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Developing an Architecture of Participation

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Abstract:

This paper focuses on work undertaken through the European Commission funded Bazaar project to establish a community of practice for researchers and practitioners in open source software and open content. The paper considers the use of social software to support such a community of practice. It considers some of the theories and ideas behind supporting communities before going on to outline the design of an Architecture of Participation.

1 Why we are doing it

This paper discusses work undertaken both at a theoretical level or at the level of ideas and practical work in progress in developing activities - face to face and mediated through computer based tools - to develop a community of practice around Open Source Software, Social Software and Open Content in Education. The work is being undertaken for the Bazaar project funded by the European Commission's e- Learning programme. The aim of the project is to develop and support a community of practice for teachers, trainers, moderators and facilitators in the development, creation, exchange and use of e-learning materials. This involves the following activities:

- The provision of information and services for teachers and trainers in the development, creation, exchange and use of e-learning materials.
- The facilitation of social networking and the development of social networks.
- The provision of opportunities to test and use different Open Source Software tools and applications.
- The provision of opportunities to explore and share experience and practice.
- The provision of opportunities to share learning materials.
- Research and dissemination into emergent issues and practice.
- Networking of projects and initiatives.
- The provision of peer group advice and guidance and access to expertise and help.
- Opportunities for discourse and communication between developers and users of e-learning applications.

We have considerable experience in attempting to develop shared meanings, understandings and activities between participants from different countries, cultures and disciplines in different previous projects and the difficulties this entails, particularly the barriers to active collaboration in a dispersed environment. We have also designed and tested different platforms and tools for communication and collaboration, and are aware of the pitfalls to their effective utilization. In developing the Bazaar project we have formulated an Architecture of

Participation, which we feel may go some way towards overcoming some of the difficulties previously encountered. The Architecture of Participation draws heavily of ideas from the Open Source Software Community and from the development and use of Social Software. However, the Architecture of Participation is not a software system as such - or even a collection of software tools - but rather a bringing together of various technologies and activities designed to facilitate and promote participation, communication and the active co-construction of meanings and knowledge.

The Architecture of Participation is built on ideas from three strands of previous research. First, we believe that knowledge is a product of the activity, context and culture in which it is used and that producing effective educational tools requires understanding the nature of the activities and relationships which exist in the proposed context of deployment. This fits with Engeström and Cole's [1] notions of cultural historic activity theory and Engeström's [2] theory of expansive learning. Second, we believe learning is social and comes largely from our experience of participating and engaging in daily life. In this understanding we draw on Jean Lave and Etienne Wenger's [3] research into communities of practice. Third, we believe much knowledge is communicated and constructed through narrative processes and story telling. In this, we draw on work by Steve Denning [4], Orr [5], John Seely Brown [6] and other writers.

In the following section we will outline these underpinning ideas. This will be followed by a consideration of the problems with traditional project designs and tools. In the last section we will outline the rubrics of a design for the Bazaar project, which we call an Architecture of Participation.

2 Communities of Practice

Mark Smith [7] has produced a useful summary of research and writings, particularly by Jean Lave and Etienne Wenger, on communities of practice. This section draws heavily on his text. Wenger points out that we are all members of different communities of practice:

“Being alive as human beings means that we are constantly engaged in the pursuit of enterprises of all kinds, from ensuring our physical survival to seeking the most lofty pleasures. As we define these enterprises and engage in their pursuit together, we interact with each other and with the world and we tune our relations with each other and with the world accordingly. In other words we learn.

Over time, this collective learning results in practices that reflect both the pursuit of our enterprises and the attendant social relations. These practices are thus the property of a kind of community created over time by the sustained pursuit of a shared enterprise. It makes sense, therefore to call these kinds of communities communities of practice.”

Although the nature and composition of these communities varies members are brought together by joining in common activities and by 'what they have learned through their mutual engagement in these activities' [8]

According to Wenger [8], a community of practice defines itself along three dimensions:

- What it is about – its joint enterprise as understood and continually renegotiated by its members.
- How it functions - mutual engagement that bind members together into a social entity.
- What capability it has produced – the shared repertoire of communal resources (routines, sensibilities, artefacts, vocabulary, styles, etc.) that members have developed over time. (see, also Wenger [9])

A community of practice involves much more than the technical knowledge or skill associated with undertaking some task. Members are involved in a set of relationships over time [3] and communities develop around things that matter to people [8]. The fact that they are organizing around some particular area of knowledge and activity gives members a sense of joint

enterprise and identity. For a community of practice to function it needs to generate and appropriate a shared repertoire of ideas, commitments and memories. It also needs to develop various resources such as tools, documents, routines, vocabulary and symbols that in some way carry the accumulated knowledge of the community. In other words, it involves practice (see praxis): ways of doing and approaching things that are shared to some significant extent among members.

Rather than looking to learning as the acquisition of certain forms of knowledge, Jean Lave and Etienne Wenger [3] have tried to place it in social relationships – situations of co-participation. As William F. Hanks puts it in his introduction to their book: ‘Rather than asking what kind of cognitive processes and conceptual structures are involved, they ask what kinds of social engagements provide the proper context for learning to take place’ [3]. It is not so much that learners acquire structures or models to understand the world, but they participate in frameworks that that have structure. Learning involves participation in a community of practice. And that participation ‘refers not just to local events of engagement in certain activities with certain people, but to a more encompassing process of being active participants in the practices of social communities and constructing identities in relation to these communities’ [9].

Learning is, not seen as the acquisition of knowledge by individuals so much as a process of social participation. The nature of the situation impacts significantly on the process.

“Learners inevitably participate in communities of practitioners and... the mastery of knowledge and skill requires newcomers to move toward full participation in the socio-cultural practices of a community. "Legitimate peripheral participation" provides a way to speak about the relations between newcomers and old-timers, and about activities, identities, artefacts, and communities of knowledge and practice. A person’s intentions to learn are engaged and the meaning of learning is configured through the process of becoming a full participant in a socio-cultural practice. This social process, includes, indeed it subsumes, the learning of knowledgeable skills.” [3]

In this there is a concern with identity, with learning to speak, act and improvise in ways that make sense in the community. What is more, and in contrast with learning as internalization, “learning as increasing participation in communities of practice concerns the whole person acting in the world“ [3]. The focus is on the ways in which learning is ‘an evolving, continuously renewed set of relations“ [3].

Following these ideas, a central activity for the Bazaar project is to develop active participation, not just in individual activities or discussions, but to develop a series of wider social interactions and commitments over a period of time and to provide a structures and activities for the community to emerge. At the same time we have to support the development of the tools, documents, routines, vocabulary and symbols that can carry the accumulated knowledge of the community. However, it is not possible for the Bazaar project by itself to develop such tools and vocabulary. Instead we aim to provide the structures which to which the community defines and develops itself such artefacts. Furthermore, Bazaar aims to support the processes which enable newcomers to move towards full participation, through mediating communication, through enabling the development of a shared repertoire, including not just artefacts, but the ability to create artefacts and through defining social identities for the community as a whole and for individuals within the community. This is particularly important for two reasons. A community based on Open Source Software and Open Content involves bringing together people and practice drawn from different domains and disciplines (and practices). For such a community to emerge it must develop its own (unique or defining) identity. At the same time it is at the very boundaries of the community - and in its interchanges with communities and practices from outside that community, that innovation will occur. For Bazaar this means bringing together social practices from teachers and trainers, from learners and from educational technologists and software developers.

3 Activity Theory and the Theory of Expansive Learning

Daisy Mwanza and Yrjö Engeström [10] have written a short summary of the ideas behind activity theory and expansive learning .

“Activity theory presents a collection of basic ideas for conceptualising both individual and collective practices as developmental processes of the context in which human activities normally takes place[2,11]. The idea of studying human activities as developmental processes is crucial for identifying changes and contradictions that exist in an activity. Therefore, contradictions serve as the means by which new knowledge about the activity being examined emerges [2]. According to Leontev [11], the concept of activity entails a complete system of human practices. Engeström [2] conceptualised a representational model to portray the various elements of an activity system.

The Activity Triangle Model or activity system representationally outlines the various components of an activity system into a unified whole. Participants in an activity are portrayed as subjects interacting with objects to achieve desired outcomes. In the meanwhile, human interactions with each other and with objects of the environment are mediated through the use of tools, rules and division of labour. Mediators represent the nature of relationships that exist within and between participants of an activity in a given community of practices. This approach to modelling various aspects of human activity draws the researcher’s attention to factors to consider when developing a learning system. However, activity theory does not include a theory of learning, instead, activity theory oriented pedagogical concepts are incorporated in Engeström’s [2] Theory of Expansive Learning.

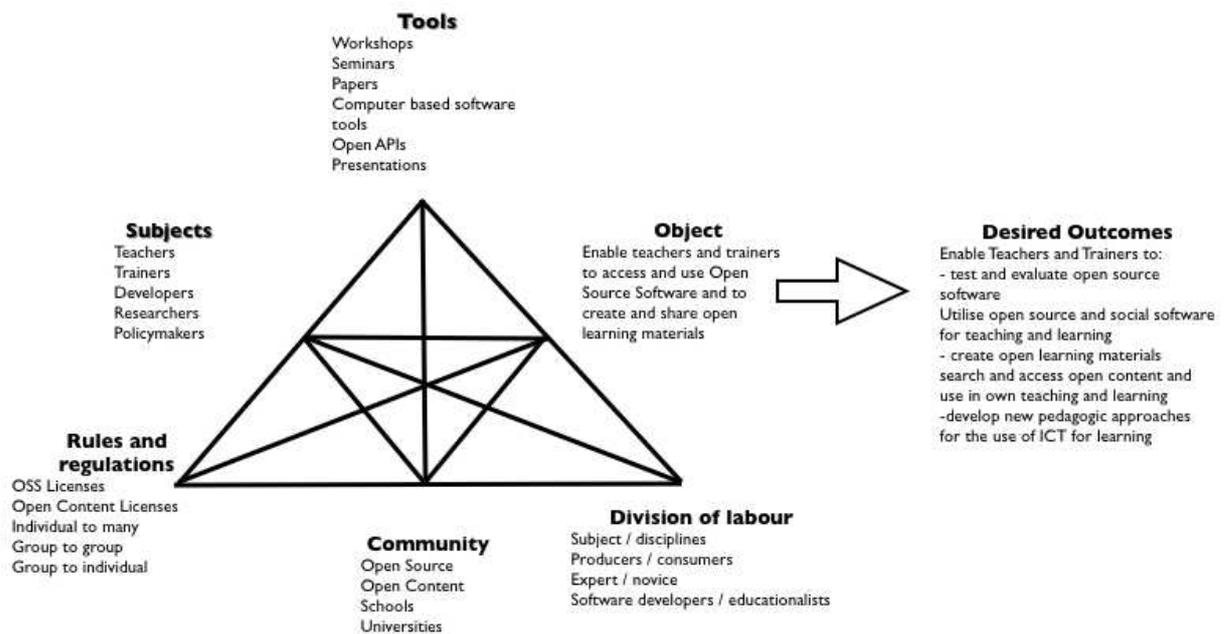
Engestrom says: "The pedagogical stance of the activity-theoretical concept of expansive learning differs from traditional types of learning in that:

- (a) The contents and outcomes of learning are not merely knowledge in texts and the heads of students but new forms of practical activity and artefacts constructed by students and teachers in the process of tackling real-life projects or problems - it is ‘learning what is not yet known’.
- (b) Learning is driven by genuine developmental needs in human practices and institutions, manifested in disturbances, breakdowns, problems, and episodes of questioning the existing practice.
- (c) Learning proceeds through complex cycles of learning actions in which new objects and motives are created and implemented, opening up wider possibilities for participants involved in that activity.

This perspective on teaching and learning highlights the potential impact of new tools as vehicles for transforming activity procedures.”

Activity theory is particularly useful for designing an architecture of participation for three reasons. It allows an understanding of the role of tools in mediating knowledge development. Secondly it allows us to understand the different communities with whom we seek to engage and that these communities may have different and contradictory rules and motivations. Finally the emphasis on developmental needs in human practices and institutions and on new forms of practical activity and artefacts constructed by participants reflects the ideas of Open Content creation. In other words, we are able to bring together our purposes and objectives for the project and the methods we follow in developing the community.

The following diagramme models an activity system for the community we are seeking to support around Open Source and Open Content.



Activity system for Open Educational Content

4 Narrative and Story Telling

There is an increasing realisation of the power of story telling and narrative as a way not just of information transition but as a means of negotiating meanings and developing innovation and knowledge. Such realisation is linked to an understanding of the importance of tacit knowledge, within organisations and within communities. tacit knowledge is defined by Polyani [12] as “knowledge that we do not know we have.”

Orr [5] has shown how knowledge about practice is shared amongst photocopying technicians by telling ‘war stories’ in break times. The transfer of tacit knowledge was important because the formal knowledge contained in manuals was inadequate for solving many day to day problems. The stories were freely shared within a community of practice, and became a very effective unofficial learning resource, quite different to the official manuals provided by the company.

Nonaku and Kono [13] have written of how tacit knowledge is transferred to shared and explicit knowledge within organisations through a knowledge development loop. Story telling and the use of metaphor is a key tool for such knowledge conversion.

Steve Denning [4] explains the use of narrative in establishing meanings.

“A narrative or story in its broadest sense is anything told or recounted; more narrowly, something told or recounted in the form of a causally-linked set of events; account; tale,; the telling of a happening or connected series of happenings, whether true or fictitious.

Narrative meaning is created by establishing that something is a part of a whole and usually that something is the cause of something else. It is usually combined with human actions or events that affect human beings. The meaning of each event is produced by the part it plays in the whole episode.

To say what something means is to say how it is related or connected to something else. To ask the meaning of an event is to ask how it contributed to the story in which it occurs. It is the connections or relations between events.

Meaning is a social phenomenon. Meaning is produced not only by individuals but by groups, communities, societies and cultures which maintain - through language and agreed understandings - knowledge of the connections between signifying sounds and signifying events.”

Storytelling can play different functions within a community [4].

- “Storytelling for communications
- Storytelling to capture tacit knowledge
- Storytelling to embody and transfer knowledge upon.
- Story telling for innovation
- Storytelling to build community
- Storytelling to enhance
- Storytelling for individual growth.”

In developing our own ideas, in sharing those ideas with each other and in explaining the ideas behind the architecture of participation we have developed our own (constantly re-iterated story). Our story is based on the social processes which take place in a party and goes something like this.

“When you go to a party, you might find yourself in a situation where you're in a room surrounded by people you don't know. We've all been in situations like this and we all have developed our own ways of dealing with them. Consider the following situations that might occur when you find yourself in such a predicament:

1. You spot a good friend and you immediately move across the room to start a lively conversation with him. Being near somebody you know makes you feel much more secure.

Before you barged in your friend was talking to somebody you have not met before, but your friend introduces you and also points out an interest that the two of you apparently have in common. You start a careful conversation.

2. You see nobody you know, so you get a drink and find a good spot to stand and watch the crowd. You can't help overhearing the conversation between the group of people standing next to you. They are discussing some issue that you have an opinion about and you identify yourself as a listener by moving closer into the group. After a while you feel comfortable enough to state your opinion and you end up in a very lively discussion.

3. You are discussing an issue with your friend and halfway through your conversation you notice that the guy standing next to you is listening in, he has given a few nods of tacit agreement already and you start to make your point not only to your friend, but also to this new person. The newcomer quickly becomes part of the conversation.

These are just a few examples of the extremely complex social processes that we have learned to master over time in everyday face to face situations.

In discussions about online or, as they are often inaptly referred to, virtual communities we need to acknowledge that the members of such communities already know how social processes work. They already know what a community is and where it can be to their benefit to be an active participant. It is not so much an issue of helping people communicate or develop communities but allowing this everyday expertise to emerge through the use of software and in distributed situations. This means that the software we employ to support a community online needs to provide the participants with tools which allow them to apply their social skills online. But we also have to acknowledge that just as in social situations some people emerge as the ‘heart and soul of the party’, whilst others are more reticent in coming forward and others choose to lurk on the edges of groups before contributing themselves, so it

may be in on-line mediated communities. Indeed lucking may be one of the most important processes in becoming involved in communities of practice [14].

5 Pitfalls and traps

We are aware, from our own practice and others, that there are a number of pitfalls and traps, in trying to develop communities of practice. As Mark Smith [7] says: “The idea that learning involves a deepening process of participation in a community of practice has gained significant ground in recent years. Communities of practice have also become an important focus within organizational development.” More recently the idea of communities of practice has increasingly been used as a vehicle for promoting a social-constructivist idea of learning, particularly with the use of Information and Communication technologies. Furthermore the development of so called ‘virtual communities’¹ have been seen as a means for shared knowledge development in distributed communities of practice.

However, frequently such communities fail to develop a momentum and identity of their own, far less an identity which is shaped and shared by the members.

Far too often, on-line communities have been envisaged as spaces - very much on the idea of ‘build it and they will come’. Pickles [15] talks of the need to provide functionality to push content to members and to pull content from members. Kondratova and Goldfarb [16] propose a knowledge portal model which they say “enables basic community of practice portal requirements” These include “a conversation space for online discussions on a variety of topics, as well as a facility for posing questions to the community, a shared workspace for synchronous communication, a discussion meeting, and a document repository to be used as a knowledge base.” In essence they are bringing together the two most common approaches to designing tool to support communities of practice, common (and usually centralised) document repositories combined with groupware functionality. What is wrong with this approach?

The problem lies in the lack of tools to develop the shared repertoire of communal resources (routines, sensibilities, artefacts, vocabulary, styles) that Wenger sees as central to a community of practice. The tools mediate not the practices of the community in undertaking activities towards shared objectives and outcomes, but a means for talking about those practices. A document repository is just what it says - a collection of artefacts. Without active involvement in the creation of such artefacts there is no process to negotiate or mediate shared meanings and understandings or even to develop a shared vocabulary with which to create meanings. Collaboration is based on communication about practices but not in the re-negotiation of the nature of the practice and of the shared goal of such practice.

Without shared activities it is difficult to establish shared meanings, particularly in a transnational and multi-cultural context. Shared meanings may be difficult to develop even where different languages share similar words. For instance, most European languages have a word (and a concept) of competence. Yet the connotative meanings may vary greatly. In the UK, competence is seen as an externalised ‘skill’ in the ability to perform a series of tasks to a predetermined benchmark or standard. In Germany, competence is seen as internalized, in the holistic abilities and identity of the individual - epitomised in the untranslatable to English idea of ‘Beruflichkeit’. Knowledge development and innovation within a community of practice may require the development of new concepts. In a email exchange with David Guile he talked of the problems with the limitation of the idea of informal learning as only describing the context or location in which learning takes place and the need for new

¹It may seem a semantic point but there can be no such thing as a virtual community. although they may use ICT based tools for communication and interaction, communities are always real and as Wenger points out, always emergent.

vocabularies and concepts to understand the trajectory of learning, that is, the extent to which someone has engaged with, evolved or transformed vocational practice. It is through shared activities - including research activities - that such new understandings and shared understandings of meaning can be developed.

Furthermore, all too often online community 'spaces' lie outside the everyday living practice of the members. They are an external place to go to - to look at, to see (and perhaps to learn from) and possibly to comment on and share a narrative on practice, but not an internalised space for that practice itself.

Groupware - be it threaded emails, bulletin boards or whatever, allows a facility to talk about something which happens somewhere else. This is incredibly powerful for conversations about football or sharing information about software - but it is not a context in which communities can build and share knowledge.

Knowledge portals and groupware can work well at the level of providing access to information and data (see figure 2 below) but fail in developing knowledge and wisdom.

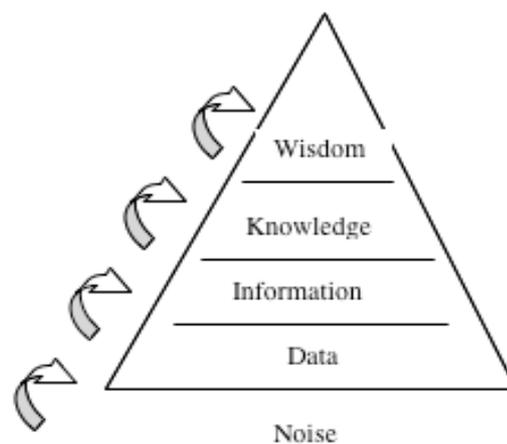


Figure 2

For some time one of us was involved in moderating a number of 'Virtual Communities' sponsored and hosted by the European Agency for Vocational education and Training, Cedefop. These communities rapidly grew in membership, come comprising of over 1000 members. Yet they failed to have a shared purpose or goal, instead they were conceived of as spaces to talk about different 'subjects' seen as important in the emerging practice of education and training in Europe. Furthermore, there was no facility for the members to negotiate and re-negotiate the purpose of the community which was determined by the host organisation. In reality, even with such extended membership and with paid moderators, it proved difficult to sustain any prolonged discourse. Rather, the virtual communities became document repositories, used, at best, for information exchange.

Such document repositories, even when supported by groupware, reflect not the praxis in a community or activity system, but are an accumulation of the artefacts of different disciplinary approaches. The praxis can only come about through engagement, that in turn requires mediation, not least in the form of tools, which reflect or are in symbiosis with the practice itself.

Such document repositories fail to allow us to tell our own stories. Many existing on-line communities lack the feeling of presence of members. And so of course the discourses lack the authenticity of practice.

In our everyday life and work we develop our own sets of tools to support our practice. As a researchers and developers, we have configured our computers to use a wide set of different applications, which are to some degree integrated. Yet, when entering a community space on

the internet, we are usually required to adopt to a completely different set of tools, outside my daily practice.

Indeed, one of the greatest problems in creating on-line communities is the feature creep inherent in software and tool provision. Instead of the providing the tools needed for supporting activities, developers throw at the web every software tool at their disposal. This can only confuse and frustrate users, unable to comprehend the point of the functionality or its use in practice.

In the next section we will develop our ideas about the architecture of participation, suggesting that the use of social software tools can potentially overcome many of the problems outlined above.

6 Towards an Architecture of Participation

As we have pointed out earlier, in discussions about online or, as they are often inaptly referred to, virtual communities we need to acknowledge that the members of such communities already know how social processes work. They already know what a community is and how it can be to their benefit to be an active participant. This means that the software we employ to support a community online needs to provide the participants with tools to apply their social skills online.

So, how do you introduce an online social structure to support your community? This process is often referred to as 'setting up' or 'building' a community and the web is full of stories of failed initiatives that tried exactly that. They built a beautiful web portal, with the best of intentions and chock-full of the latest modules and gadgets available. Everything was ready to go, but the prospective participants stayed away. If we want to provide online systems that help people to participate in wider communities, we need to provide systems that live within those communities, not around it.

More recently the emergence of social software has led to the deployment of new tools and applications for supporting communities of practice and new ideas about networked collaboration. Although the term social software is difficult to define, it can be seen as a collection of tools that can be used by people to support the use of their social skills within a wider community. Extending Anderson, Annand and Wark's [17] definition of 'educational social software', social software could be said to be networked tools that support and encourage individuals to learn and work together while retaining individual control over their time, space, presence, activity and relationship.

Over the last three years many young people have established accounts on social networking sites including Bebo, Facebook and MySpace. More recently there has been an explosion in the use of such sites for social networking between employees in enterprises and amongst professionals. Such social networking services provide tools for content creation and sharing and for developing networks of friends.

A recent survey for Pew Research² [18] found that:

- 55% of online teens have created a personal profile online, and 55% have used social networking sites like MySpace or Facebook.
- 66% of teens who have created a profile say that their profile is not visible to all internet users.
- 48% of teens visit social networking websites daily or more often; 26% visit once a day, 22% visit several times a day.
- Older girls ages aged 15-17 are more likely to have used social networking sites and created online profiles; 70% of older girls have used an online social network

² It is a shame that the surveys being undertaken by Pew Research are limited to the USA. Similar work in other countries and cultures would be extremely useful.

compared with 54% of older boys, and 70% of older girls have created an online profile, while only 57% of older boys have done so.

6.1 Identity production

In a speech to the American Association for the Advancement of Science, Danah Boyd, [19] said many teens access MySpace at least once a day or whenever computer access is possible. “Teens that have a computer at home keep MySpace opened while they are doing homework or talking on instant messenger. In schools where it is not banned or blocked, teens check MySpace during passing period, lunch, study hall and before/after school. This is particularly important for teens who don't have computer access at home.”

Boyd went on to look at the issue of identity production in on line social networking environments. “The dynamics of identity production play out visibly on MySpace. Profiles are digital bodies, public displays of identity where people can explore impression management. Because the digital world requires people to write themselves into being, profiles provide an opportunity to craft the intended expression through language, imagery and media.”

As Boyd point out public spaces on the internet are critical to the coming-of-age narrative because they provide the framework for building cultural knowledge.

Lest it be thought that the use of technology for social networking and informal learning is limited to the so-called ‘net generation’, a study of the use of ICT for learning in Small and Medium Enterprises [14] found that whilst there was little evidence of formal e-learning computers were being widely used for informal learning through amongst other things participation in networks and distributed communities of practice. Furthermore, there was some evidence that older workers were more likely to participate in such activities (probably because of more autonomy in how they undertook their work). It was also noteworthy that in addition to being motivated by the need to solve work based problems, much of the participation was driven by personal interest.

Of course, there is an issue as to how much learning and knowledge development takes place through participation and engagement in social networking sites. In her book “I Found It on the Internet: Coming of Age Online”, librarian Francis Jacobson Harris [20] explores “environments in which people use communication technology to access information, manipulate it, transform it, and exchange it.” Harris focuses on the idea that technologies can help teens do their job, which is “to develop a sense of identity and of community.” “Our professional literature is replete with how-to manuals for teaching with technology and running technology-based libraries. But we still must come to terms with the way kids perceive the world as a result of growing up with digital technology.”

In developing an Architecture of Participation, we are seeking to develop and implement tools and processes for working and learning together within an emergent social network. These tools and processes draw on the way in which social software is being used for networking and sharing.

6.2 Constant beta - functionality delivered when needed

The set of tools a community needs to support their activities is heavily dependent on the nature of the community. In some cases a simple message board might suffice, especially in those cases where the main activity is 'talking about stuff'. When we look at more complex communities, where the activities are sharing and cooperation, we need a different approach. Professional communities are real communities and their activities are never entirely online. Systems used to support such communities need to be able to support those activities, without trying to contain them in a strict online environment. This is usually where it goes wrong. One of us once attended a presentation about a test of e-learning tools on a university campus. The pilot had failed, largely because the students would just call each other or talk things over

in the cafeteria. So to fix things, they told the students that they were only allowed to discuss class inside the system. After that it became slightly more active, just enough for the researchers to conclude that it had been very interesting, but that next time they needed a stricter environment.

However the researchers and developers failed to realise that people are dynamic and communities are dynamic. The activities within a community are never fixed and are dependent of the purpose and make-up of the community at a given time. To support dynamic communities we need dynamic tools. We have argued many times that all the software we have today is, and should be, in constant beta. With the constant development of technology it does not make sense to present a finished piece of software and if we go back to our dynamic community we can see that where activities change the need for functionality changes.

With a system that is 'in development' and a community that feels ownership of their toolset, functionality can be introduced when it is needed and more importantly, the members of the community can have a role in defining and designing the functionality they need.

Indeed we have already produced three different versions of our project website and tools. It is still not right and we are about to embark on yet another makeover.

6.3 Activity based

We are trying to move away from providing web sites which merely provide information for users – although information provision is still important, to providing web tools allowing participants to directly contribute to the activity. In this way the site becomes based on user-produced content. Moreover the tools allow and support collaboration, initially in the Bazaar site between project partners, but hopefully also between members of a wider community. One of the first and simple ways we started this process was through a collective blog, with each of the six project partners contributing an extended article every six weeks.

We have also installed a wiki for collaborative writing and are exploring different ways of how this might be managed. Previous experience suggests that just using a wiki for writing does not necessarily guarantee collaboration. Researchers are unused to collaborating in their reports and papers, and distance makes this more difficult.

6.4 Participation at different levels

A particular challenge is to allow users to participate through 'gestures'. We are presently developing a tool to allow collaborative scenario development exercises. The software will allow participation on a number of different levels, from participating in the development of complex scenarios to adding "content" to scenarios or at a lighter level allowing users to rate the likelihood of particular futures happening.

6.5 Open APIs

The tools we are developing, or integrating within our website, rely on Open APIs and are modular in form. This means we can plug in different functionality when needed. The use of Open APIs should also allow participants to use their own desktop tools and applications whenever possible. In this way, we hope to overcome the divide between peoples daily work and activities, with interaction within a dispersed community of practice.

6.6 On and off line

Furthermore, we are attempting to bring together on and off line activities. The scenario development is taking place through face to face workshops at conferences and seminars and on-line which each round of activities supplementing the other.

We wish to explore how we can move the interface to online tools from the web to the users own environment to help them integrate their face to face and online activities in the way that they see fit.

6.7 Involving the community

We are aware of a tension between setting out to ‘build’ a community and the fact that communities of practice are emergent and based on shared practice and need. That tension is increased through the confines of project based funding and the need to deliver particular outcomes to meet project funding conditions. As far as is possible we have designed the funded project activities to involve the wider community – through events such as show me days for teachers and trainers and through open seminars on subjects of particular emergent interest to the open source and open content communities. We are also prepared to support activities outside the scope of the project funding, through investment of additional time and effort from project partners. However, our overall aim is that the community takes ownership of the activities and tools, rather than being dependent on external support.

6.8 Using new media

We are ourselves exploring the use of new media, particularly podcasting, for supporting the community. Bazaar produces a fortnightly podcast magazine programme. Although initially, participation has been limited to interviewing members of our community, we are now extending this through providing support to others as guest editors of the Sounds of the Bazaar podcast and providing workshops in podcasting

6.9 Exploring the boundaries

One driving force in these activities is our belief that innovation takes place on the boundaries of the community. We need to constantly explore those boundaries, both the boundaries of our ideas but also the boundaries and interactions with other communities and developments. It is notable that social software was not developed for learning but that social software has been instrumental in allowing the exploration of new pedagogic approaches to teaching and learning.

6.10 Active moderation

Although we are aware of the limitations in trying to build a community, any community requires active moderation and support. We are particularly interested in the nature and form of those support activities and in how we can develop the collective skills of community members to play such a role.

It may be that the role of moderating and supporting community activities is little different from that of ‘good’ teaching. Enkenberg [21] points out that while there are many examples of productive learning in everyday situations: “investigative deep-level learning is relatively rare without instruction or intentional self instruction. For that very reason, instruction is necessary to enhance the quality of learning and to make it purposeful. We would change the word instruction to moderation. Enkenburg goes on to say that teaching involves:

- *organising* the contexts and communities of learning;
- *formulating* organisational objectives
- *structuring* instructional contents
- *guiding and monitoring* the students advancement through the integral cycle of investigative learning;
- *interacting and conducting* conversation with the students

These tasks are not so different from the task of a moderator. Magda Balica [22] has described the role of a moderator as:

- a shepherd
- a keeper of the purpose
- a guardian of the community
- a timekeeper

- a co-explorer of meaning
- a co-explorer of contexts
- a mover of inquiry
- a host as a banquet

This is perhaps the best description so far of the role of an on-line moderator. We particularly like the idea of being a host at a banquet and are working to ensure the banquet is rich and satisfying, and full of surprises and delight.

7 Concluding remarks

This is not a finished paper. Rather like our software, we suspect it may be always a perpetual beta. As we gain more experience our ideas on how to support the emergence of communities of practice will change and hopefully both our knowledge and the application of that knowledge will grow.

George Roberts [23] has said Communities of Practice “cannot be magicked into being”. He goes on to say “we do not know how to make a Community of Practice”. However we do know it has to be “enquiry-led and it has to be fun”.

Through a process of enquiry we also have developed a deeper understandings of the different processes that can support the emergence of communities of practice and of the underpinning ideas which support such processes. We also appreciate the importance of user involvement in the development of applications and of iterative development and evaluation. It is through this process that the Architecture of Participation will evolve.

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