definition to "anchor itself in existing titles", presumably because it needed to be understood by others (locally), to legitimate him in their eyes: hence he linked the point of the labels to going out around the university (**BM27**).

Yet several of the labels he referenced were not transparent. Thus editor was glossed unexpectedly as "a junction point" - like a connector (cf. HF's notion of a translator, see the next Section) rather than simply a proof reader, say. There was even more apparent ambiguity in his saying "information scientist, the information professional, information specialist whichever term you prefer" seemingly offering to be whatever the hearer chose. The ambiguity of the information professional element was further demonstrated in that although he saw himself as an information specialist of some sort and was a member of CILIP, he rather distanced himself from librarians in the stories told about web development. In a further complexity his role had expanded into non web areas (BM21).

Thus his attempt to define his own position in terms of known roles is problematic, both in terms of the lack of transparency of the elements and the number of points referenced. He attributed the complexity of the assemblage to the complexity of the organisation, which forced one to be adaptable, somewhat "chameleon like" - though distinctly he did not want to be seen as "a jack of all trades" (in contrast to CM who admits this), which might imply "all things to all men", suggesting bad faith, duplicity. Thus he connects the nature of the job and the uniqueness of local conditions as a factor in the configuration of the role and so the identity. The logic of this is to partly disconnect him from the cross organisational community, since his position is unique. Yet, in fact, he saw himself as "pretty typical" of people doing the web in HE.

In yet a further layer of complexity, BM's description of his role at this point focussed on an assemblage of technical specialisms, forms of expertise, but he also sets this against his managerial role. One of his first answers goes further in claiming to have moved from expertise to management.

> So: the role has changed from one of being an evangelist in a sense and a do-it-your-selfer to a manager in the strictest sense, of somebody who is trying to acquire the resources and control the resources to provide the business benefits to the institution. **(BM7)**

In other places, though, his sense of the balance between expertise and management is more subtle **(BM33-37)**. Like others he was concerned about potentially being disconnected from specific expertise (AM11, CM40, HF31, QM21, RM147, UM57). But for BM it was not a straightforward disconnection. He perceived there to be a pendulum which was swinging backward and forward.

> I now appreciate that the big problem is that one can't effectively in this context manage without a knowledge of the actual technology. **(BM33)**

He thought it possible to sustain a position of being "an expert with managerial skills" (BM37). This was in contrast to EM who presented himself as an out and out manager, celebrating his disconnection with the practitioner.

It is a subtle, individual reworking of the classic technician's dilemma of promotion leading to pure management (Roberts and Biddle 1994, Orr 1996, p.67). Again the novelty of this formulation among the interviewees is probably linked to the novelty of BM's own position.

6.10.5.2. HF, "the inbetweeny"

HF said that she saw herself as an "inbetweeny" between journalism / the content people and IT people, though identifying more strongly with IT, and there were continuing tensions with marketing as an organisation.

> But I'm not a real techie, you know what I mean? - I can do HTML and I can do CSS and I can do javascipt and if you ask me to program something in java – Oooer - but I know a nice man who can... So I'm an in-betweeny - and I often talk of myself as a translator [...] (HF13)

This seemed the key boundary she was concerned with, though as an intermediary, a translator rather than as herself veering between the two positions.

Like AM or QM (at different levels) she is preoccupied, even concerned by the limits of her technical knowledge, as if she should be a techie. She said almost regretfully that she "could have been" a computer scientist (HF 64). This may be linked to a sense of wanting to keep rooted in the practical stuff, the code. Lack of this grounding leaves her in a slightly uncomfortable, in-betweeny position between an external marketing company and external relations, between techie and content. Several times she talks about it being a "funny" type of

job (HF17), a fuzzy role. Both her background (suitable for the web she says) and the job are described as a "mishmash", a term reminiscent of CM's sense of fragmentation from the diversity of the job, but also MF's sense of the appropriateness of diversity of background for the web.

The other notion she uses, of translator, is a more powerful position than in-betweeny, ultimately by being the core of the communication network, but she is still an intermediary. She explains things (not an expert role), she "tries" to manage everything from this role, but it is a tenuous control. At another point she portrays herself "flapping at the sidelines" (HF17) because she lacks the technical knowledge to do the work directly. She is stronger as translator than as inbetweeny, but both roles lack the strength of ambassador (MF), certainly carrying less prestige than the out and out manager (EM). EM sees himself as a "bridge", but somehow he is in control, responsible, HF is more obviously just balancing external forces. She described her role as having shifted from "I used to be a driver, and now I think it's more of an enabler" (HF 23). But this was difficult to do. She liked the Dilbert cartoon which was on the wall and she read out:

> It says I'll design the system as soon as you give me the requirements. No no you build me a system and I'll tell you it doesn't meet my requirements.

Thus defining needs was problematic:

> So, the trick is that I think I think that because the web is erm so - becoming so ubiquitous for everything - people are expecting great things of it [...] Actually teasing out what what it is that the institution wants to do with the web and what its priorities are are quite difficult. Because you've got people piling at you from all different directions wanting to do different things. (HF23)

This quote captures very vividly the dilemma of the IWM. A strong sense of diverse activity around the institution, with only a limited ability to pull things together.

Perhaps a key way of understanding HF's account of her role **(HF9-11)** is that in a recent reorganisation she had failed to be given the continuation of her current post. Instead she had been given a temporary contract and charged with responsibility for important but perhaps more difficult projects, implementing a CMS and a portal project, which she described as a "poisoned chalice". This may explain why she dwelt on and tells quite so evocatively the story of the evolution of her role. This story captures the potential liminality of the role, the uncertainty, the struggle. There is a strong sense of complexity, fuzziness, emergence about the starting point of the story **(HF9)**. Time is somewhat uncertain. Unlike EM she lacks the warrant of a document that defines, invents the role at a high level (EM38), just a long catchall job description. Yet she is there first - often a key claim in such stories (cf. GM claims by being there first (GM5) or FM and BM with their first contact claims and HF's own involvement with Firstclass (HF13)). The indefiniteness carries on into the subject, which

shifts from I to the job ("its role") to "we", in rapid succession. If "we" is taken as a neat if simplistic indicator of embededness/liminality, at this point of the story "we" barely forms, except in getting "on and doing stuff" and around the strained weness of the web development project. "We" - the web team - scarcely exists. There is a sense of her isolation then, "I was the only person ...little section" (like SF's description of her team as a "little thing").

Despite the complexity of the story she says she is simplifying - and "it was a bit more complicated than this - I'm trying to simplify...it got immensely complicated". Specifically it seems to be the relations of power that are complex.

The turn in the plot, the down turn in fortunes ushering in the current situation is the institutional reorganisation. Through the story her role, her place, emerges out of the competing pressures of politics - "argy bargy" - individuals' preferences (the IT specialist becomes more webby, her own interest in e-learning, though this is somewhat blocked, unrealised), comings and going of staff, institutional reorganisations, cost cutting rationalisation.

The underlying theme of the story is *am I a manager?* - "I was managed" "I was in charge of the web - and I was in charge of [Personal name] the developer" , "sort of managing", "you can be head of it", "so its been a difficult time really to be head of anything" and "I didn't get that one - the guy from [University name] got it." But she is also seen getting things done, despite the problems. Ultimately the story is governed by a complex of forces, rather than being under her control. It is unplanned. Further, she has a sense of having failed to manage the process successfully; yet also it is a story worth telling, worth calling "the history". When she returns, a little later, to the dilemma of being a manager or a doer, she is quite unclear where she stands, if clearer that she wants a senior role (HF31).

From this narrative, positioned right at the beginning of the interview, one gets a powerful sense of the complex flow of forces, the inchoate nature of the role, within which she has to manage as an inbetweeny. This may well be how more of the interviewees' world are, though they mask this behind the story of professionalism. Certainly it may capture the common state that BM historicises to the early days, but seems actually to survive in many people's roles (eg SF or CM). One could imagine that the unpolitical knowledge sharing in a cross organisational community would be quite a relief for people in these roles; though this does not come out in her actual comments on the wider network.

HF's strong orientation to e-learning also complicates the picture. E-learning has never really been a topic at IWMW. When she talks about the web enabling everything (HF27) she

stresses research collaborations as a potential new area and the need for a real step change in the nature of e-learning; in contrast BM and EM stress enabling "business processes." Again she considers doing ILT accreditation, but it is not really appropriate. One senses an interest somewhat stifled.

Another submerged identity perhaps leaks out when unexpectedly at the end of a cautious answer about a further career in the IT department she says that when she retires she will be a photographer (HF31). Perhaps this hinted at frustrated interest in the graphical side of the web. It is interesting that her ploy to unify departments' look and feel with the common templates is to focus on people's simple graphic preferences and that her critique of marketing is that although they are entitled to choose the look and feel, they *only* see things in terms of how they look (HF25). There is a sense that her position on the techie side of these conflicts has suppressed her ability to express her visual interests, because they have become politically charged. Whereas the original appeal of the web was its multidiscplinarity and to be involved in content, graphics, technology - the variety was the appeal.

Compared to EM with his clear managerial position, even to BM with his subtle balancing of roles, HF is in a less empowered, more ambivalent position. Partly a manager, partly a project manager, but with difficulties exercising control and lack of resources, and with frustrated interests in e-learning and graphics. All this places her in an identity limbo which makes easy participation in IWMW more difficult. EM and BM see themselves reinventing everything, HF is trapped trying to get her vision resourced.

6.10.6. Externally orientated roles

If it is argued that individuals approximately in the IWM space had in fact vastly different roles, there were some roles that were particularly orientated to collaboration in a wider network.

RM saw an important part of his job to be a "watching brief" to track new technologies and work out their application locally (RM60-64), a role that seemed to be linked to participation in the cross organisational community. MF also stressed this aspect of her job, though the stress was less specifically on technology (MF116). It was the part of the job RM really liked. For this the network was useful for "stealing" ideas (RM42,44,77, UM also uses the expression), i.e. copying innovations that had been proved at similar institutions. In his search for such models he seemed to be primed with ready stories about what they were themselves doing - offering an implicit trade- stories he would tell even if not really relevant to the question asked by the interviewer. Often he was not directly involved in local activities, and

he had a characteristic way of listing named colleagues, often offering to put the interviewer in contact with them (RM8,12,139). His way of talking suggested that he used his knowledge of what was going on locally to trade for information from others about what they were doing. In this a wide net of local contacts built up through project work was useful, though he primarily referenced people in his own department.

The watching brief role benefited from an open, knowledge sharing culture across the sector, and his institution's hosting of IWMW2001 could be linked to a generalised interest in promoting this sharing of knowledge, an interest shared with BK. There was a sense (again like MF) of admiring and also identifying with BK, standing at the centre of the hub.

EM's participation was also premised on a particular role, in his case of creating and promoting the strategy. He had a strong sense of ownership:

> So I consider myself to be in charge of it - I develop the strategy - I own the strategy - I do all the kind of politics and the selling within the institution [...] (EM22)

Taking "responsibility" was a key concept for EM (EM22,26,38,52,80). Since he did feel ownership of the strategy it made it easy for him to talk for it in a wider community.

His role was "outward facing" (EM10) about selling the policy locally and that was why "visibility" was key (eg EM32). He had a sense of the role as being a "bridge" (with other units in administration) and of supporting a community of web authors within the institution (EM64). Again we can see how these roles naturally extended to activities in the cross organisational space. Certainly, his marketing/PR/IT sales background (EM18) equipped him with skills to sell himself in the community (he commented himself on his own eloquence (EM36)), specifically a fluency in technical jargon/concepts was key as was a comfort in public self presentation. This was critical locally but also in the national community.

This attempt to recruit others was felt in his whole way of talking. He was confident, expansive, even aggressive, self congratulatory in the interview. He had a vigorous persuasive rhetoric: ending many sentences "yer?" challenging the hearer to agree with what he was saying. The vigour of his language conveyed a sense of passionate, engagement with work. He also talked of taking work home and he defined professionalism as "worry". Thus work was personalised and invested with personal meaning and this clearly favours an interest in talking to others about it.

6.10.7. Exclusivity

It is a classic move in professionalisation that the forming professional body calls for only trained people to do the job and for them to exclusively specialise in that job (MacDonald

1995, p.193). Exclusivity is important to maintaining professional identity. EM was exclusively a web manager (or was happy to portray such a clear image). Others had roles beyond the web which would arguably diminish the likelihood of identifying with the IWM ideal. Thus RM worked on a range of IT projects and was in charge also of high performance computing (RM6). This may explain his patchy attendance at the conference (RM42), and perhaps a somewhat instrumental attitude to networks such as WS. Again, OF had roles as a trainer or mentor, and clearly identified far more strongly with those than web management, about which her interview revealed a degree of role discomfort.

6.10.8. Resources and innovation

Winning resources and implementing major techno-organisational change was implicitly the ambition that IWMW supports. Those who achieve this, such as EM, have centrality. It creates new information needs. Those who did not win resources or innovate had less motive to be involved in the cross organisational community. Both MF (off tape) and SF questioned the relevance of much "fashionable" innovation that had been central to IWMW. For example, both questioned the relevance in their context of web enabling databases. So a key factor in participation is involvement in winning resources for innovation.

The rest of this section explores SF's experience of the blocking of resourcing and innovation (echoing themes from HF) which leads to increasing disidentification with the role. Resourcing was a key issue she returned to over and over again (eg **SF25**, SF65). She was a victim of her own success (**SF25**,37), she said, in the sense that she had constructed a large site that involved a lot of maintenance, but she had been starved of extra resources to pursue bigger ideas. Efforts to get funding for a CMS or portal seemed to have been stifled. The institution only sought limited influence over departments in their web sites. This was in contrast to the well resourced virtual learning team (**SF27**) and a dynamic external relations department, who seemed to have political approval.

The resources she did have were oddly informalised. She had two members of staff, both women, but this seemed to be strongly tied to design work for departments, the internal charges for which she never saw coming into her budget (SF124). One of her team was also her own boss's secretary, the other worked in a different building (**SF17**). Her decision to resist being in marketing, left her unit stranded in an anomalous organisational position, with two and a half people at the same level as departments, like the library, with "hundreds". "I'm a separate little thing", she said (**SF23**). Unlike MF, for example, who positions herself as ambassador of the computing department, by her unit being separate she has failed to gain legitimacy by association.

This lack of resourcing is directly linked to her positioning in the wider community. Lack of resources mean that the service is "trapped" in routine and lack of innovation and has reduced ability to contribute to the cross organisational community as essentially it is standing still and has no need for new information or ability to contribute new ideas.

In a sense, her position had not progressed from the early days of the web. She had freedom but lack of resources, freedom meant "fending for herself" (SF37) rather than the empowered position BM and EM felt. Those responsible had never really defined a clear strategy (SF31). As has been argued such feelings of liminality often led to participation in the community, but over time in SF's case it seems to lead to disillusion.

6.10.9. Summary: diversity of backgrounds, locations, roles, trajectories

Thus EM, by being successful within the terms of the community and fitting the aspirational model of being a manager, gains great centrality in IWMW. But EM's position may not be typical. Rather, BM's position of having to juggle multiple identities seems potentially much more common. Yet the uniqueness of BM's vision suggests that the local complexity is a barrier to much collective work on rationalising about the role. IWMW does not seem to do much work on discussing such pre-occupations and conflicts. Equally many individuals such as CM or SF were struggling to have influence or win resources. The absence of representation at IWMW of many smaller institutions may reflect that more immediate information needs would be salient (perhaps these are provided for in other ways). For these moral support and extra sources of information would be important. EM largely did not need these. The paradox is that the community values most those with the most local resources, who are logically least in need of extra organisational support.

There were some other ironies to EM's centrality. He himself saw his position as unique (EM56). Through innovation he gained centrality in IWMW, but the consequence of innovation was not merely to, for example, do things more efficiently, but transformational in terms of what could be done, and leading him to re-envision his role. He shared with BM and KM, who were also involved in portal projects, an increasingly business orientated way of speaking (see above Section 6.7.2.1), distancing him from many IWMs. He also saw the whole web manager community as increasingly parochial, as his wider "engagements" around the organisation expanded his vision (EM66). Thus those most central to the community were reinventing the whole role, creating a break with those less well resourced in smaller, less prestigious institutions who continue to struggle with more "known" issues. Whether this is divisive or not depends on whether the path pursued by the most successful represents the

trajectory of the whole HE sector in the long run or whether it will be confined to the bigger, richer organisations.

6.11. Division between marketing and IT

The programme of IWMW clearly envisions the web as a technology, with the issues being how to choose and implement it, and policy issues. However, in this an alternative set of discourses, and professional practices are silenced. The interviews revealed aspects of this:

- Marketers tended to ask a powerful rationalising "why" question about why any piece of content should be published, who is the audience, what is the purpose (VM3,**VM62**)
- From PR/journalism marketing professionals had a confidence in writing and knowledge how to present ideas in an interesting way and a desire to make content interesting and inspiring (**PM80**), not merely informative. "Information" people commonly did not like to rewrite content (HF9, SF59).
- They had professional discourses about the power of imagery (Porter and Gibbons 2004)
- Marketing people had a willingness to commission content and to go to external providers for "technical" work (PM136-143)

The focus is clearly on *content*, and though there would be internal divisions (word people and image people) the range of professional groups in marketing bring important concerns about doing the web which are largely invisible in the web community as realised in IWMW.

The IT view of the web tended to focus on providing a stable infrastructure in which people are free to publish within the law and acceptable use and some technical guidelines to ensure accessibility and a core navigational structure. Information could be judged by objective tests of quality of content such as spelling, up-to-dateness, accuracy of links (all of which are capable of a degree of automation). The IT approach can produce the form of a strong laissez faire mentality (TM44), but there is leverage in security issues for control, eg blocking running cgi scripts, a common complaint against IT (QM49, NF111) and possibly used as an excuse to block innovation (IM83).

The split between marketing and IT is a division of values or discursive resources that cuts across the web space (summarised Table A11.20). Yet both bring a lot to the role.

There was strong evidence of quite bitter tension locally between IT and marketing among IT people (**HF9, KM34-45, SF29**,SF65, EM36 - plus also comments from FM28, TM79,IM29)

and WF on the marketing side (WF44,WF221). Others saw the relationship as currently peaceful because of a balance of responsibility being made, often technically through dividing up the web site and the marketers controlling a front facing, largely recruitment orientated site (QM, VM), through apparent domination of marketing (OF eg 34) or marketing accommodation to IT values of laissez faire within an information architecture (PM). AM, CM, UM in a sense resolved the problem by sitting in marketing areas, but holding IT identities.

Marketing was often portrayed as not understanding the technology (**EM42**) or accessibility (HF25), focussing on the purely visual (SF65) or narrowly on recruitment (IM29) and trying to be too controlling (**EM42**, NF55, QM49).

In turn IT was seen as focussed on the technology for itself and divorced from the web as communication (IM17), as individuals in their alleged generalised inability to communicate (excessive use of computing jargon) perhaps a general masculine trait (WF221-7), focus on pure IT (GM) and through disconnection from the source of the institutional "message" (AM19).

Clearly, both perceptions have their limits, so that one direction of development could be to develop an integrating discourse. Thus there is a potential elective affinity in the business/professionalism logic and the underlying rationalising marketing why question (AM). Kazoleas, Kim and Moffitt (2001) argue that all organisations have multiple images, and that the most effective ways these are transmitted are through actual services not media. This suggests that in effect the marketing message is best promulgated through efficient services (eg a portal), rather than through marketing departments' simple rationalisations of the image of the organisation. Equally even within IT terms marketing approaches could be validated, eg QM is active in generating multimedia content that could be seen as technically innovative.

Some accommodation is discernible in individual accounts. Thus although PM identifies himself as a marketer, he often used the concept of information architecture, which sounds like an IT/information management term. This is probably linked to the fact that he has few resources and he is only a manager in the sense of cajoling a large committee of web authors. He accommodates to dominant values; marketers are often criticised for having too controlling a stance. WF also combined the marketing "why question" with concerns about navigation as a way of structuring information to differentiate her approach to that of IT people. UM often uses the rationalising why question (UM99), even though at other points he claims not to be concerned with content.

Thus we find people who see themselves as marketing people (PM, WF) accommodating to what have been defined here as IT values, and IT people (UM) to marketing ones. This may be partly because of the lack of professional organisation of knowledge so that the "knowledge" of navigation can be rearticulated with marketing values without discordance.

These accommodations tended to go unacknowledged so that identities are defined relatively clearly. UM unhesitatingly sees himself as an IT person, yet he uses marketing style arguments to apply to the rationalisation of content (UM99). As a multi-professional practice the web sits uncomfortably in any pre-existing professional/organisational framework. But there are problems when it sits outside the framework too, since it is isolated and weak (SF, WF99). In practice, the professional divide remains a continuing problem for integrating the perspectives. Unless web management were to reinvent itself as a whole new profession, the weight of existing division cuts a fracture line through the field, forcing people to make a choice. Ultimately the role may be too insignificant to challenge the boundaries.

6.11.1. Sense of competition

There was relatively little evidence from most of the interviews that an obstacle to cross organisational contacts might be any sense of competition between universities, eg to recruit students. Thus RM's strongest contact was with someone working at the chief rival university in his region. There simply was not direct competition for students in his part of the country (RM54). This is consistent also with the IT view of the web as infrastructural, not directly a source of competitive advantage. In this it is just a technology enabling people to publish and there is little concern with the content of what is published, as well as, for the older universities, a lack of orientation to competition through marketing.

The exception to this absence of sense of competition was among those who saw themselves as marketers. QM was particularly candid. He made various comments about not cooperating with competitors

> Whereas if it were [university name] we'd just, we would put the phone down, and not talk to them (laughs) because they - we are at each other's throats in that sense. (QM63)

He was slightly concerned about the interviewer being from a competitor institution. Nevertheless he did talk to many visitors (QM off tape) and had a strong dyadic relationship with someone at a university that was not considered to be an immediate competitor (QM63). He also saw the technical arena as one area where there was a surviving tradition of cooperation.

Similarly, VM regularly met other marketing managers in his region both individually (VM142) and as an informal group (VM132) and at conferences (VM144).

> Yer we are competing, but thankfully universities in the UK haven't got to that cutthroat and ruthless that people don't talk. (VM142)

It was interesting that NF's job was being redesigned as a marketing job, but she subverted the competitive intent.

> I'm quite interested in this market research side of things - erm kind of reaching out and communicating with other universities really - and working together - because we are all in the same business - we don't have to be so competitive - some places are very very competitive - and there's the feel of that here. I think there should be more collaboration, but that is probably just me. (NF17)

Clearly then a lack of extreme conditions of competition and academic anti-commercialisation were influential in making cross organisational collaboration possible. However, one reason marketers were less involved in cross organisational activities could be that they were more immediately concerned with inherently competitive activities. In fact, the Heist awards for the best web site in marketing (HEIST 2004) offered an alternative focus of collective engagement. Actually respondents suggested that the main value of the award was in local legitimation. VM described the benefit as: "internal kudos" (VM68) "It pleased the principal" (VM70).

It is significant that the communal space for web marketers in HE was competitive, and one organised by a body dominated by new universities and FE. It is also interesting to note that BK had never heard of the awards (BKII174-80), so that there is a sense of the invisibility of the marketing domain from the world of IT.

6.11.2. Special role of technology in collaboration

Both cross organisational spaces had a technical focus, as has been argued. Technology often seemed to be the locus of collaboration on an individual level, eg QM talked to his one main external contact partly because they had the same Student Record System (QM111). Notwithstanding the cost of excluding the marketers, reasons can be suggested why technology was suited to be the centre of collaboration:

1. As has been argued marketing perspectives were potentially competitive, premised on differentiating a particular university as a "product". In particular they cut against cooperation with organisations which were most like themselves. Thus if the new universities were more geared to marketing, it precluded cooperation, especially with other new universities. Because IT is infrastructural it tends not to be seen as a direct source of competitive advantage, in the way that good marketing content is.

2. There is a strong tradition of collaboration in the IT world, strong models from the Internet and the Open source movement (however much OS organisation seems to be different from its image).

3. The technology of the web is a dynamic area, it could be argued, continuously generating new learning needs, which could be collectively met. The intense commercialisation of IT discourses creates a strong need to talk to other practitioners to collectively filter out sales hype. Yet it should be noted that several of the respondents thought that it was actually quite stable (PM155, QM125). IM thought the technology was easy, in essence, a diversion. So the centrality of keeping up to date, that Kotamraju (2002) observes, is itself a belief tied to (and reinforcing) beliefs about what the job is inherently about.

4. Technology is inherently at a level of generality. Much of the role in using IT is to localise an externally produced system (like a portal) or realise value from a set of technical possibilities (the web). At the point of taking it into the local organisation it is generalised, therefore already available to be discussed with others working in different contexts. In contrast, local content or processes are unique to one institution. Work of generalisation has to be done to explain the relevance or problem to others. The effort of doing so may outweigh the benefits in terms of support or other help. This means that while technology is a natural boundary object, local issues are not. The web is specifically of very general relevance since it is a universal architecture, not a specific solution or application, like a particular CMS. These solutions, especially proprietary ones, form user communities around different CMS, as is the pattern of activism in cross organisational spaces in the library systems world. The web is relevant to all.

5. As a community the web community was already encompassing diverse specialisms within IT; to stretch it further into the realm of content risked stretching the common ground too thinly. Bridging the divide between different professions is difficult (Boland and Tenkasi (1995)).

6. As Kotamraju (2004) argues in web production IT skills have come to be taken more seriously as technical, and valued more highly. This may be linked to quite profound social evaluations of different forms of knowledge, and was reflected in the interview data. It is noticeable that both FM (86) and CM (16) backgrounded their accredited design knowledge in favour of technical knowledge. Although SF's colleague had design training, she portrayed design skill as mysterious, and ultimately her story about a site design suggests the vulnerability of design to being construed as merely a matter of taste (SF63). Emphaising the more socially valued aspects of the web (technology) could be a

way to valorize the whole activity of web management, and, for example, validate it as a "serious" activity with local computing services. Marketers also benefit from this.

7. Larger, more prosperous institutions invested more in home grown technology and they may use their general prestige to influence the agenda of the cross organisational community.

8. BK's personal interests and JISC agenda had the IT focus.

6.12. Interconnection of factors

EM was arguably the most central individual in the IWM community at the time of the interviews. He encapsulated the factors in favour of participation in the community which this chapter has explored. He was a decentralist, though intensely engaged with others as part of his attempt to recruit people locally to his strategy. He was an innovator in the terms of IWMW, which leads him both to talk to others, and to have experience which others want to hear about. His specific role of ownership of the strategy and as spokesman for the policy seems to be associated with skills and orientation towards participation in the cross organisational space. He had centrality in the community through claiming the status and clarity of being an IT manager in an IT department, with a IT management trajectory. Although ironically a marketing man by background, he distanced this and rehearsed common arguments against the web being based in marketing.

EM's place is linked to his coming from one of the large old institutions which the previous chapter showed were over represented in IWMW. They have a tradition of decentralisation, but invest resources in technical innovation, often locally developed rather than bought in systems. Arguably the scale and complexity of the organisation itself prevents the simple adoption of commercial products. They do not tend to compete through marketing, which is deprecated as commercialism. They also use their general prestige and resources to buy centrality for their agenda. Thus EM sought respect from coming from one of the Russell group universities. In his public speeches his specific claims seem to seek some validation from an initial rehearsal of impressive facts of the size of the university and web site.

If we treat EM as a model, the lesser participation of others can be explained through their divergence from the model. Thus BM is involved in a similarly innovative organisation, but it seems to be that his role is less as owner, it is far more a collegial effort. He is a stalwart of the IWM community, but with a less glittering role. MF and CM are like EM, decentralists, but with far fewer resources, so still at a DIY technical level. SF has experienced major failures in local relationships, become blocked from resources and so has become

disillusioned. KM does have the resources, is an IT manager type but is pursuing a centralist model of control, an aspect of which is to create distance with others doing the web.

At the other end of the spectrum is QM. He is from a new university, with its centralist traditions. Marketing is seen as a central use of the web. He is innovative, but in email marketing techniques, not IT, and is not concerned with developing or implementing high level systems.

Thus the factors examined in the chapter cannot necessarily be disconnected (see Table A11.21). The large, old institutions tended not to do so much marketing and the web continued to be seen as an information source. They would put resources into the most fashionable forms of development, eg portals - as a way of controlling access to a proliferating range of content - rather than integrating it at the publishing stage through CMS. Success in obtaining resources would enable the responsible party to have something new to say. It would also boost their individual status in the community, high anyway since public evaluations of universities also apply in the community. The result is that the work of the bigger institutions is more visible, and influences how the sector as a whole is perceived. The big institutions used their general prestige to promote their own agenda. They were in a better position to host the conference and buy centrality this way.

Newer institutions or smaller ones and FE tended to have a more marketing focus, have far fewer resources to do new development work. They would probably be more centralised institutions, so there would be less comfort with networking skills.

This begins to explain the pattern of activism in IWMW judged by the affiliation of speakers: that the old institutions predominate, and the point of view of under-resourced, new universities, small HEIs and FE get a poor airing. This is not necessarily "dysfunctional". It may be that the information needs of less innovative individuals are more easily satisfied by general resources, eg how to do SSI is well known. It is only in the context of innovation that major new information needs are generated. There may be a collective benefit in focussing on the innovative work because it generates interest, a sense of importance that can be used locally to legitimate positions even of those who are not being innovative.

6.13. "Failure" to professionalise

Professional membership among the informants was low (Table A11.19). The most frequently mentioned body was the British Computing Society (BCS), but no one was a member of it. IM and BM had been involved in attempts around 2000 to form a Special Interest Group within the Institute of Information Scientists (IIS), but this had failed to be realised, its sole

achievement was a partly cross sectoral "professional web management conference" organised in 2000 (Professional web management 2000). The available data about the "failure" as a historic process is limited. However it was partly simply the outcome of contingent events: it was around this time that IIS had begun merger talks with CILIP (IM50).

However, the outcome also had deeper roots (see Table A11.22). On the side of the professional association (eg for BCS) the group might be too small a group, too marginal to justify great efforts to accommodate them. Equally on the interviewees' side there seemed to be some generalised scepticism about the value of professional bodies (eg KM166, JM72). Clearly, though, a key factor was the multi-discplinarity of the field, meaning that forming up explicitly under computing or indeed marketing would be divisive.

IM saw the web manager role as distinctive (IM52); he had worked out quite a developed philosophy of the web, which seemed in some respects to generalise the "why question" of marketing, while diminishing the centrality of technology. What was needed was some higher level commitment based on senior management understanding of the web (rarely found he thought). A strategy should be driven by the needs of the organisation (IM7). If the purposes of the organisation in using the web could be clarified, and appropriate resources given, then a rationalising logic could be applied to content on the web site: asking why any piece of information should be published, who it was for (IM13,17,35). Clearly this is a centralist argument. A likely such strategy lay in cradle to grave customer relationship management (IM27), though the strategy was likely to vary from institution to institution, he thought (IM29). This was a putative integrative discourse to remake web management outside both marketing and IT. Although in some sense a convincing strategy on paper, it would seem in practice that it did not work (he withdrew from his role as Director of web services after 18 months), perhaps because it imagines the web manager outside the existing professional categories. In organisational terms this demanded a high status department outside existing structures. It is easy to see why this might meet strong organisational resistance. As a centralising strategy it would be divisive within the wider web using community.

If web management fails to emerge as a new professional SIG, this leaves those in the space with dilemmas about legitimation. The problem was acute for KM, who wanted to draw a firm divide between himself with his "professional" team and the mass of what he dubbed disparagingly as hobby web authors. Professionalism was one discursive resource he tried to use to mark the boundary. Yet though he himself had a fairly long track record, he had no real credentials and he was not a member of a professional body. He justified the lack of professional membership from a belief that a professional body would not be able to keep

pace with technology change. But the logic of his position suggests an unsatisfied desire for professionalisation.

Like KM, CM also spontaneously talked much about professionalism. When asked to define professionalism he saw it as about a holistic approach, and repeatedly contrasts metaphors of "big" and "wholes" to the bittiness of amateur sites (CM32). Yet he described his own job as:

> You get anything that is vaguely even kind of in a round about way touches somehow on something that might be half web related. (CM90)
>
> [...] anything that's related to web usually one way or the other kind of finds its way into my inbox as - so its a bit of everything (CM4)

This suggests a lack of distance between himself and the amateur. Interestingly he also saw WS as a "bit of everything". So, although like KM, CM used the word professional a lot, there was a different approach. He did not attempt to construct distance from web authors, rather stressed a more a communal relationship, whereas KM sought separation. Indeed he actually masked his own professional training (CM8).

While KM faced a problem because of the lack of professionalisation of the space, AM saw the lack of professional definition as of value personally in creating space for him to make choices.

> I've always felt as if I've had not quite a free rein, but I've been able to make suggestions and develop things the way that... I've been able to steer things quite well. Because people basically they don't know enough about it, and it's it could be quite dangerous I could have been just sitting here for the last eight years doing nothing. But I have felt as if I've been able to have a real an impact and a real input into the way the institution has developed in this particular area, because they are looking to people like me to tell them what they should do and what they need to do. So I've had quite a bit of freedom, that my other administrative colleagues might not have had. (AM49)

So the lack of formal professionalisation gives the job greater potential, just as the lack of exclusivity gives it variety. This echoes Gornall's (1999) suggestion about the key place played by liminal "new professionals" in reinventing universities. However, it is interesting that for AM this freedom is quite narrowly conceived, within a techie's concern about having freedom to explore favourite technologies (AM49), which perhaps supports Rose's (2002) arguments about the limited nature of the computer scientists' impact on the organisation.

This freedom results in equivalent personnel having rather different, rather unique roles. It offers a form of closure; the individual's position is protected by the adaptation of the organisation to the individual, the uniqueness of their position which makes them difficult to replace. In contexts where a role is well understood and standard across organisations people are more replaceable, a job market emerges and mobility is greater. Then, professionalisation is more of value as a form of collective action for social closure.

On the other hand there were clearly some costs attached to lack of professionalisation. BM is not uncomfortable with the range of roles he has; he sees them as multiple sources of legitimation, but for others the complexity may be difficult. For HF or SF who are somewhat less successful in winning resources or establishing stable roles it may be that the lack of formal professional definition leaves them with little defence against political pressures and wider professional struggles. Inter-organisational mobility is less easy because there is a less clear job market. This itself is a factor in there being weaker networks than in professional or disciplinary communities. The lack of a clear career path for those working on the web was a recognised problem (UM61) with implications both for individuals and organisations, but it was partly offset by the development of the web itself which opened up a natural career path for those like AM or BM equipped or desiring to follow it.

6.14. Gender as an emergent aspect of the analysis

Gender is another emergent factor in participation in cross organisational communities. It was noticeable that all the female interviewees, with perhaps the exception of MF, seemed to be struggling, whereas the male interviewees tended to put on at least a show of confidence. SF disidentified with the job, had been blocked from getting more resources. OF too disidentified with the role and was under pressure from her techies and a more dynamic colleague in marketing (actually another woman). HF had been set back by institutional reorganisation, and been handed the "poisoned chalice" of the portal project. NF had been set back by illness, downgraded from her aspirational technical role to administration and a marketing role was being imposed upon her.

This could be "just" a way of talking. Men seemed more comfortable presenting a successful "professional" image. Women were perhaps more prepared to admit to uncertainty, ambiguity. One compares the quiet impassioned rhetoric of BM, the moralising of KM and the buoyant confidence of EM with the self doubt of SF or the thoughtful pondering conclusions of HF's answers.

Teasing out the nature of the gendering of the space is complex. One aspect of the process is that the dominant profession in the space is IT, which has always had an underrepresentation of women. OF, SF and WF clearly identified strongly with other professions, and explicitly did not want to be seen as techies. HF was an inbetweeny, "could" have been a computer scientist. NF identified with computers but as a user. Only MF was happy to be called a webmaster and ambassador of IT department. If women were attracted to other professions such as marketing and repelled at some level by IT, they were in a weaker position to legitimate themselves locally as web managers. SF for example had failed to fully develop a

convincing account of what it would mean to treat the web as an information skill. She rejected IT (but also marketing) as an identity.

So on the whole women tended to be less comfortable with IT - either as a profession or a game, "playing with computers" (QM57). They were less willing to talk the talk of business discourse. They constructed themselves in more intermediary, potentially service roles like the ambassador or translator. Men were happier to construct themselves in control, responsible, making up strategy.

Alternative professional identities in marketing and librarianship were female dominated.

> And people like PR, that whole kind of stuff is a very kind of female centric kind of world, I think. To a lot of people if you go to our press office here, it's run by a woman, there are a lot of women press officers in there. If you go to our marketing area, it's run by a woman, there is a lot of women in there. You go to design and publications it's run by a woman and there are a lot of women designers in there. So it's all very kind of female centric over there (laughing). So. But when you look at who manages the web sites - it's a lot of men. There is that thin veneer (laughing) yer? There is a lot of men who take that responsibility. (EM82)

It seems also that professionalism, a key discourse in the struggle to exercise control over the mass of web authors, was less available to women (Kerfoot 2002). Whereas men spoke comfortably about their jobs entering their personal lives, women more typically saw their personal lives as scales against which to value work. When MF tried to remember how long IWMW had been going she worked it out from the birth of her daughter. All her descriptions of herself for public talks mentioned her daughters. HF defined her role starting from the description provided by one of her children who had come to the office one day. It is symbolic that the only reference BM made to his children was that staying up all night with a baby had made his voice hoarse, so his answer was "lame" (BM27), i.e. it was an impediment. This is not to make a serious statement about how the men and women valued their children; rather professionalism with its sense of cool impersonal detachment and objectivity does not articulate well with femininities such as being a rounded person, mother etc. Professionalism is unfeminine; it requires more effort to rhetorically integrate a professional image with it. It fits in much better with masculine identities such as the expert, nerd, geek, hobbyist. This is clearly not to argue that women are less professional, far from it. It merely notes that ways of talking that are most available to women to use can be seen as not fitting well with professional discourse, creating problems of self presentation.

A key aspect of this gender effect is its subtlety. None of the interviewees really saw that there was a gender problem in the domain, though they recognised that there were more men in IT. Universities are strong on equal opportunities in their public policy. There were few complaints of overt discrimination. NF's progress had been structurally limited by being a sole breadwinner. SF felt she had been discriminated against. But beyond this it is possible

that a lack of fit between discourses that reflect professionalism or powerful (like business/IT used by KM) take extra effort to articulate with female ways of talking, and this in addition to more overt forms of discrimination play a part in the patriarchal character of the space.

6.15. Do IWM form an occupational community?

The coordiating actions of JISC, partly through BK, both help to build community, but also tend to set its limits within HE, within the UK, within an IT focus. Over time with a relatively stable smallish group, and with the obvious paradigm of professional organisation as a model there is a basis to form a community of some sort. There is common ground in attempting to legitimate a quality control role in a context of a powerful self publishing ethos, yet divergence between the decentralists and the centralisers. There are common information needs, though innovators and the new or liminal may have somewhat greater value on it as a resource. Diversity of underlying roles of people in the space cuts against the common ground. IT does seem to be a natural focus of sharing. But the exclusion of marketing makes a division across the space.

Collectively these factors seem to explain the main features of IWMW, and the pattern of involvement among the individual interviewees. Their very complexity justify the methodological approach. Some are strongly orientated towards IWMW, others are rather isolated and disillusioned. Diversity of values (Table A11.11) and occupational conception (Table A11.16) suggest a failure to form as a professional community. Nevertheless value is derived from the cross organisational interactions and the "cost" - in terms of coordination for example - of maintaining them is low.

6.16. The place of WS

As well as the IWM group (whether IWMW participants or not), the interviewees also included core activists in WS (FM,TM,JM,DM). NF was also interviewed because she was one of the few to raise professional issues on WS. Three of the IWM were also relatively active in WS (CM,MF, QM; Table A11.4) and many of the others were subscribers or were aware of it.

BK made the claim that WS is one major channel of communication for the web or web management community, and that IWMW and WS were linked **(BKI190-8)**, though at IWMW2004 he seemed to increasingly distance himself from it, condemning email in one comment as "so twentieth century". CM continued to see it as "an extension of the general conference chat" (CM102) and in an extreme statement of identification "pretty much like my

days" (CM106). On the whole, though, the IWM group offered very qualified approval for WS, mostly focussing on limited instrumental uses (Table A11.4). For example, RM saw it as useful in getting answers to questions, but it was implicit in this that he did not really care that asking the question made him seem stupid (RM127). So its use was premised on a lack of relationship. He was a member of many lists. KM was rather scornful (KM201-203), and BM had left the list years before, comparing it unfavourably to other virtual communities he had been part of (BM93). They did, however, see it as a way of seeing what was going on (IM116, KM203).

So for some there was a connection between WS and the IWMW worlds, that others dismissed. This section considers how WS fitted into the overall pattern of participation in cross organisational community.

What is striking is that many of the key participants in WS were marginal to the formal organisation of the web in their institution, indeed the most frequent poster was liminal to the whole UK HE domain. Thus, TM, for instance, had no formal role in the web in his organisation (TM18,19). His own role had emerged out of his own interests and skills to a large extent (TM11). The result was a role adapted to his individual strengths and weaknesses both to his own benefit and for that of the organisation, in terms of higher commitment and productivity (TM27). He was a niche finder in the terms of Dearing, rather than a new professional (Whyley and Calendar 1997). But what he did was anomalous, difficult to define. The best description was the vague "university administrator" (TM31). This fluidity and informality was linked, he thought, to the scale of the institution, which inhibited a fine division of labour and associated specialism. There was less structure in how the web was done; there was what had evolved by "a sequence of events and circumstances" (TM19). Having to spread himself thinly but widely, he was less interested in the in depth discussions of IWMW (TM71). WS is for the non specialist in this sense.

Further this sense of letting things evolve was mirrored in his view of the best way to treat the web. This also should not be overly centralised, he thought:

> Our boss believes, and I agree with him, that we have to allow the individuals, whether they are in academic departments or the administration to er to publish and the crunch is how for us to maintain that publishing, to maintain the individual enthusiasm. (TM38)

These attitudes were further linked to a stress on search engine technology as a method of integration - allowing people to find information - without curbing the freedom of those who produce it (TM44). This radically decentralist philosophy is perhaps what WS represents for some.

Ironically, the list owner of WS, DM was in one sense the most anomalous participant of all. Having originally set up the list he had not been involved in producing web sites, except hobby ones, for almost 10 years. He continued to read messages and answer a few queries, but he was "just an observer", he said (DM19). This probably explains why he was vague about membership (DM30-35), historical changes and the character of postings (DM69-74). Again, JM had just moved to a new organisation, working on a e-learning project in a non-campus based department of the university, and he was liminal to his home organisation:

> Well it's quite a flat organisational structure within the school anyway and I don't know if that is particular to nursing, it's a fairly egalitarian place, it's fairly informal as well. Erm. My post is a new post. So it's not really slotted into - sort of - the organisational hierarchy as such. So I'd - I'm not in charge of anyone - No one is particularly in charge of me - I'm kind of. Yer the post is a bit of an anomaly. (JM31)

Of all the interviewees he used the word "we" least (Table A11.7), suggesting the least integration into any team or organisation. This does not entirely explain his activism, since he had posted previously when he had worked for a specialist CAL centre. But this role also positioned him marginally since it was a service to the whole of HE, not the institution. Several of the other heavy posters seemed to be in similar positions, working for advisory services across HE. Indeed BK himself was in such a role, using WS as a scaleable way to reach a large number of people (BKI31). It was noticeable of all the interviewees JM spoke most closely to the JISC agenda.

Finally, FM, who was the heaviest poster on WS, was in multiple ways anomalous. Whereas the mass of members were working in UK HE, he was a New Zealander, an independent consultant, working in France, with only distant connections to higher education even there. He is even so an awkward, problematic participant, seemingly posting to a different pattern to others, persistently waspish and rehearsing classic techie behaviours and attitudes. WS accommodates this sort of marginality.

So WS would seem to be a space available for those in somewhat anomalous institutional positions. This hints that it represented a continuance of the self publishing, DIY ethos referred to in Section 6.7 above. Indeed, QM saw WS as a throwback to earlier collaborative attitudes, which he generally thought were in decline:

> And it's quite nice actually that kind of area of it you know web sites originally in universities used to be very much about networking community and actually sharing information, and as universities have become more competitive the amount of the information we share has been reduced, but at least on that level, people are still happy to share experiences... That community spirit is still there albeit in a small area. (QM111)

Although he did not go to IWMW because it was too technical, he remained on this apparently quite technical list, perhaps because it continued to deal with "simpler" mark up orientated issues, but also because the potential marginality of being a marketer is ignored.

However it might be misleading to historicise WS. MF's participation, like her participation in IWMW, was linked to her continued decentralist position and reliance on low specialisation. The fact that she had a role of influence in informal netowrks would make WS seem a natural extension of this, whereas KM, say, wanted to create distance from the "hobby farm people". Again because the university was weakly centralised and relatively simple technologies (SSI) were being used to control content rather than a CMS, the level of discussion on WS was still relevant.

Similar considerations may explain EM's surprisingly positive view of WS, given the divide he drew between himself and practitioners. Like MF he tried to influence through an inclusive vision of how things should be. It may also have been linked to his sense of centrality in the whole domain.

CM, like MF, was also trying to build community locally, and in this enterprise saw little distinction between himself and others doing the web (see above 5.7.1). There is an additional element in that CM, still operating with low resources (liminal in that sense), continued to consider an independent, consultancy position as a relevant career aspiration. When asked about his future career, his immediate response was an aside "going freelance and making loads of money", before self correcting and going on to talk about becoming a manager having been promised more resources (CM46). Those who were in clearer management roles tended to express a commitment to a career climbing up the organisation in their answers to the same question, eg EM (see Table A11.15). If a consultancy role was an aspiration, building a reputation in a wider community was a relevant activity. The group also supplied potential models, such as FM, even if FM ceased to get consultancy out of the group. This may explain the effort CM put into his answers to WS, and his choice to specialise:

> Usually I'm the one for all the stylesheet questions - so they will say I'm trying to achieve this effect, how do I do it - then I see the message, I spend about half an hour - quickly working out the prototype and sending back look at this I've done it, kind of thing, is that what you wanted? (CM106)

Thus he has assumed the role of expert within the community, with that role's obligations to fully, reliably, quickly answer any question that falls within the area of expertise. This gives him a centrality his lack of managerial status would deny him.

At IWMW2004 BK precisely called for individuals to become experts in something in order to play a role in the community. This seemed to be an attempt to construct the value of a space of expertise, even though generally the job was a local one, dedicated to organisational issues. Indeed if the aspiration is managerial, that is not an expert position at all. This was in effect an invitation to be like BK, and some others on the list who seemed to use it like him as a scaleable way to talk to the web community, in an advisory role funded by JISC. They had

roles outside their local institution. WS can be seen, then, as a space for those working at HE wide level to influence others.

For NF as a departmental web author WS was aspirational, her connection to it part of her struggle to keep her independence and status as a technician fought against a backdrop of ill health, the lack of a degree and the weight of being a sole bread winner in the family:

> First I was admin, then I was technical then I was admin again. (NF9)

The resistance is to preserve the independent consultancy flavour of work a technical role offered:

> A lot of the time I've been here, I've been in a way acting as a sort of consultant. And that is a very interesting way to be, and a very interesting way to work. And I'm not quite sure whether I'm a consultant or not at the moment - but as I say it's all very much in flux...And I think it is a necessary thing. Because it lets you put a little bit of distance between you and the person you are doing things for, but it also give you a little bit of kind of creative space which I think is very necessary. (NF99)

So she is trying to build distance, expertise. Actually her technical skills were "low level ones". She construed the web almost as a physical activity. She talked about "driving" a computer and "making" web pages, making HTML (NF9,15,17,63,67) in a way that made it feel like a craft or manual activity. She saw herself as a "computer user" (NF97). She fitted in a sense the hobbyist identity that KM so deprecated.

For her WS represented the spirit of collaboration characteristic of technical people:

> They're never - they've never been condescending to me, I'm well aware that my technical level is well below theirs. But they're just not that kind of people. They're what I call real technicians, in the sense that they are not - they don't do that. Condescending isn't part of their vocabulary, and they'll just share, because they like sharing, because they like what they do and they like to spread the skill. I don't write to web support very often, but I do read it a lot. And get all sorts of useful information. (NF137)

So WS represents an open forum available as a learning resource to help individuals build individual expertise.

As the most frequent poster to the list, FM saw it far more favourably than most interviewees and saw it as a rich resource serving multiple *personal* purposes. Whereas most of the survey respondents, for example, stressed informational purposes as reasons for being part of WS, FM said he valued it for "friendship" (FM123). He defined these as friendships "with people he had never met", and at the end of the interview recounted the story of a critical moment in his career which had turned on trusting someone only known through the Net. He had faith in email as a guide to good character:

> But email - you can't hide behind email - it's very difficult thing to hide behind - you have to be a very good writer - to lie. You have to be an excellent writer to lie, most people - when you read between the lines and you know who they are and where they are coming from. (FM179)

Such relationships are common in Internet mythology (Chayko 2003) and defy the expectations of media richness theory. So it is this investment in email as a medium that has a critical role in his explanation of his participation in WS. "Email is how I work" (FM107), he said. He used it as the primary means to keep in contact with clients, "training" them to use it with a chat like level of interaction (short immediate responses). He posted to WS in the same way. He also used email to accumulate information from lists that could be referred to later as a resource bank (cf. Chapter 4.4.2.4 above). He saved huge amounts of past email (so vast that, satisfyingly, it could not be stored on one computer) which he said he navigated by memory, since he had no search engine (FM108).

He also saw the list as a sort of comforting background noise/chatter and a source of diversion and small challenges to expertise:

> So I use it - I work on my own from my own living room, so [WS] for me is - is like having - I have the radio on as well as background noise - I work and then I'll come back and read some messages - and if there is a question somebody has asked that I can help I'll help and I sort of chat with people on or off list. I have lots of mail off list as well, from several people. (FM127)

He differentiated the subject matter of WS as somehow other than that found in true technical lists which were just endless code (FM129). WS was more about helping someone stuck on "really stupid" things because they had been staring at it so long and just couldn't see the problem. (FM139)

6.16.1. Conclusion

So WS can in some senses be seen as a throwback to an era when web publishing was an enthusiasm, supported by informal collaboration; BM refers to WS in the past tense (BM91). Yet for those IWMs in strong decentralist or liminal positions it remained a relevant forum: the technical discussions were at the right level and they continued to see the whole space as a collaborative community. For those like BM and KM who were more implicated in professionalising, formalising activity, WS is dismissed or historicised. WS also seems to have had a role in work aspirations for those who were liminal in the organisation but trying to build up their own specialisation and expertise, a personal project of social closure as it were. The most active participants seemed to be distinctly anomalous in the terms of the IWM world. For them participation can be linked to personal uses, rather than to structuring work factors.

6.17. Summary

The purpose of this chapter was to use interviewees' accounts of their jobs and their participation in cross organisational activities to examine what factors seem to be operating to create and shape cross organisational spaces in the web sphere in UK HE.

The analysis reveals that:

1. JISC, partly through the person of BK, but also through its broad activities has a major role in defining the space as primarily about IT, and creating a sense of the "natural" boundary being around UK HE.

2. A number of conditions such as the pervasiveness of the model of professional organisation in universities, the pre-existence of professional networks and the scale and stability of the population seem to be favourable to the formation of a "community" of some sort.

3. Critically across the group there is a central problem of legitimation which is both a shared challenge, and one that could be partly addressed collectively. Yet there is also a practical and philosophical divide between decentralists and centralists which seems to be systematically linked to participation or non-participation in IWMW. The decentralists may see informal, communal relationships locally within the institution as mirrored in a network of peers across institutions. Centralists were less likely to participate in the cross organisational space.

4. There are also somewhat common information needs arising from sector specific technology trends or implications of legislation, for example. Yet there is something of a division between innovators and newcomers and those who were old hands not innovating at least within the fashion of innovation defined/reinforced at IWMW.

5. Liminality seems to play some role in participation in cross organisational activity, since new people working in the area may have more information needs and are likely to see external sources of information as valid as local ones. Yet because they have as yet probably had less success in winning resources or being innovative their status in the occupational community may be less.

6. The actual diversity of roles, organisational positions and individual occupational trajectories, arising from the diverse character of HE and the multiple possibilities of the web, cut against the common ground, but make it also potentially a rich space. Certain roles have a particular extra organisational focus. There are ironies in the way that those

who are most successful locally in winning resource are made central in the cross organisational space, since their success also leads them to redefine their role in a way that builds a divide with those in smaller institutions or who have been less successful in winning funds. Their actual need for collective resources may also be less.

7. Ways of talking about the web seemed to draw on two main sets of discursive resources, an information and a content view. IWMW stands squarely in the information arena, and part of the effect of this is to marginalise those who choose or have a marketing trajectory. For the latter the HEIST awards are an alternative legitimating resource. Low participation in cross organisational spaces may be partly linked to marketers' close involvement in inter-organisational competition. In contrast, there are reasons why IT might be a particular focus of "knowledge sharing" behaviour.

8. Systematic connections can be drawn between the different factors: while the large, decentralised, well resourced universities are well represented in the community space, the less prestigious institutions, which often emphasise marketing and traditionally are more centralised generally, are not.

9. The "failure" to professionalise can be linked to the multidisciplinarity of the practice and benefits to individuals and organisations in terms of freedom to innovate. The personal and institutional costs in terms of lack of definition of roles must also be recognised.

10. Gender is also an emergent factor in participation. There seemed to be suggestions of a gender divide arising from IWMW being IT orientated, as a consequence of this being a male dominated profession, while the marketing professions are female dominated, and because professionalism as a discourse is a less available resource for women.

11. WS could in some sense be seen as a survival of the collaborative DIY attitudes to the early Internet, perpetuated by individuals marginal to "official" ways of doing the web. However, the continued liminality and informality of some IWM roles give it continuing relevance. It is valued by those with cross organisational roles (usually funded by JISC) as a scaleable way to reach a large audience of web producers at different levels.

6.18. Conclusion

This chapter has explored how the character of individual roles and positions influence the tendency to participate in cross organisational networks and how this influences their shape. The web as an occupational space diverges from the model of formal professionalisation, and so it does not provide practitioners with the bases in common ground that were identified in

Chapter 2.2 above. University web production could be seen to embody the breakdown of a neat model of professionalisation; weaker forms of association such as occupational community or the strategy of "professionalism" are likely to be prevalent. The historical data needed to explore how the failure to professionalise occurred are lacking, so we cannot compare to a model of professionalisation as a process, but we can look at the divergence of the space from the model of a profession as a community as an accomplished state of affairs. A number of self reinforcing and recursive factors emerge as having an impact on the historical failure of professionalisation (compare with p.15 above).

1. The **public image** of web production is not of a profession, it is of empowered users. This probably inhibits professionalisation, creating a problem of legitimisation (though the problem may itself encourage collective effort at a solution).

2. Since people working in the area come from diverse backgrounds and as there is no common formal **professional socialisation process,** there is a continuing diversity of knowledge and values among those working in the sector. Though such diversity is valuable to some extent in potentially producing creative diverse solutions to sectoral problems, it reduces common ground. The common perception of speed of technological change seems to undercut the possibility of formalisation of knowledge as achieved by abstraction in the professions. This may be linked to the general failure in computing of the connection between formal academic knowledge and practitioner work.

3. Work is organised differently in different locales, so there is a lack of the parallelism that leads to occupational socialisation/**workplace socialisation**. There is no easy equivalence of job roles and titles across organisations, constantly undercutting simple comparisons. In a sense the concept of web manager (which people like IM argued strongly for) has not emerged clearly; few fit the model neatly. As the local is central, adapting to local culture is a major priority. Therefore in so far as cultures of organisations are different the resulting strategies are different. The variety of job titles, roles, organisational positions, occupational trajectories was an outstanding feature of the interviewees. None of the interviewees mentioned involvement in formal collaborative projects between institutions.

4. Sector specific **professional media** are under-developed.

5. The group is too small to attract the interest of **professional bodies** for itself. The skill is inappropriate to be absorbed easily into existing professional domains; it is too low level a skill for computing and too technical for marketing. Formal professionalisation could

actually create problems. Few of the interviewees were members of a professional body; there was no clear natural professional home.

6. The lack of common organisation of the work inhibits the emergence of a common **job market**, further cutting against the creation of common ground. For example, it reduces the mobility between organisations, which, in a professional context (as in academic disciplines), probably has an important role in helping to expand personal networks. It reduces the desire to maintain a reputation in the field, since no immediate personal benefit can arise from it (unlike Barley and Kunda's (2004) contractors). Organisations are less able to select from a credentialised population of professionals, so rely on developing existing staff to fit the need. This further reinforces the divergence of arrangements locally, since roles have to be adapted to individual preferences and abilities. Thus few of the interviewees had worked in multiple universities web departments.

7. **Personal networks** lack the stimulus of common socialisation institutions, formally organised CPD activities or movement between organisations. Thus many of the interviewees seemed surprisingly isolated from others doing similar jobs elsewhere.

In so far as the work is seen as mature, unexciting, requiring only low level skills, it would lack the cachet that van Maanen and Barley (1984) identify as one quality that can help form an occupational community. It is not highly distinctive, dangerous.

Nevertheless, there remains substantial common ground, out of which emerge forms of pre-professional community, especially when facilitated with coordination effort and distance defeating technologies:

1. If there is no public **professional image** of the web as a profession, the image of the web as a practice may influence recruitment, causing some parallelism in character and aptitudes of candidates for the role.

2. There is a limited amount of **common training** through Netskills, which is seeking to develop accreditation for its courses.

3. Again there are some common practices (such as writing perl programmes) that could produce common experiences. These are not sector specific common ground, but could be discovered as common experiences during direct encounters.

4. All those working in the web may have some common **media exposure** - they may look at the same web sites (webmonkey, slashdot) - and though these may not be sector

specific influences, it may be that they are read the same through the lens of sector specific needs (eg lack of resources), thus producing common patterns of media use which can be discovered as common ground.

5. Although not organised by professional associations, attempts at cross organisational association can piggy back on existing networks and the pervasive model of the organisation of knowledge in professional communities and perhaps also the model of the academic disciplinary community. Since most work in universities is organised in this way there is an inevitability in some sort of cross organisational group emerging. IT itself has strong traditions of informal knowledge sharing, and academic computing itself often produces cross organisational collaboration, eg *nix support.

6. Some limited mobility between institutions may take place.

7. A logic to **network** still exists. People prefer oral sources of information, know how. Local sources may be central, but extra-organisational sources could have special advantages. Perhaps particular sorts of information are sought through such groups - environment scanning, validation, purely technical information. There are simple instrumental motives to share information, which are particularly acute because of rapid change in knowledge in some areas, such as pure technology. Those who are new see their knowledge as owned by themselves, therefore feel less requirement to only share it locally within the organisation (cf. P12). They are also less embedded locally, so will talk to people in other organisations. If they are less committed to the local organisation there is a need to keep their knowledge generalised, to help get a new job. Experts in other organisations may be just as visible as local experts to a new comer (particularly in the web field), and are less of a potential political challenge. The new practitioner is keen to acquire knowledge rapidly about how to perform the task. This suggests that in so far as new professionals are entering the space there will be a force for creating new cross organisational ties. Cutting against this new practitioners know less and have lower prestige in the community because they not yet won resources in a way which collectively valorises the sector. Equally, however, stability of employment in the sector favours the gradual emergence of a community of some sort, through simple repeated interaction.

8. There are **common pressures** on practitioners working in web production in universities, such as: those arising from the academic context (the dominance of teaching/research activities), funding limits and specific legislative challenges. HE is recognised as a clear sector (though there may be continuing problems of new universities and small HEIs place in this image). This creates some initial common ground and context, making it

easier for people to understand each other. BK stressed the importance of the common educational context, its deprecation of competition. Where development has been funded by public money there is a feeling that it is inappropriate not to share outcomes.

9. There is a common interest in wishing to promote the impact of the web and legitimise the role as a defined occupational specialism.

These factors are reinforced by aspects of the web itself:

10. The visibility of web work - not only is the web site a public object, but also anyone can view the code that makes most web pages - makes cross organisational comparison at a deeper level relatively easy. This would favour cross organisational awareness if not occupational community. It might actually reduce the need for direct contacts since so much can be known about comparable work in other institutions without direct contact.

11. There may be something about the web itself inscribed into the essentially distributed nature of the technology or within the ideology of the web that favours free informal sharing of knowledge, be that interpreted idealistically as by Uimonen (2003b) or perhaps more sceptically as Iacono and Kling (2001). Web managers often saw themselves as bridges or ambassadors, an image which is a far cry from the kafkaesque miscommunication in a computing services department described by McCombs (1998). IWMW showed a concern to develop ways to understand end-user needs (usability), to influence web authors, other departments and also senior management. The thrust of the role - like that of the learning technologist, (Oliver 2002, pp.248-9) - is integrative and collaborative, therefore, rather than itself being a silo of expertise. Most people working in the area were members of multiple communities themselves (through their diverse roles) as well as trying to integrate the work of others. As a result, diversity within the community itself can also be accommodated, so that the conference seems to integrate diverse groups. In a sense it is a group of people with similar problems rather than who have chosen similar solutions (a distinction made by Rahtz 2005). BK often said that there was no one fits all solution, but that the problem could be shared:

> So I guess in a way it shows that the members of the list are willing to agree and define some of the big challenges, but will then look to solve them in other ways. And in a way, it might be that you have to solve them on your own. But at least you know you're not on your own. (BKI17)

12. In so far as the Internet continues to have a certain cache as a revolutionary force in organisations, it may supply the sense of specialness that van Maanen and Barley (1984) argue is favourable to the formation of occupational community. The cross organisational

institutions play a role in creating this sense of significance, change, a "buzz" that valorises the activity.

Another level of factors arises from deliberate attempts to create cross organisational spaces:

13. JISC exists to build collaboration across the HE sector, identify good practices, promote standardisation. Its interventions cut against the need to compete.

14. There is a level of direct intervention, "coordination" in the sector, primarily by BK, that has favoured the creation of some sort of cross organisational space. In some sense the whole group resemble one individual's personal network.

15. Technology is also a factor. The explicit purpose of Net technologies is to make it easier to form direct relations between people. Mailing lists require little coordination; the technology is well understood. Low visual presence hides difference. A relatively easily accomplished climate of helpfulness (or even non flaminess) proves the existence of community. A common background makes it easy to establish context in questions, making them quicker to ask, and eliciting better answers.

16. IWMW acts as an episodic thickening of community. It has a role in realising that there is such a thing as institutional web management, and that it is an important activity.

The result, rather than formal professionalisation, is reliance on a few sector specific cross organisational spaces. These provide some aspects of the advantages of professionalisation, such as connections to discuss issues and reduce the load on the individual to entirely to reinvent the role. At the same time flexibility is preserved, both for the organisation and the individual. AM's comments (discussed in Section 6.13) point to the potential value of such lack of formality in giving successful individuals freedom to invent the job, influence the development of the organisation creatively and preserve a valued variety of roles. They can escape close monitoring and evaluation. They are orientated to local values, so there is no marginality in the organisation as found by Zabusky (1997) built into the role of IT specialist.

Yet the analysis of the pattern of participation in the cross organisational NOPs shows problems too in this informality. It is recognised that lack of career paths is a problem for those working in the web area; this is a problem within organisations and also across organisations, because there is no job market as such. The lack of an agreed way of organising the web leads to a continuing vulnerability to shifts in local political power. Women seem to be particularly vulnerable to such perturbations. There may also be costs for organisations, such as an inability to formalise outputs or to substitute credentialised staff for

local people who have evolved their roles. The direction of development is vulnerable to being hijacked by particular interests or perspectives.

7. Conclusion and implications

7.1. Introduction

This chapter draws the work of the thesis together. Section 7.2 recapitulates the findings of the data chapters, in relation to the intentions set out in Chapter 1 and the literature and method chapters. Section 7.3 summarises the conclusion about the research problem, and the following sections, 7.4 and 7.5 examine the contribution of the research to theory and implications for practice. Section 7.6 discusses the limits of the research findings, and 7.7 proceeds to examine how further research could build on those findings, testing and expanding their scope. 7.8 looks at one possible future path of development.

7.2. Overview of the thesis

Having reviewed the background to the topic, the first chapter identified the research problem addressed in the thesis: the character and significance of cross-organisational networks of practice in web production in UK HE. It was explained that to explore this, three more specific research questions were to be investigated. The thesis would start by examining the character of two of the main cross organisational spaces in the area, asking who participates, what work is done there, how they see themselves, their climate and governance. It would then redirect attention to the individual level, to explore how the character of local roles and local culture influenced participation in the cross organisational spaces, thus shaping the spaces themselves, and explaining the implications of a divergence from the model of formal professionalisation.

This promised to increase understanding of an ephemeral, under-researched but important information role and to expand knowledge of how the web works, by looking at the web producers themselves. It would also contribute to an understanding of how work and knowledge about work is organised where there is no formal professionalisation, the role of informal communities in this, and more specifically the nature of professionalisation in computing. It also offered to increase our insight into the springs of cross organisational information seeking and knowledge sharing and the working of online communities. Finally the thesis would also make a small contribution to knowledge about the nature of work in HE itself. The focus was deliberately delimited to HE, and to focus primarily on those building informational web sites rather than staff involved in e-learning, i.e. learning technologists.

The literature review established a base line understanding of the nature of formal professionalisation. It discussed the character of solidarity in professions qua communities,

and the balance of advantage and disadvantage to the individual and to the organisation in such a way of organising knowledge. The tension between the potential value of professional commitment and expertise and the possibility that a professional community be a rival form of loyalty to the organisation was framed as a key issue. The literature review also considered various ways in which the reach of the theory of the professions has expanded so that it offers theorisation relevant to examining work outside formal professionalisation, considering the concepts of occupational community, jurisdictional struggle and notions around professionalism as a social construction and discursive resource.

The concept of a community of practice can also be seen as challenging the centrality of formalised professional knowledge, in its stress on knowledge creating and sharing interactions at the level of practice. From the diverse COPT literature, Wenger's (1998) account of a community of practice was chosen as the basis for studying cross organisational clusters of activity, providing a four dimensional model through which to both describe and evaluate cross organisational spaces as networks of practice. At the same time, networked individualism as a concept of willed, loose knit connections was an important orientating concept, even if the typical method used to explore such ties, SNA, was rejected.

The literature of web production specifically, and engineering, technical work and computing more generally - and the literature on online communities and knowledge sharing in general - was investigated to yield a number of propositions about the nature of participation and the enterprise and repertoire that might be expected in such NOPs. In the first place the literature suggested that informal communities might in some sense substitute for professional organisation (P1). As such these communities were conceived as primarily about information gathering, but it was unclear precisely what forms of knowledge were gained there: were they for keeping up to date, keeping ahead or practical information (P2)? What particular qualities as information sources might they have (P8)? The literature pointed to technicians' interest in sharing know how, personal expertise (P9) and knowledge validated by experience (P4), often through stories, but there might also be a concern to manage the customer and do identity work (P3). Contacts with people were likely to be central (P5), but different networks would be used for different types of information (P7). Overall the networks of employees might be less extensive than those of contractors (P6). As regards participation one would expect discontinuities between experts and non experts (P10). People who are new to organisations might be particularly involved in cross organisational activity (P12). Technology allows the creation of large scale groups, but social relations do not scale (P11). Specific attitudes to technology may influence participation (P13). Ultimately local contacts are likely to be more important (P14).

As background, the character of email discussion lists was investigated. The literature review also discussed alternative theoretical starting points and the choices of method associated with them. The final part of the chapter expanded on this to introduce the overall qualitative methodological approach of the thesis.

In Chapters 4 and 5 the model of a NOP was used to loosely structure the study of two cross organisational spaces, and to provide a point of comparison, acting as a model. As the data was somewhat different for the two there were some limits to comparability. The conclusions can be discussed under the headings of the four dimensions:

- Participation

Although there was some overlap of membership, including of who were the most active members, the populations of the two were somewhat different. WS was larger, including more web authors; IWMW more specifically for central web teams and managers less than "techies".

Compared to a community of practice there was limited engagement in both spaces: WS offered a continuous but thin form of contact. The total number of messages ever sent was quite small and a significant proportion were sent by a few people. Traffic was reactive rather than interactive. IWMW was episodic and although it was the occasion for much direct mutual interaction, the core of the event was a one way presentation of ideas from the platform in formal presentations. As a whole there were no signs of the collectivity creating common projects, or the online group making a decided move towards enhanced technology or even to create a common web site. All this suggested that cross organisational contacts were secondary to local contacts as information sources.

A key divergence from the community of practice model was the scale of membership in both cases. They were large compared to a small scale face to face group like a community of practice. This inevitably limited mutual engagement: neither were a local, intimate group (confirming P11). WS did not seem to be used as a starting point of networking, rather the relationship was between the individual and the group as a whole. The groups were diverse in membership in occupational terms and subject covered, and could be conceived of as boundary communities. Yet the inclusivity had its limits; both WS and IWMW were predominately UK, HE and male. The content perspective was excluded. As a technologically mediated community WS attracted technically proficient and concerned practitioners, less the managers and marketers (as suggested by P13).

- Enterprise and repertoire

The enterprises of the two spaces differed somewhat: WS was primarily for fixing immediate small problems, leads and advice and to a certain extent working out a view of how to adopt emergent standards. This was consistent with previous findings about technicians' interest in sharing know how (P4), though it did not extend to "fixing the customer" (P3). It chimed with the idea that people are more likely to share their expertise than formal codified knowledge (P9). Interactions were elliptical, but it is difficult to see them as stories, certainly in any complex sense (cf. P3), rather it might be better to see them as enacting a narrative of helpfulness. The list was supportive as well as being about information sharing.

IWMW was more focussed on discovering the next big thing, providing opportunities to develop skills and understanding of key issues in workshops, mobilising local experience for the good of all in a formalised way, and bringing JISC services effectively into organisations. Informal contacts (less easily captured in the research) were also highly valued (confirming P9). All were unique types of information. The common ground that the spaces had was that they both had quite a strong technical orientation. This may have had a role in symbolically defining the field of web production as about technology and its implementation.

The data about the repertoire explored in Chapter 5 was limited. BK was clearly claiming the existence of a shared history and a common set of experiences, but there were limited data about how this was used and reworked. The evidence for WS was that the repertoire that supported interaction was not original, rather the familiarity of the genre of interactions was a resource enabling easy use and new entry. However, the result is a list without a strong local culture. There was evidence that the archive of past activity in WS was not heavily reused.

- Identity and community

It was argued in Chapter 4 that behaviour on WS constructed a helpful, professional, non-geeky identity. It was also clearly a computing orientated discussion, not just from what was discussed but how it was discussed. This suggests ways in which those from the content community were excluded.

As regards WS there was a patchy sense of community, which seemed to be accomplished through a number of relatively low level processes, such as: a level of reactivity and demonstrated helpfulness, the egalitarian character of off the cuff, contributory answering, a level of politeness, a lack of a sense of anybody in control or there being strict rules and a few people taking time to maintain an identity and glimpses of interactions between people who know each other. Here the claim of community was not a strong claim, only the sense of being something more than just a source of information.

- Climate and governance

The climate of WS was generally friendly, though there was some conflict between the main participants, acted out through the "religious" divides of computing (Mac v. Windows, Linux v. Microsoft, adherence to standards v. pragmatism). However, in essence these were personal squabbles that did not matter much because the community had no highly valuable purpose as such.

WS was not formally governed; it traded on very well known conventions of behaviour embodied in netiquette and familiar computing support practices to produce a form of interaction requiring minimal coordination. Naturally the conference series was much more closely organised, and influenced by commercial considerations and one individual's view of the sector. The claim of community that BK was so careful to construct may have been partly about influencing the climate of relations at the conference itself. It also works to construct the existence of a cross organisational space - institutional web management - that does not necessarily exist, and to make claims that it is important and what it should be about. Yet, the claim expressed his sincere perception of a special quality of relations found in the domain and he seemed to be reflecting a general experience.

Both the cross organisational spaces were useful; they provided everything from a responsive source of immediate fixes to an indication of major sector trends and forms of moral support. IWMW could be seen as more inventive at a higher strategic level. WS was more inclusive, and, as more continuously available, more immediately helpful. The limit of both lay in their positioning in the technical field and the resultant reach of participation. Chapter 6 proceeded to deepen understanding of the cross organisational spaces by looking at the springs and limiting factors in individual participation.

Even though web production was in some respects a mature practice, the issues known, there continued to be a shared challenge of legitimation for institutional web managers, both with senior management and with web authors. People in other institutions were a resource for local efforts of legitimisation. What is done in other similar organisations can be used to influence senior management to invest resources in the web. The conference had a role in creating a sense of dynamism and cache which boosts morale of IWMs in their local dealings (acting mostly reflectively to do this). The conference was a place to spot upcoming trends which helped them boost their personal local position by being there "first", which often in interviews was seen as key. In this employees had a need to keep ahead in the same was as Barley and Kunda's (2004) IT contractors, contrary to the contractors' belief that employees

organisation to another, if the context of operation is substantially different. Perhaps therefore IWMW should be seen as a boundary community in the sense of in itself including multiple perspectives. This probably reduces the salience of the newbie/expert divide (cf. P10). This arose not simply because collaboration is inscribed in the technology, as Uimonen (2003b) argues. The orientation of many IWMs to "bridging" roles, to influence senior managers and web authors and try to understand the needs of end-users locally also favours cross organisational networking. The same skills and mindset are needed, even more so as the community itself has representatives of many groups whose concerns need to be bridged. This seems far removed from the characterisation by McCombs (1998) and Woodfield (2000) of computing services people as unreconstructed "techies", and to be far closer to the ideal of service to users that those writers see as just a surface ideology.

A particular role associated with interest in the community was an externally facing role, either that of monitoring for new technologies or presentation of the university strategy. That is to say some people had a role which looked to external examples and benefited from there being an active cross organisational space from which to draw exemplars.

There seemed to be a marketing and an IT orientated way of talking about the web (i.e. discursive resources, but also actual practices). People did not neatly use one and deprecate the other, but orientated towards these arguments. There seemed to be evidence that IT was often a focus of cooperation: it is a dynamic area so the new information needs are greater, there is an IT tradition of sharing knowledge, IT is not competitive as such (a CMS is not really a source of competitive advantage, whereas marketing is precisely aimed at differentiation for competitive advantage) and IT is often about localising systems which exist at a general level. The large old institutions lent their prestige to IT, and deprecate marketing, and IT was central for JISC strategy and BK.

There seemed to be systematic connections between the factors, so that the big old institutions were likely to have decentralist models of web production they also had more resources, so had web teams and dominated the technology fashion. In addition, they deprecate marketing. This means that the large wealthy old institutions tend to dominate the IWMW agenda, to the exclusion of the perspective of less technical, more marketing orientated smaller institutions.

Low professionalisation was a feature of the organisation of work. BCS was the most commonly mentioned professional body, but none of the interviewees was a member of it. As technicians many found they were not able to get membership of the most prestigious professional institutions in marketing. The expectation that professionalism would be seen as a valued discursive resource was supported to a certain extent.

It seemed that there were emergent gender issues. The female professions/skills in marketing, external relations and graphic design are downplayed in the community, which focusses on the male dominated profession of computing. The discourse of professionalism may also be less usable to women. The result is that men often seemed confident, whereas women were in more defensive positions.

Exploring the set of factors in relation to the model of a profession as a community suggested various observations about the nature of cross organisational association in this space. Whereas, for Abbott, its public image is a key element in the emergence of a profession (1988 pp.60-62), the web does not have the image of being a profession at all. There was no common formal socialisation process through accredited professional courses, although a sector specific training organisation, Netskills, was working to develop some accreditation for its training. Because each institution organised the web so differently there was a lack of parallel socialisation through parallelism of practices, such as writing code (though there was some common ground). There was a lack of sector specific media, though people in the sector might have common reactions to more generalised web news sources. Professional bodies were inactive in the area, though the model of professional collective action and CPD was perhaps influential in the formation of informal communities to meet the perceived functions of a professional body. There was grounds for networking in sector specific information needs. There were also common pressures on all those working in the HE sector, and a common education background. There was common ground in the need to legitimise the role, but this did not express itself as social closure around the role of IWM. Thus overall much of the common ground that would exist in a profession did not exist, though some elements were there.

Helping to sustain a community, was the specific character of the web: the visibility of web work, the collaborative ethos (maintained at least among decentralists) and the cachet of working in an organisationally transforming technology - all these brought people together. Further, there was the coordinating impact of JISC's general activity in constructing sector wide collaboration and BK's work as web focus. This was both essential to the creation of a cross organisational space, and limiting in restricting the focus to IT and HE (for example not the whole web production sector). WS but particularly IWMW had a value in constructing the existence of such a thing as IWM, of a cross organisational collaborative space and opening up pathways of influence.

7.3. Conclusions about the research problem

The research problem addressed in this thesis was: **what is the character and significance of the cross organisational networks of practice in web production in UK Higher Education?** The thesis explored in depth the working of two clusters of cross organisational activity, one online, the other an annual face to face conference series. Though connected they had different participants and uses. They are valuable sources of diverse, unique information: and in a sense perform some of the roles of professionalisation. There was no aspiration to social closure or great interest in defining the IWM role, however. Nor do they constitute in any sense a locus of a rival source of loyalty or commitment (cf. Zabusky 1997). Web producers were not generally organisational outsiders, or if they were this was because of organisational incomprehension of the web more than their external orientation. If support and knowledge is sought in these spaces the whole thrust of the effort is directed towards improving practice in local organisations, increasing its influence.

Both cross organisational spaces were in themselves seen as communities by some participants. For delegates who return year after year to IWMW it did sometimes feel like a community. To a certain extent the event is organised in a way to stimulate such a feeling. WS and IWMW were also both public spaces in which a deliberate rhetoric evoking or constructing community could occur. Further, acts of helpfulness and other behaviour were visible here, that could be taken by participants as evidence of the existence of a "real" community, extending to people not participating and based on common preoccupations or problems. The plausibility of such thoughts was linked to a grounding in real world conditions. Compared to the grounds for community found in a profession, the basis in the web production area seemed quite weak, eg experience was quite diverse and there was no common socialisation. Yet the conditions were strong enough to sustain a sense of community for some over time. Where the boundaries of the community were partly determined by such underlying factors but also to conscious rhetorical choices and the positioning of the cross organisational spaces as symbols. In a sense this meant that the perceived community was bounded in ways which seem to misrepresent the "real" community. This was because symbolic communities were in technical areas, masking views that foccussed on content rather than technology.

7.4. Theoretical contributions

This thesis has explored the nature of informal, online communities, which seem to be a common feature of cross organisational professional contacts in computing (and other professional domains). It has increased our understanding of the dynamics of such groups: the

inclusive character of membership, the types of information they are valued for and how support can be offered implicitly. It has identified in this case a reactive level of engagement as characteristic, and shown how the character of interactions implicitly construct a professional, non "nerdy" identity. It showed some of the processes involved in construction of a sense of community. It has suggested how such spaces can be seen as boundary communities, by showing the inclusivity of their topical reach, but also explored the costs of informality, for example in terms of gender participation. It has demonstrated how the spontaneity, voluntarism and flexibility of the "informality" so central in the discourse of online community and community of practice masks a potential cost in terms of participation (Mistzal 2000,2002). Further, the thesis has supported a continued interest in studying email discussion lists.

The thesis has also explored the parallel role of a practitioner conference series in constructing the nature of web production as a job, and its relation with the online group. The genre style analysis has been usefully extended to study this face to face event. The thesis examined how and why a claim of community is made at the conference, expanding our understanding of the nature and role of community as a claim. In many respects it is the unremarkable character of both of these forms of association which make the study of them interesting.

At the cross institutional level, networked individualism in NOPs seems a more relevant reference point than intense communities of practice. However, the reworking of Wenger's (1998) conceptualisation of community of practice as a theoretical framework for exploring a "NOP" was successful in offering a simple model of their principal dimensions, some useful terminology and a point of comparison that helps reveal the nature of particular communities. Community is a vague concept that has defies precise definition, but this vagueness is one of its strengths as a social resource. BK's use of the term illustrates the urge to use it to express a feeling which is significant to social actors. The concepts of reach and non use expands on simpler forms of evaluation, by looking at who should participate and what should be discussed, not just the level of satisfaction among those who do participate.

By exploring the cross organisational spaces and their inter-relationships, and the impact of local organisation of the job on participation, the connection between online communities and their real world context becomes clearer, avoiding the solecism of seeing the community as a free floating object. The relevance of the theory of the professions to studying online communities has been explored, showing more clearly the relation than simply seeing them as substitutes, through being a source of information and a form of informal CPD.

The thesis also makes a contribution to our understanding of the nature of (occupational) community. A mailing list and arguably also a conference can in themselves be experienced as a community. But they may also be taken to be symbolic of a deeper, "real" community, extending to people who are not participants but who share some common ground, such as a similar occupation or preoccupation. The character of the symbol may influence perceptions of what that real community is like. So if, as here, the symbolic community is in the technical area, this may mask the possibility that the underlying common ground includes people with a marketing orientation.

Such spaces also provide a necessary public place in which active community building work can be done. Thus speeches at IWMW explicitly made a claim that there was a wider "real" community. A platform was needed from which to state this. To a certain extent the circumstances in which the claim is made test its plausibility. So if the conference has been as experienced as close knit, with speakers and other delegates seeming to have very similar concerns, a delegate might respond to the rhetoric favourably. Such claims should not be seen as cynical i.e. manipulative or simply for individual gain - rather the rhetoric is sincerely believed and community spirit is seen as worth building up for the general good. This does not, however, prevent such rhetoric also constructing the community in a particular way, eg drawing boundaries in particular places - when it was possible they that could be set elsewhere.

At another level, certain quite superficial processes give rise to a sense that there is a community. Thus the voluntary and informal character of email discussions in WS does convey a sense of public spirited helpfulness, which can be perceived and evoked as proof of community - even though other interpretations are possible.

These positive constructions and low level activities taking place within symbolic communities interact with underlying structural forces which favour or block achieving a more persistent sense of community. These structural factors could be seen as the grounds of a "real" or natural community. In the thesis they were understood by comparison to the strong grounds for community found in a formally professionalised field. Thus, for example, the seeming relative continuity of people in web roles favours the gradual growth of personal networks through accumulation of chance links. So this structural feature can be seen as favouring realisation of an occupational community. On the other hand, lack of common socialisation militates against a sense of there being a cross organisational community. Community building rhetoric or low level activities or symbolic communities serve to realise active consciousness of the real community. This is captured in Amit's (2002) idea that latent community can be realised and made visceral through some direct contacts occurring among

those having common ground (see above Section 2.3). Yet, in theory a group could have a sense of community, but it be largely a willed social construction, without any real basis. One might expect this to be a somewhat transitory phenomena. Equally, there might be powerful forces for a latent community without the sense of community emerging, because of a lack of places for people to meet or explicit rhetorical claims of community. Given the complexity of the social world and the agency of actors it seems unlikely that sense of community can ever be simply read off from underlying structures.

While priority is given to perception of what community means to participants, a precise definition for a type of community did prove useful too. Thus COPT provides a model of a close knit community which can be used as a comparative reference point for looking at any actual space. This model is not a more valid or true definition, but purely for the study may be useful. In fact, it did seem that a COPT based model was a good way to structure the analysis of the studies of the online group and the conference, but also, more fundamentally, a way to evaluate them. Such an evaluation does not assume that a close knit community is in any sense better or more appropriate to the needs of a particular group, rather merely measures the intensity and the causes of this.

The thesis has added to our understanding of an under-researched part of the information profession: those involved in web production. The interview data does a little to capture the rich but ephemeral working culture of this domain. It has confirmed and extended Armstrong et al.'s (2001) characterisation of the diversity of the organisation of this activity in terms of background, job title, organisational position, role and occupational trajectory. The thesis has also identified an important division in discursive resources in treatment of the web, between an information and a content view, and explored the nature of this fracture line, including its gender aspects. This expands on what is already known about the gendered nature of IT and web skills in particular (Kotamraju 2002). The division between these two ways of looking at the world may be significant across the whole information profession.

The thesis specifically challenges whether Zabusky's (1997) characterisation of the IT specialist, with their prior loyalty to a community of expertise beyond the organisation, provides a complete account of the dynamics of this other computer support work. In fact it finds that it does not fit the case of web production well; indeed the reverse logic seems to apply. Web producers are likely to be organisational loyalists, for whom there are obstacles to constructing an external community at all. At the same time Gornall's (1999) characterisation of new professionals may be too optimistic in seeing web managers as marginal but powerful through association with institutional change desired by senior management. There was often

a sense of a strategic hole or at least senior management incomprehension of the issues in the web area.

The thesis also expands our understanding of occupations in the computing domain, showing how the web as a low level technology remakes many roles, not just those most easily recognised as computing ones. The character of these jobs is often focussed on trying to exercise influence over others, be they web authors or senior management. They are intermediary roles. These roles, at least, do not fit with McCombs' (1998) characterisation of academic computing services as dysfunctional. Nor do they fit well with Rose's (2002) characterisation of computing professionals as isolated relative to other professionals in the organisation. As "bridges" those working in the web space are precisely orientated to changing the organisation around them and breaking information out of silos. The nature of computing as a form of boundary practice, around which inter-institutional collaborations are clustered, has also been revealed and explored.

The thesis expands our understanding of how work and knowledge about work are organised outside formal professionalisation. In fact, it does find that generalised models of professionalisation are influential, eg the model of CPD and in a valuing of "professionalism". Overall it shows how the balance of advantage and drawback of formal professionalisation are worked out in one emergent occupational space. It is interesting how different the outcome has been from the learning technology area where there has been the emergence of professional forms of organisation (Oliver et al. 2004). One can speculate that this is because of the association of learning technology with the core purposes of institutions and the dominant profession: the academics. It is too core an activity for organisations not to control it closely, with benefits in terms of clarity of job role and career progression. In contrast, in the web area a lack of professionalisation was seen as necessary because of the speed of change and encouraged by generalised suspicion of professional associations. To the individual lack of formal professionalisation offered variety, influence and creativity but also vulnerability. To the organisation it seems to offer flexibility and may offer a reduced challenge of conflict of loyalty. A greater understanding of this logic may provide a more solid basis for examining cross organisational knowledge sharing and differential patterns of activism in cross organisational activities at a more general level.

Certainly the thesis tells us a little more about the nature of HE as a set of institutions, and the impact of its diversity in configuring work. Gornall's (1999) characterisation of new professionals in general perhaps underestimates the active intrapreneurial effort needed by them to maintain senior management interest, and so access to institutional power, to outbalance the risks of being in liminal positions. Nor does it acknowledge the cross sectoral

diversity that impedes the development of a cross organisational community. The interaction of professionalisation and the adaptation of roles to individual preference is an interesting light on the nature of much work in HE.

7.5. Practical implications

At IWMW2005 the author participated in a panel session on "The web management community: present and future" (Cox, Kelly and Ireland 2005). This session captured some practical implications for future development of web production as a community, particularly in the context of apparent changes in WS, and the reduction of coordination effort by BK as web focus (Kelly 2004d) and his desire to promote new technologies of collaboration.

The way that WS has built upon low level helpful reactivity, supplemented by forays into best practice, frames the continuing need to develop collective practices to sustain a useful cross organisational community. The local focus of practitioners makes this a continuing challenge. IT may be a natural ground of collaboration, but may also skew the perception of the activity.

Drawing out the historic contribution of WS helps to make the point that the specific technology in use, email lists, have many advantages, such as universal reach, flexibility, low cost and the ability to borrow self sustaining genre of interaction. This makes the case for "low level" technologies (if email is that), and not necessarily excessive concern with technology as such at all. Plans to introduce new types of forum to the space raise issues of appropriateness of their features and how to support migration. The research pointed to the risks inherent in dividing effort if new technologies were introduced, as one of the challenges of migrating communities through different technologies.

Uncovering the discursive divide between the information and content ways of talking about the web pointed to the need, certainly at the cross organisational level, and perhaps also locally, of doing more work to integrate these perspectives. It poses the question of whether a move away from a technical agenda would sustain broader participation in cross organisational spaces. This would not necessarily be the case, given the characteristics of IT that make it a focus of collaboration. Yet given the gender aspect of participation this is an important issue, one that should perhaps not be left to see what emerged from "informal" interactions.

These issues around the forces for standardisation across a sector have implications for bodies like JISC and how they might support collaboration across institutions even in areas where competition between them is quite salient, and not just in web production. The experience of IWMs (and also learning technologists) suggest, for example, the problems that will be faced

by people working in e-research as an emergent practice: ad hoc development, multiple roles, tenuous access to resources, status concerns, lack of career paths. The approach that has worked for IWMs, eg creation of the web focus role, creation of a conference series and informal ties through CMC, may also be helpful in other new areas. The research also points to issues about the importance of deliberate effort at inclusion of smaller HEIs and new universities, as well as of FE, in agendas which are often dominated by the large old institutions. Methods of evaluating the health of the community developed in the study, such as the topical or participative reach of WS and IWMW could be used to support steering them in healthy ways: this goes beyond simply asking actual participants if they are satisfied. The model of uwebd and US trends in developing practitioner conferences that bridge the divide might be instructive, notwithstanding the differences between US and British education.

On the other hand, the level of community of feeling that has emerged historically is precious and perhaps quite fragile, and there is a strong case for protecting it even if there is some cost in terms of balance. Given that a defining aspect of practitioners' work is their local focus, the problem of how to provide facilitation effort in a sustainable way is acute. BK's role emerges as critical across the whole sector. It is not clear that technology can substitute for such human coordination. Continuing to support the efforts to construct a perception of community through roles such as web focus or funding joint projects in the web area could be worthwhile. The literature is clear in seeing these facilitation roles as difficult but essential. The decline in activity since web focus reduced his involvement in WS is a strong confirmation of this. To a certain extent any centrally funded services could use WS and IWMW as channels through which to bridge into local organisations, though the research has not collected much specific data about the effectiveness of such channels.

For professional bodies thinking of expanding membership into the web production area or similar areas, the research tells us something about the problems of recruitment. Sectoral perspectives were quite powerful and there seemed to be little appetite for out of sector contacts, which would be one of the main features of a fully professionalised field. Professional membership was generally viewed with a certain cynicism, particularly given the rapidity of change of technology. In fact, professionalisation might be quite divisive in fixing the boundary between information and marketing perspectives. The research does, however, point to the way collegial ties can be mobilised to facilitate cross organisational knowledge sharing with relatively simple technologies. This is highly relevant, because professional bodies such as BCS and IEE are moving towards harnessing the power of informal online community (BCS 2005, IEE 2005, see also Gallas 2003, Bieber 2001, 2002). The research does also, however, reinforce the message from previous literature on online communication

(summarised by Herring 2001) that the benefits of informality may be bought at the cost of a gender slant in inclusion, unless facilitators recognise and address the problem.

7.6. *Limitations*

The thesis has revealed much about the character and significance of cross organisational spaces in web production, yet some limitations, particularly arising from availability of data, need to be acknowledged.

As regards Chapter 4, a significant limit was the lack of archived messages for WS from the period 1994 to 1998. The early stages of the development of an online community are likely to be particularly interesting and revealing (BKI11), yet the data from this period is unrecoverable (apart from a fragment from 1994, found by the author). It is interesting to note that data for uwebd are also limited, pointing to a pervasive tendency for records about web activities to be quite evanescent (Kotamraju 1999). Data about membership and use of the list archive are also limited. Only a sample of all the available data in the archive was in fact analysed, and we would learn more if more data were processed using the methodologies developed in the chapter. Equally we do not know the true level and character of off list posting, nor do we know very much about the reception and personal use of emails from the list. Some useful suggestions have been made based on interviews, questionnaire and internal evidence, but the relatively low response rate to the questionnaire for example necessarily limit the sureness of findings. The diversity of potential uses make it essentially a very complex question. Nevertheless, within these important limits, a useful characterisation of WS as a space does emerge.

As regards Chapter 5, the data for the conference series are even more fundamentally limited. We lack access to the full text of papers or even a detailed report based on observation, except for the 2003 and 2004 events. The lack of scholarly infrastructure prevents them from being analysed through citation analysis. Certainly there is a lack of any record of the informal interaction that took place in the conference or post conference networking or even within the discussion groups. Given the centrality in information preferences of such pragmatic know-how as opposed to formalised knowledge in papers, this lack for a practitioner conference is significant. The obstacles here were that the events are in the past, the ownership of the event by a particular organisation and ultimately the nature of these private interactions being rich, highly complex and fleeting. Having acknowledged these limits a useful picture of the character and evolution of the conference has been captured.

Within Chapter 6, one major limit was the small number of practitioners who were interviewed. Given this the analysis can only be seen as suggestive of the factors involved in participation in the cross organisational spaces, requiring further validation. Yet the complexity of the issues, the fine grained analysis required to tease them out make it difficult to see how much more could have been done within the resources of one thesis. This again must explain the reliance on interviews for data about local practice, as opposed to direct observation. Observation would have given a more vivid view of how different usage of discursive resources about the web are used in specific situations and particularly the nature of local relations between marketers and IT people. Nevertheless the sophistication and eloquence of the arguments presented in the interviews point to them successfully capturing well rehearsed ways of talking that persist across contexts, justifying an interview approach. Given the thesis's emphasis on cross organisational activity a lot of local work could not be justified.

The research has not collected data about whether participation in the online spaces improved performance or job satisfaction at an individual or collective level. It is possible that the cost in time and effort involved in participating outweighed the gains in terms of knowledge or social support. In fact, to demonstrate a link between performance and participation "objectively" would be difficult partly because of the problem of choosing criteria to evaluate web sites, presumably some variant on usability testing or user testing. The information - content divide suggests the difficulty of arriving at agreed criteria of evaluation. Given the multiple factors that go into achieving quality it would be difficult to differentiate the specific impact of whatever was gleaned from participation. It would be difficult to go beyond anecdotes of personal benefit. In fact, this is precisely a key aspect of the evaluative methodology proposed by Wenger, McDermott and Snyder for communities of practice (2002, pp.168-71). Further, the argument here is that participation may be influenced by the character of the role more than a calculus about costs and benefits in informational terms. This points to problems with the idea of simply evaluating online communities and their contribution.

Implicit in the recommendations for further research is a sense of directions the research needed to explore to provide a more complete picture of the whole field, and develop the comparative data that would be needed to fully understand this case. Inevitably as a seamless skein social life cannot be understood within the crude boundaries of simplistic social categories. Sheer lack of time was the main reason for not pursuing more of these approaches within the scope of one thesis.

7.7. Suggestions for further research

The exploration in this thesis of the character and significance of networks of practice in web production in UK HE opens up several possible lines of future research. These can be considered under five headings.

A. The thesis has examined in depth some of the cross organisational spaces in UK web production. There would be scope to thicken the existing study by looking at:

1. The several regional support networks that have existed historically.

2. Topical networks: especially those emerging around new technology such as institutional portals. This would be particularly interesting because they might be much more small scale, sustained and inventive than most of the cross organisational connections examined here. COPT or theories about collaborative relations could be more directly applicable.

3. Individual personal networks, possibly using formal SNA, looking at the relation, perhaps, between local and cross organisational patterns.

4. Connections built through new technologies. It would seem that in the future, BK may be successful in encouraging those involved in web production to use new collaborative technologies such as blogs and wikis. It would be interesting to examine how using new technologies reconfigure the existing network, how they change the pattern of interaction and types of knowledge exchanged and how the leadership challenges in such a migration are managed.

It would also be useful to interview more participants and non-participants, particularly those in smaller HEIs and new universities, to further explore the springs of individual participation.

B. Having explored the topic of cross organisational links with qualitative methods, there is the basic understanding on which to base a more positivist study, to survey those employed in web production in all institutions, about their local roles and cross organisational activity. Beetham, Jones and Gornall (2001) provides one model of how to do this. Definitional issues would still be problematic given the diversity of arrangements across the sector, but after this research these could be more successfully addressed.

C. This thesis's focus was primarily on cross organisational level activity. Only interview data were used to look at the local context.

1. It would be particularly interesting to perform detailed studies of local web development and the interactions that occur around this, perhaps using workplace ethnographic methods. Such studies could explore the character of interactions between web managers and other web authors and departments as clients, for example tracing the variations in use of the content and information discourses, as well as the discourses and practices that are drawn on to influence others. The analysis could extend to interactions with senior management in the struggle to win resources and attempts to reach out to understand end users. Such studies might also usefully encompass interactions between web managers within their own department, to explore the struggle of web managers to define their role as a "serious" one to colleagues. This would go some way to address the lack of ethnographic style research into the nature of academic computing departments (or for that matter marketing departments).

2. The nature of the role of web authors and the way web skills are constructed locally within a local community would in itself provide an interesting complementary study. Local institutions' email archives are also a potential resource for research, especially for a study of the social construction of the role of web author.

3. At a level higher in the organisational hierarchy, it would be interesting to explore the place of web production in the overall provision of both academic computing services and perhaps also marketing, through interviews with more senior managers in those departments. This would bring out the balance of organisational advantage in formal professionalisation and how arrangements in the web sphere interact with the home department, as itself in some sense a (professional sub-) community.

4. This could be further set within the context of JISC activity, in research asking how policy is itself constructed and looking at how the central and specific JISC services use institutional gatekeepers to bridge into local organisations.

5. Another approach would be to look at the broad "information needs" of web practitioners and see how these are met in practice. Such a study would help put use of cross organisational sources discussed here in a broader context.

6. Wenger's (1998) concept of multi-membership invites research looking at the difficulties of being a member of multiple communities. If the web manager has the roles of coding, writing guidelines and training, for example, what are the strains (and advantages) of being members of such diverse communities? This approach would also open up common media exposure as a common ground between people working in web production.

7. Another line of research would be to look at the policies of professional bodies working in the area of the web and see how they have attempted to incorporate the new practices.

D. As this was a case study limited to one country, the research invites comparative studies in other geographical spaces, eg USA or Europe. It could also be usefully extended to other sectors, such as UK FE, the public sector more generally or the commercial sector, to examine differences in the working of cross organisational contacts among web producers in those sectors. This thesis has focussed on employees. The study could be usefully expanded to explore the role of IT and other contractors in the web production process.

E. This case study was confined to one "professional" domain. The same approach of looking at cross organisational connections, including online communities, in relation to local context could be usefully applied to any emergent or established occupational practices. It might be a fruitful way to look at online community activity across various professions. The instrumentalisation of COPT developed and tested here is available as a resource to do that. A data resource in this could be jiscmail archives, which contains a vast amount of potential data from email lists, which has been barely investigated by researchers.

7.8. One future

> Talis Insight is the conference and exhibition for the Talis community. It will bring together Talis customers, partners and staff to talk about maximising the return on investment, streamlining operational processes and to set the direction for the future. (Talis 2004)

Every six or so years academic libraries undertake a major procurement exercise to license a library management system (LMS). The LMS is a hugely expensive, totally proprietary piece of software that provides the IT infrastructure for a traditional library, to manage the book and journal stock, providing the circulation system, the OPAC, as well as back end systems such as for acquisitions. Many of the suppliers of LMS (like other software suppliers) build their own user communities encouraging customers to talk to each other and opening up more continuous contact between the customer and system vendor. This fits quite well with optimistic notions about users as potential sources of innovation (von Hippel 2001) or forms of participatory design.

The Talis Insight conference is one example of this phenomena, consisting of a careful blend of big name speakers on a range of library management topics but also including the "Talis zone" at which delegates can "come and talk to the people behind the software and put faces to names in an informal environment" (Talis 2004). Sold as a customer benefit, such "communities" also give the supplier privileged access to the customer, certainly without the presence of rival suppliers (such as would happen at an exhibition, like Online Information).

There is also a "Talis Developer Network," created in 2004 "as a knowledge base where members could share technical 'assets' from 'how to' explanations to documentation, scripts, APIs and full-blown open source applications" (Talis 2005). Talis run online forums for users to discuss the implementation of their product.

Such events and networks are presented as a customer benefit. However, in a sense the whole purpose is also to lock customers into dependence on their current LMS. They are somewhat closed user communities, which are inevitably dominated by the supplier. The capture of libraries in user communities is partly possible because they do not have in-house development resources and do not see development as a core competence. Further, having bought a system, any interest in systems as a whole evaporates. As a consequence there is no real space to discuss library systems in general (eg no jiscmail list), or to build collective pressure to improve systems as a whole. The author's own experience was partly the uncomfortable one of trying to work in this non-existent space. Asking why it was different in the web area was part of the motive for the research.

To date, the web area has had a different experience. Partly this is inscribed into the technology. The web is in its very nature distributed and open. There is no necessary dependence on one large system/vendor. The UK HE web community has emerged out of common problems, rather than common solutions. The impetus for collectivity has come from JISC, not system suppliers and on the whole commercial elements, apart from the odd consultant, have been excluded.

However, increasingly the same pressures that work in the LMS context may suck web producers into user communities, if universities become dependent on large proprietary content management systems. BM saw this move away from DIY development toward customisation of proprietary solutions as a recurrent path in the history of computing (BM15), even though he still saw the DIY spirit as typifying web people and differentiating them from librarians (BM81). TM also attributed a certain apathy in the cross organisational domain to a focus on local solutions:

> Because technology comes down to a solution, it's the case of which one - you want a content management system - fine - that's a content management system. The moment we have one it will probably be good enough for a number of years knowing how we work - I'm not particularly interested in the latest or even the other content management system. I would rather spend my time making that one work, and making sure people can use it and so on. (TM71)

The cross organisational community as it has evolved is a precious space that has helped make sense of a new technology for many practitioners. The personal experience of the researcher from the IWMW conferences, is of an intelligent, thoughtful, intrapreneurial

group. It does seem that it is in some sense skewed towards the bigger institutions, excludes the content perspective and perpetuates a gender bias. Yet the further evolution of such informal organisation seems the most attractive forward path for web production in UK HE. Some of the vivid quality of the cross organisational ties might well disappear if vendor dominated user communities emerge or even under formal professionalisation, though there would be advantages to these forms of organisation too.

Publications and presentations arising from the thesis

Cox, A. and Morris, A., 2003. Dynamics of a distributed community of practice. *In*: Verburg, R. M. and De Ridder, J. A., eds. *Knowledge sharing under distributed circumstances*, pp.25-30.

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