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Paul Maharg and Nigel Duncan

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Black Box, Pandora's Box or Virtual Toolbox? An Experiment in a Journal's Transparent Peer Review on the Web

PAUL MAHARG AND NIGEL DUNCAN

ABSTRACT *We all accept that peer review is an essential part of journal publication in all disciplines, but almost everyone is agreed that it could be improved. This article describes an experiment in peer review with a legal education journal The Law Teacher. It reports on the process, and describes ways in which the process can be improved for the future.*

the dissemination of learned research, . . . will be substantially accelerated, universally accessible, and incomparably more interactive in the age of Scholarly Skywriting than it was in our own pedestrian, papyrocentric one; Learned Inquiry itself—and hence all of society—will be the chief beneficiary.¹

Introduction: the Peer Review Process

The process of scholarly review of journal publication is built upon the concept of intellectual quality review. Generally speaking an editor or editor-in-chief will receive an author's manuscript; will seek the advice of reviewers either on the editorial board or beyond it; will receive reports from the reviewers, pass these on to the author in one form or another; the author will revise, possibly rebut and re-submit to the editor, who then will check revisions, may revert to the reviewers, reject the paper or accept for publication.

The role of the reviewer within the process is thus to ensure that the intellectual standards of a discipline are maintained in the critical review of an author's contribution. The process is often built on variants of anonymity (papers can be anonymous to reviewers, reviewers can be anonymous to authors through the Chinese wall of the editor). That

anonymity, it has been argued, gives reviewers the confidence to focus without bias upon the strengths and weaknesses of the submitted paper and gives the author the confidence that his or her paper is receiving impartial treatment. If there are disagreements between reviewers (and there often are), then the editor or members of the editorial board can step in to deal with this impartially. Disciplines often have their own specific processes, and within these journals have their own set of procedures; but these are the general outlines of the generally accepted process.²

The system is not perfect, of course. Even in our age of e-mail attachments, it is often lengthy and cumbersome. For reviewers, more pressing matters can intervene and a paper can be then reviewed hurriedly or not to deadline. Papers are not always anonymous—when ‘Smith, J.’ appears more than, say, three times in the references, with no rebuttals or qualifications, there is a good chance that the author of the paper is one ‘Smith, J.’ Reviewers are not always unbiased, particularly when a submission affects their own line of work; or they can be dismissive of innovative approaches.³ Reviewers are rarely if ever trained, and as all editors know, some reviewers are more conscientious than others.⁴ At a time when academic specialisations are becoming increasingly subdivided, editors are not always the best judges of reviewers to review submissions. Some editorial processes are semi-anonymous rather than fully anonymised. At least one researcher has argued that this solves nothing and that only complete transparency or complete anonymity is acceptable.⁵ In addition, there is evidence that anonymity has little effect on the process of detecting errors.⁶ In spite of these shortcomings, the system does ensure a measure of equitable rigour in our journals that is generally accepted as necessary, and generally acceptable to all parties concerned.

Can there be an alternative to it? Can we improve upon it? Can we use technology to improve our processes of peer review? One way *not* to do this is to mistake peer comment for peer review. For instance, if we post up an article on our blogs and receive comments, this process can hardly be called peer review.⁷ A more rigorous alternative might be to post articles on the web, and have readers comment and possibly vote on them. Here too, authors are open to the vagaries of readership and the vote might possibly be influenced by academics for whom publication is a crucial part of their livelihood.⁸ Expert reviewers would not necessarily be the readers of the text on the wide-open web and the filter of an editor would not be present; or if it were, the process of editing would be much more difficult because the process of reviewing would not be in the editor’s control.

Another form of review is that of ‘open peer commentary’, particularly as advocated by Stevan Harnad. As described by him, the process is linked to that of ‘skywriting’, or putting text up on the web for review by others, but only after the article has undergone the peer review process. He ascribes the method, used in his open peer commentary journal *Behavioural and Brain Sciences* (BBS), to the earlier journal, *Current Anthropology*, founded 20 years earlier. His proposals are, in effect, a way of supplementing the peer review process.⁹ Thus, while Harnad is radical on the use of the web and free-access to journals, he is by his own admission conservative on the subject of the canonical importance of peer review.

Peer Review

Peer review is necessary, but the process could probably be made more transparent than the current black box of many legal journals. This does not mean that we run the risk of *no* quality control—in effect, opening up a Pandora’s box of poor-quality research upon

the legal community. The process of review can be improved if we use procedures and processes that are customised for the job in the way that a tool is customised for a task. We would not use a fret-saw to cut lumber; and sawing across the grain of timber is easier if we use a cross-grain saw with teeth that are adapted to the task. Similarly with academic review, and specific forms of academic review in specific types of journals. The more adaptive our intellectual and communicational tools are, the easier and more effective will be the task of peer review. Moreover, adaptive procedures can bring about a community of practice that can be a creative element of the review process and one that is often eradicated by the process of anonymous review. Anonymity and the role of editor as intermediary and judge reduces much of the possible dialogue between author and reviewer. If dialogue is to take place, community is important in setting the boundaries of dialogue. How wide should such a process be? As wide as a wiki?¹⁰ Would authors readily submit their work to a public critique? How public should this be?

One leader in this field makes the process very public indeed. The Open University's *Journal of Interactive Media in Education* has an open peer process where authors have a right of reply to reviewers, where reviewers are named and where the wider community has an opportunity to comment on the published work. The editorial team characterise this as 'preprint under private, open peer review, preprint under public, open peer review, and finally publication' (see Figure 1).¹¹

What is interesting about this model is that, in Lancaster's taxonomy of journals that use ICT, it is one of the most open and also one of the most rigorous models. It combines peer review, peer comment and transparency in a way that assures quality, yet opens up the critical process to participants wider than editor, reviewer and author.¹²

The Experiment

The opportunity to carry out an experiment in such transparency occurred when, with a colleague, Dr Antoinette Muntjewerff of the University of Amsterdam, Paul Maharg undertook to edit a special edition of articles for *The Law Teacher*, the journal of the Association of Law Teachers whose editor, Nigel Duncan, courageously agreed to a process of review quite different to the usual processes of the journal. In the next section of the paper we shall describe the journal's normal processes of peer review, prior to describing and analysing the experiment.

The Law Teacher: Processes of Peer Review

The Law Teacher is a fully refereed journal published by Sweet & Maxwell, one of the main publishers of legal texts for students and practitioners.¹³ It is the journal of the Association of Law Teachers,¹⁴ a UK-based organisation of teachers of law that has sought, with some success, to expand its membership internationally. The editorial board of the journal has attempted to reflect this by encouraging contributions from authors outside the UK, one of the methods used to do so being the development of an International Advisory Panel. This development has also been largely successful, with not entirely UK-based issues in the last 4 years.

The process of peer review is generally conducted in a traditional way. Articles are received and, if within the area of the journal's interest, submitted anonymously to (usually) two reviewers, who also remain anonymous. Reviewers may counsel against publication. However, it is most common for reports to be basically positive, but to contain a constructive critique. These will be passed by the editor to the author, although inconsistent advice between reviewers (or the language of some reviewers) may require some mediation by the editor. Authors occasionally challenge the comments, but normally regard this as a positive process and are grateful for the constructive criticism received. Their revised articles are generally pretty much ready for publication although on occasion (where the editor was sceptical of the sufficiency of the revision or he was relatively ignorant as to issues being debated) the revised article was referred back to reviewers.

Each issue of the journal is structured to meet the diverse needs of its readership. Many of these are teachers in schools and further (pre-degree) legal education. Institutional expectations of those working in these sectors mean that time and resources for scholarly work are limited and the journal receives few articles from this sector. In order to ensure that these readers receive a publication of direct use as opposed to general interest, there are three other regular sections:

- Government and Education News, informing of and commenting on policy developments relevant to legal education;
- Recent Legal Developments, which title speaks for itself;
- Book Reviews, containing in a typical year, some 60 or 70 reviews of books aimed at students, academics and professionals.

Although these sections contain some internationally focussed material, they tend to be more parochial than the articles, which tend to focus on the concerns of higher and professional education and to be more international in perspective.

The journal appears in three issues every year. The practice is to have one issue organised round a particular theme annually, with the other two containing a more diverse group of articles. This is a deliberate balance. Given the highly contested issues influencing legal education, the editorial board wishes to be able to exercise some choice in the issues to be addressed by the journal, as part of their goal of informing and thus empowering the journal's readership. Thus, a theme will be chosen and this may require a degree of commissioning of articles from experts in the field. However, the board's ideas and experience are finite and we have always felt that it is important that the major input into the journal reflected the serendipity of colleagues around the world submitting their expressions about what excited them. This increases the diversity of the journal's contents and has a democratising effect on the editorial process. It is also very stimulating for the editor, who is constantly exposed to new ideas

It is probably true to say that past issues on a particular theme may have suffered from a lack of internal coherence. This is because most authors write in isolation and the editor may have little scope for alerting contributors to the content of the other pieces as the timing of submissions, the return of reviewers' observations and the submission of final versions is beyond the editor's control (and often runs rather later than planned). Even where the time for addressing such matters is available, there is a limit to what can reasonably be expected from an editor's persuasive abilities. Note the context. Most authors seeking publication of their work will be prepared to respond to the comments of reviewers, which generally provide a serious, constructive critique, which they will recognise improves the quality of their own work. Where, however, an issue is being organised round a specific theme, some, at least, of the articles will have been commissioned. These authors, in the editor's experience, are still willing to respond to reviewers' suggestions, but the power relationship is somewhat different and the editor needs to tread more carefully. Where suggestions for change relate not to any perceived deficiency in the piece itself, but to a desire for cross-referencing to another's work, or revision in the light of another's work, this may meet greater resistance.

The Virtual Toolbox

This, then, was the context for the experiment in peer review. The guest editors, Maharg and Muntjewerff, were aware from the start of the need for transparency in what would be a significantly different system to that of the journal's review process.¹⁵ Their review process was based upon the communicative potential of the web. They created a web page on which they posted authors' draft articles, special edition guidelines and other relevant information (see Figure 2). They then invited all authors to take part in an online discussion where each piece of work produced by authors was reviewed and commented upon by the editors and other authors. Those authors who accepted the invitation were given logins to the website.¹⁶ Authors could set 'alerts' that would send an automatic e-mail to their e-mail address whenever a forum's content was altered. Throughout the period of the forum the community of authors spent approximately one week focusing on each article and discussing it in the context of the other articles and whatever else was brought to the discussion. The discussions gave authors review points for their articles for the final deadline of the issue. The process was stimulating and useful for the editors when they came to edit the papers after final re-submission by all the authors.¹⁷

It could be argued that the process of transparency was made considerably easier because the edition being edited was a special collection, based on the area of ICT

Figure 2. (Note that the separate article discussions were organised under different bars, with the first forum top-left being a general housekeeping forum. Textual resources were available from the panel to the left of the window—author contact details (should anyone wish to contact the authors off-line), texts of draft articles, a list of the deadlines, list of abstracts, an area for final articles, and finally information relevant to the special issue—style sheet for authors, the original call for papers and a description of the review process. The information on the site was written by Paul Maharg, while the page was designed by David Sams and Scott Walker of the GGSL's Learning Technologies Development Unit.)

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within legal education. A range of authors was invited to contribute to the edition: some of the invited authors declined for various reasons, but those who accepted the invitation were in effect deciding to become part of a community of practice within the special edition website and if this was not apparent from our original description of practice, it certainly became clear from the content and layout of the website, and even clearer as the reviewing process took shape from week to week. This community of authors is quite different from the normal editions of the journal, which are made up of contributions from disparate areas of legal education and writing about different topics.

What would be the advantage of such transparency? The key advantage, as we shall see below, is that of dialogue beyond the triumvirate of author, reviewer and editor. The second, we would argue, is a more rigorous review process. To illustrate this, we shall discuss some of the contributions to *The Law Teacher* special edition.

On the website, we began with the review of the McKellar/Maharg piece. We judged it appropriate, if dangerous, to begin with a discussion of a piece by one of the editors. This had the advantage of allowing one of us to stimulate discussion and show authors by example that complete transparency and entirely open discussion was what we were aiming at. It had the potential disadvantage that other authors may have been uncertain about critiquing an editor. In the event, this did not happen: the McKellar/Maharg piece attracted more comment and discussion than any other piece in the edition (13 comments in all).

The postings on the forum sometimes took the form of question or point raised by reviewer and answer by the author. A number took the form of extended 'conversations' in text, as point was balanced by counterpoint and answered again. The discussion moved freely from one topic to another much more than in the normal process of reviewer report and author reply, precisely because the conversation was not mediated by an editor. At times, authors could pick up topics from within a reviewer's posting, and elaborate them within their own postings, and sometimes interpret them in the light of other reviewers' comments. The conversation, was in this sense fairly sophisticated and (when compared to the normal glacial progress of the classic review process) fast-moving.

However, 'conversation' as a metaphor is unsatisfactory. It suggests forms of dialogue and mental representations that are quite different from the mindset of peer review, and the dialogic forms that are used on an electronic forum. To explore how in fact a dialogue can be created by a discussion forum we need to define what precisely is 'conversant' or dialogic about the forum. One useful model of conversational sophistication is that of Nick Burbules.¹⁸ Burbules identified four different types of dialogue—dialogue as (oral) conversation, as inquiry, as debate and—rather improbably—as instruction. The four types were arranged, in his typology, along x - y axes of convergent-divergent and inclusive-exclusive polarities. Convergent dialogue strives to reach a conclusion to a dialogue, where divergent dialogues tend to be more open to diverse interpretations. Where inclusive attitudes aim to understand the other speaker's context, an exclusive attitude judges the other speaker against external criteria such as conceptual validity, logic, the internal coherence of an argument and such like. Burbules uses these polarities to characterise a complex matrix of dialogic types:

- Inclusive-divergent: dialogue as conversation
- Inclusive-convergent: dialogue as inquiry
- Exclusive-divergent: dialogue as debate
- Exclusive-convergent: dialogue as instruction

It is a neat typecasting of dialogic attitudes and moves, and in its plotting of quadratic opposites it gives us conceptual tools with which to understand the rhetorical moves that are created in dialogues in specific situations. In the last chapter of his book, for instance, Burbules uses it to give a persuasive account of why dialogue fails in classroom contexts, because the social context limits dialogical possibilities. The theory is not without its critics, but it is useful for our purposes here, and the discussion of examples below.¹⁹

Sample Dialogue from the Website

This is a contribution made by Peter Martin on the article Maharg co-authored with his colleague Patricia McKellar. Here is Martin's posting, headed 'Two questions of terminology and one about student access':²⁰

Patricia and Paul

Let me start the discussion with some inter-related questions about the terminology you employ in positioning your work.

I suspect that challenge of communicating about new and changing educational methods to communities of practitioners whose stance toward them may be skeptical

at best will lead to different choices of terms in our different national settings. And situating some new effort in relation to more widely recognized phenomena forces some hard choices. The phrase 'Virtual Learning Environment' or 'VLE' constitutes an example. It is not much used in the US. BlackBoard and WebCT are referred to (and refer to themselves) as course management systems or platforms. I assume from the initial portion of the essay that in the UK, and Europe more generally, placing these course materials within the VLE zone has value.

The second and, to me, more problematic terminology choice you make is to refer to the video material you have prepared and integrated with text and graphics as an instance of 'webcast'. To me 'webcast' connotes internet dissemination of video or, for that matter, audio material. As most widely practiced in the US it consists of streaming video or audio of an event or lecture as it occurs and, in some cases, archiving the file, unedited, for subsequent access. The conference or radio program 'will be webcast' illustrates the emerging usage. The video content replacing live lectures in the two courses you describe was prepared specifically for this use, edited presumably, segmented and integrated. Unless you have strong strategic reason for wanting to associate what you have done with dominant webcast practice I would urge that you refer to this content simply as 'video lectures'.

How, in fact, did the students access the lectures and integrated resources? You note at page 4 that the full package was available both on CD and online on GGSL computers (online only within GGSL?). My assumption would be that those students with CD-capable computers at home or work did most of their work with these materials away from the school. But that rests on computer-use patterns among US law students. Curiosity about your student work environment, including what else these same students are doing with computers, leads me to ask what you observed.

Peter Martin

Maharg answered as follows (it was agreed between McKellar and Maharg that Maharg would be the 'named' co-author for responses):

Peter

These are very interesting points, and touch upon some quite deep issues in the article. I'll respond to them below in order:

VLE

VLE is a phrase pretty commonly used in the UK to describe Blackboard and other generic course management systems. Another phrase is MLE—managed learning environment. The difference between the two tends to be that an MLE refers to functions such as course administration tools, registration with university and department, and suchlike. A VLE tends to describe an environment that focuses more on learning and possibly the assessment of learning. Our environment contains almost no administration functions, and therefore we've called it a VLE. I think it'll make sense to our UK audience, though others may want to comment on this. I'd like to hear from our Dutch and Australian colleagues on this point, too. It also bears on Peter's second point, below.

But before I leave this point, there is a second issue to do with the adoption of VLE as a term in the article. One of the themes of the article is that, as educational institutions, we ought to have concerns about giving over to corporate VLE providers such as Blackboard & WebCT the design of our learning environments. Such commercial generic solutions are driven by concerns other than the good of our students, the finer points

of teaching and learning, and our specific ways of working within our own discipline and sub-disciplines. What we wanted to point out was that a VLE is just that—a learning environment, and should contain the tools and information required by students to learn. What Peter says about placing materials in a VLE having value (apart from flexibility) is important, for the design of such environments is critical to the success of student learning.

Webcast

This is a good point, and goes to the heart of what we were trying to achieve in the application. We struggled with the term ourselves. We adopted it for historical reasons, in that (as the appendix at p 52 in the much longer paper shows, at http://www.ggsl.strath.ac.uk/ltdu/research/pdf/webcast_research.pdf) the initial 'webcasts' were in fact archived video lectures with little more than synchronised PP files. It was pretty clear to us that the phrase 'video lectures' (my first phrase for them) wasn't accurate: they weren't quite video, and weren't lectures, in the sense of a f2f lecture.

When the much more complex environments of civil and criminal procedure were created by LTDU, it became even more apparent that 'video lectures' didn't describe the environment, its functionality, the ways it could contain substantial quantities of information, and contain activities as well (this is particularly true of the civil procedure environment). So we adopted the term 'webcast', the more so because we wanted students and others to think about the environment less as multimedia (which it indubitably is, but the connotations of that phrase are wrong for what's happening in this environment), certainly not as video-on-the-web (it's much more substantial and sophisticated than that). As we explained in the diagram in the article, the focus of the application is the presentation by the speaker, but the application was designed to be used in so many different ways (and the variation in use was verified by student feedback).

Still, as Peter points out, the word 'webcast' is not quite descriptive of what occurs. True, if students have broadband at home, they can access the streaming video resources, and that part of the environment's resources can then be called a webcast. But the environment is much larger than just the streaming video. And by no means the majority of students accessed the streaming video from home. If they were accessing the application outside the GGSL, they would use the CD, which was of course no longer streaming video. We didn't actually ask about this point so I don't have data to give you. The nearest topic question was one we posed to the general student body, where we asked them to rate the flexibility of the resources. 22 thought them excellent, 47 very good, 49 good, 31 reasonable, 2 not very good, 7 poor, and 4 gave no response, $N = 162$. Still—flexibility is not quite the point you are making re access.

I have to say that we agree with your point about the terminology of webcasts, Peter, and it's definitely a point for revision. I'm not sure, though, that 'video lectures' gets across the impression of using this resource amongst others in the application. Possibly the best compromise is simply the word 'lectures', with the caveat that the technology changes the sense of the word entirely.

Student Access to Lectures and Integrated Resources

This question sent me back to the original data of the research project. The questionnaire revealed that the majority of the small research group had access to the resources

at home (we didn't ask about broadband—the numbers of students with this wd be quite small), and the majority did. Feedback from students over the entire year group showed that. So yes, you're right that those students who could work at home with the resources did so—and as we pointed out, they enjoyed the flexibility of this. However the great majority of students used the resources within the GGSL during the semester at least.

You raise an interesting point about the extent to which other work affected patterns of usage amongst the students. It did, of course: our research sample of 11 students commented on this in depth, and the extent to which, in particular, the way they used the application depended on other deadlines, etc in the course timetable.

More interesting is the point that what students do with computers affects their view of the resource. One of the concerns we had before we started was the extent to which we were forcing students to use technology to access a body of knowledge that had, hitherto, required no other technology than a pen & paper. In the event, only one student out of the sampled 11 in our research group wanted a return to f2f lectures: the rest agreed to a greater or lesser extent that the VLE had advantages that they appreciated over the traditional format. When the larger body of 162 students who responded to the civil procedure questionnaire were asked what they thought of the VLE as a learning tool, 17 thought it excellent, 41 very good, 42 good, 37 reasonable, 9 not very good, 14 poor, with 2 giving no response. To be honest, we were hugely relieved that such a major step-change in technology had occurred without causing the students major upset.

One reason for this, I'm sure, is that we ask students to use ICT technology a lot on the course—certainly much more than other Legal Practice Courses (in England & Wales) or other Scottish Diploma courses. They use the virtual firm environment for four major projects; multimedia for skills development Foundation Course and throughout the Diploma (and there are multimedia skills units within the civil and criminal VLE), and we insist on use of the intranet to communicate with students. I guess that what I'm saying is that the context of IT use is critical to acceptance of environments such as these by students. I think, too, that the politics of such change has to be carefully managed, for both students and staff (our civil and criminal tutors are practitioner-tutors ...). Have other authors observed the same sort of phenomenon?

What we observed in terms of use of the VLE was a wide variation in ways of approaching technology, and we comment on that in the paper, from paperworld student who constantly turned digital technology back to paper & pen where he could, and to e-world student, who used technology wherever she could. As we point out, these two poles tended to be pathologies: the majority of students found their own accommodations in the spectrum between them, depending on personal choice of study channels (visual over audio, eg), and other pressures on them (pt-time work, upcoming deadlines, etc).

Hope this answers your points, Peter. Could I ask others if they have similar points they want to raise, either about terminology or about argument?

Paul

A number of points can be made about these two items. First, Martin's is a carefully worded intervention about nomenclature and access. Both issues are typical of the points that a reviewer might make about a paper in the classic model of anonymous

and editor-mediated reviewing. Normally, under this model, an editor would pass these and other appropriate issues to the author and there would take place a form of single-loop communication. This cannot be considered a dialogue, or if it is, it is a restricted conversation between the author and the editor (the reviewer often takes no further part, except possibly to review the re-submission and report on that). There is no genuine dialogue that is continued throughout the review process.

In Maharg's reply above, he identified what he thought were the key issues in Martin's posting, and in doing so, he took a view of the relative weighting of Martin's comments. Maharg focuses on the nomenclature of 'webcast' as an undeniably fundamental point that needed to be answered. In subsequent postings there was a continued negotiation between Martin and Maharg over which term would be appropriate. Others joined in the discussion, commenting on the rejoinders and adding their own points. What built up was a quite complex discussion of the McKellar/Maharg article which was far more sophisticated and wide-ranging than the majority of anonymous reviewer comments on papers submitted to peer-reviewed journals. Above all, it was a dialogue, and it was this, rather than the content of reviewers' reports, which accounted for the sophistication of the review process that took place on the website. Moreover, there was an implicit recognition on Maharg's part that Martin had raised an issue that required to be addressed, based on community standards of rationality and communicative effectiveness.

Compare this with the normal review process. Martin's comments, passed to Maharg by an editor, would have been issued as instructions for review. There would have been no fruitful exchange of views and little in the way of *learning* from the process. What we have, in the webpage above, is a form of double-loop learning between authors and reviewers. In terms of Burbules' matrix, we have an example of inclusive-divergent dialogue. As an editor of the special issue, of course, Maharg was in a special position. If he had disagreed strongly with any of the comments and that disagreement had been irreconcilable, then he would have put the issue to the other authors on the forum. Those authors were in fact the *community of practice* that, accordingly to the editorial procedures adopted in the special issue, would determine what was fit for publication, and what was not.

At the end of the reviewing process, Maharg summarised the points that had been made. The other authors/reviewers were of course at liberty to point out if he had missed revision points or misinterpreted them, since all the discussion was there on the forum; and given his potentially compromising status as editor, it was essential that he was clear about his next steps as regards review of the article. Here are his final comments:

Thanks to all who commented on our article. Below is a summary of the revisions we need to carry out according to the discussion over the past week.

1. Terminology: replace 'webcast environment' with either VLE, if referring to the whole environment, or with names of specific elements. Refer to 'webcast' itself as 'video lecture'.
2. Give more information about the context of the course: forms of learning, assessment.
3. Point out the local nature of the conditions under which f2f lectures were turned into the VLE.
4. Clarify that the discussion of themes is the discussion of variation.

5. Point out that the form of open-book assessment affected the style of notation and media of learning.
6. We'll reference to the larger article the data on relationship of learning resources in the VLE.

It would be helpful if all authors could summarise the set of revisions required from the discussion, either directly to the editors or on their discussion forum.

This is the end of the discussion period for the McKellar/Maharg paper. Authors can of course add comment to this discussion forum or indeed any other whenever they wish; but the focus of next week's discussion should be our next article, which is Peter Martin's: 'Cornell's Experience Running Online, Inter-School Law Courses—An FAQ'.

Did the lack of anonymity have a deleterious effect on the special edition? This question really unpacks into two separate but related issues. First, did the lack of anonymity in the forum lead to less rigour in the process of peer review? The literature on the principle of anonymity in peer review is mixed—one study found that asking reviewers to consent to being identified to the author had no important effect on the quality of the review, the recommendation regarding publication, or the time taken to review, but it significantly increased the likelihood of reviewers declining to review.²¹ Here, it was clear that a variety of comments from authors, all of whom worked within the field of ICT and legal education, had a beneficial effect on the reviewing process, and including the reviewers as authors in a community based around the web page clearly meant that there was inducement to review.

Second, did the lack of anonymity within the invited community of scholars compromise the integrity of authors' positions? We would argue that it did not. Within the issue there are a number of different and potentially conflicting approaches taken to ICT in legal education, in both content and methodology. The article by Leijen and Muntjewerff, for instance, sits squarely in the Gagnean tradition of instructional science, and very different from the content of the McKellar and Maharg research, which is based on a phenomenographic approach to learning. This variety was reflected in the methodologies adopted by authors. On the one hand, there was an article that used a strictly quantitative methodology (Nadolski and Wöretshofer) while others depended almost wholly on qualitative methods, and some used a blend of the two. This variety was not compromised by a lack of anonymity.

After the reviewing process was complete, the editors set a deadline for re-submission of all articles and checked that the comments of reviewers were taken into account in the re-submissions. It is significant that all eight articles required resubmission: not one was allowed to proceed unamended from the stage of initial submission through to publication. Only one author made no response to the (four) comments on her article.²² The editors ensured that all the points raised by reviewers were taken account of in the resubmission of the paper.

Throughout the process, the website in effect acted as a discussion forum focused on the special edition. The discussions exemplified rhetorical guidelines regarding audience, purpose, channels and media, and helped to create and sustain a *community of practice*. The technology, in other words, was used to make review procedures transparent between authors and reviewers, and to communicate the community standards of intellectual rigour appropriate to the journal and the author-contributors. Nigel Duncan,

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the editor, was given a login and could watch and read the progress of the discussions, and was also informed by private e-mail of the progress of the experiment and progress as regards publication deadlines.

The aura of technology can lead us to think of discussion forums such as this one as awkward, clumsy affairs—not a real conversation, after all, and possibly ineffective as a tool for editorial comment and review. We would argue that a discussion forum as a medium for review is useful, in that it gives us a flexible tool for analytical discussion of text. The discussions between authors and reviewers were relevant and to the point: while many of the postings tended not to be extended discussions, there was the potential for this to happen.

In many ways, though, a discussion forum is a cumbersome tool. The guest editors would have much preferred to have had discussions linked directly to in-line revisals of papers, for instance; and in this respect some kind of shared document drafting software would have been more intuitive to use. However, most staff (and certainly those involved in ICT) are at least aware of discussion forums, even if they may not have used them much; and this familiarity with at least the concept if not the reality is useful in generating dialogue.

In this respect, the research that informs student use of discussion forums also holds true for staff use of discussion forums as research review arenas. As Gilly Salmon has shown, students often require to feel confident in their use of a VLE before they can begin to dialogue.²³ The dialogue space, in other words, needs to be a safe one. Salmon's concept of 'e-tivities' can help create such a space.²⁴ The concept needs to be treated as highly flexible, depending on the audience, but it is, nevertheless, a valuable acknowledgement of the *social* nature of online dialogue. As Bourdieu and others have pointed out, there are no such things as neutral spaces in education and the same is true of research review.²⁵ For Crook and Light, for example, online discussions cannot be 'decoupled from the artefacts, technologies, symbol systems, institutional structures, and other cultural paraphernalia within which it is constituted'.²⁶

As with all rhetorical activities, there was an awareness on the authors' parts of their audience. For an experiment such as this, it was essential that the discussion forum was a private one, limited to the authors and to the journal editor. Had the discussion been public and advertised as such, the discussions would have probably been quite different conversations. Quite early on in the process, therefore, both Maharg and Muntjewerff agreed that the forum should be passworded, and that conversations on the forum should be divulged only with author agreement.

Two questions remain: is this process one that worked for the special edition and is it transferable to other editions of *The Law Teacher* and to other journals? Both Maharg and Muntjewerff are agreed that it was a highly useful process of review and several of the authors commented later to us in private e-mails that they actually *learned* from the process of review. In this sense, a community approach to review did seem to work. Can it, then, be cascaded to the usual editions of *The Law Teacher*?

Our opinion is that this process, under its current model of journal production, probably would not work as well for the more conventional issues of the journal, with its more diverse content. One of the features of this experiment was that it operated in effect as a virtual conference. It thus allowed all participants to know what their fellow-contributors were saying. This, however, is hardly sufficient. We have all read edited books that are the product of a specific conference and which nevertheless, fail to have the conceptual coherence of a 'real' book. This indeed is a regular criticism of such books in the book reviews

published in this and other journals. Having undertaken the hard work of preparing a structured, coherent conference paper it is understandable (if regrettable) that, in revising for publication, authors are reluctant to unpick their careful work to accommodate references to or adjustments in the light of other contributions.

If awareness of others' contributions is not enough, what does take us to a greater level of coherence? It is the extent to which the whole process is managed and the preparation involved in identifying participants and then engaging them in a mutual peer-reviewing activity in which mutual responsibility is clear from the start. This is the community of practice identified earlier in this paper. This does not come into existence by chance. Potential participants had to be invited to contribute and to participate.

The first thing is for editors to identify, with the support of their editorial boards, an appropriate group of potential participants. This is not generally a problem. However, the initial pool will probably need to be larger than the number of final contributors as individuals find themselves unable to participate or to meet specific deadlines.

A timetable must be set to allow participants time to prepare their first drafts and to submit them to editors for initial editing and placing on the website.²⁷ In the instant case, authors were contacted over 6 months before the review period was to start. The choice of this period must also consider the risk that some potentially valuable contributors may be unable to commit to the extra degree of engagement required by this method, and provide for alternatives to be sought. Choice of participants may also be influenced by the need to secure individuals who are comfortable with the systems being used. Given the subject-matter of the instant issue was 'Legal Education and ICT' it was reasonably to be expected that all participants would meet this criterion. It will not always be the case.

The timescale required, however, is unlikely to exceed that of other reviewing processes and the transparency and coherence of the reviewing process is a definite advantage. The editorial board also liked the less hierarchical nature of the process, more genuinely one of peer review than the normal, where relatively senior academics tend to comment on the work of relatively junior colleagues.

Interests: Organisational and Property

One minor but significant point may be worth raising in the context of this experiment. The *Law Teacher* exists as a printed journal and has never had a significant website presence. As educators, however, this left the Board somewhat uncomfortable. The logic of their position should be maximum availability of any article that was worthwhile enough to publish in written form.²⁸ We have mentioned (note 17) the original intention to post the articles for this issue on a publicly accessible website. Although that did not eventually happen for the reasons given, the plan required us to address some fundamental issues.

Permission was required from those with an interest in the journal.

- It is the organ of the Association of Law Teachers (ALT) and is a significant element of what members receive in return for their subscriptions. The Committee of the ALT has always been concerned that if the content of the journal were to be freely available this could put the viability of the Association at risk.
- It is published by Sweet & Maxwell, who are entitled to a say in the presentation and availability of their publications.
- The authors themselves, arguably have an interest in the form of publication of their work. There has been a perception that publication in bound hard copy is somehow

more prestigious than web publication.²⁹ While that perception may wither as the quality of the content of electronic publications speaks for itself, it may be a factor of some concern to authors.

Whether the first of these concerns is true is contested. Dan Hunter presents a powerful argument for open-access publishing in the specific context of the US law review.³⁰ He supports the principled argument with a suggestion that there are few substitution effects when articles published in hard copy are also made freely available on-line.³¹ The evidence he cites comes from different disciplines and may not necessarily be applied with confidence to law. Moreover, the economic relationship between US law reviews, largely student-edited, their publishers and their readership differs from that between journals like *The Law Teacher*, their publishers and readers. That being said, the arguments for a move towards open-access publishing are meritorious and will continue to be kept under review by the Committee of the ALT.

The response to a one-off posting of a special issue concerned with ICT was, in fact, favourable. The Committee of the ALT agreed readily and the publishers were equally content. Part of their motivation may have been the publicity that open-access publication would have generated for both the Association and the publishers. Indeed, the Contents and Editorials plus some selected 'sampler' articles are already made freely available through the Sweet & Maxwell website. It would always be possible to prepare a password-protected section of the website for members and subscribers only, but this would not meet the goal of maximum availability. This remains a conundrum between the desire to communicate as widely as possible on the one hand and the quasi-commercial interests of the organisation sponsoring the journal in question—the epigraph from Harnad, quoted at the opening of this article, is a marker for one direction that journals could take in this regard.

The debate of course has wider ramifications, both for the scholarly community and for publishers. In August 2005 the JISC report on Disciplinary Differences pointed out that for staff seeking research resources, the main problems were in gaining access to journals, conference proceedings and databases.³² As far as scholarly publication was concerned, the authors discovered that the two main problems were 'pressure of space in highly-rated journals', and 'slow speed of reviewing and decision-making by editors'.³³ The researchers also found that most scholars across the range of disciplines they surveyed thought that 'new forms of dissemination will grow in importance', while a surprisingly large minority of scholars think traditional peer review is ripe for replacement'.³⁴ Given these results, it should come as no surprise that some researchers believe that 'existing models for the scholarly communications system which rely most heavily on subscription fees paid by institutions are becoming unsustainable'.

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Website Improvements

Could the discussion site be improved? Most certainly. The guest editors would have liked the site to have been more 'mobile', so that they could have communicated with other authors via SMS, IM or mobile email. As Howell-Richardson and Mellar have indicated with regard to student learning on discussion forums, even small modifications to the structure of an online learning environment or task can affect communication outcomes considerably.³⁵ Above all, having gone through the experience of reviewing and editing within this environment, they now tend to agree that reviewers need training and experience in this environment if they are to carry out their tasks well.

Just as the physical space of learning contributes to student learning, so the dialogic construction of the forum can enhance or inhibit learning.³⁶ The construction of dialogue in such spaces requires effort, skill, reflection, practice. Above all, it requires an awareness of the different forms of dialogue that can contribute to analytical review. The editors found it unnecessary to intervene in the review process as editors, but as reviewers they found themselves at times reflecting on what was good for the journal issue as whole, when reviewing individual papers.³⁷ Above all, they found that the complexity of the situation of reviewing within a community to be a learning process, precisely because it was dialogic, much more so than when they have written anonymised reviews for journal editors where no dialogue was anticipated. It would be helpful, therefore, if this experiment is to be continued, for participants to be given some form of training. To our surprise, we could discover no evidence of training of reviewers in this respect. Whether or not reviewers in the classic journal review process require training, we would advocate that they have training in online review. Reviewers, after all, are not writing reports: they are essentially engaging in dialogue with the author. They need to think about the ways in which postings represent different forms of group interactions, based upon how individuals interact with each other, and how 'roles and strategies emerge amongst the participants', which in turn can lead to 'deeper insights into how professionals collaborate to develop their own practice, and into the complexity of the interactions between individual and group processes during these collaborations'.³⁸

As we pointed out above, the discussion web pages of *The Law Teacher* special edition on ICT remain passworded to the authors and editors. The experiment ended with the submission of final papers to the editors, who then took the papers through the usual processes of proofing and copy-editing to publication. However there is no reason why the experiment could not be continued in many different ways: the web toolbox is expandable and highly adaptable, as the example of the *Journal of Interactive Media Education* shows. Our experiment concerned only one element of the review process. Harnad points out how such an experiment might be expanded to take account of the web's hypertextuality and his remarks show the way, should we wish to take it, to a transformation of the legal journal review process:

Reviewer reports can be revised, published and linked to the published article as commentaries if the reviewer wishes; so can author rebuttals. And further commentaries, both refereed and unrefereed, can be archived and linked to the published article, along with author responses. Nor is there any reason to rule out postpublication author updates and revisions of the original article—2nd and 3rd editions, both unrefereed and refereed. Learned Inquiry, as I have had occasion to write before, is a continuum; reports of its findings—informal and formal, unrefereed and refereed—are milestones, not gravestones; as such, they need only be reliably sign-posted. The discerning hitch-hiker in the PostGutenberg Galaxy can take care of the rest.³⁹

Notes and References

- 1 S Harnad 'The invisible hand of peer review' *Exploit Interactive*, 5, 2000, <http://www.exploit-lib.org/issue5/peer-review>
- 2 For some disciplines, such as medicine, the review process is subject to on-going critique—see for example the International Congress on Peer Review and Biomedical Publication, held every 4 years, at <http://www.ama-assn.org/public/peer/peerhome.htm>. For an analysis of the

processes of scientific peer review (in the field of Chemistry), see H-D Daniel *Guardians of Science: Fairness and Reliability of Peer Review* VCH, Weinheim, 1993.

- 3 See M J Mahoney 'Open exchange and epistemic progress' *American Psychologist* Vol 40, pp 29–39, 1985.
- 4 See for example S Schroter, N Black, S Evans, J Carpenter, F Godlee and R Smith 'Effects of training on quality of peer review: randomised controlled trial' *British Medical Journal*, Vol 328, No 7411, 2004, where the conclusion was that short training packages have only a slight impact on the quality of peer review. The value of longer interventions still needs to be assessed.
- 5 See, for instance, D Rennie 'Freedom and responsibility in medical publication: setting the balance right' *Journal of the American Medical Association* Vol 280, pp 300–302, 1998.
- 6 See for example F Godlee, C R Gale and C N Martyn 'Effect on the quality of peer review of blinding reviewers and asking them to sign their reports: a randomized controlled trial' *Journal of the American Medical Association*, Vol 280, pp 237–240, 1998. In this study the authors modified a paper accepted for publication introducing 8 areas of weakness. Reviewers were randomly allocated to five groups. Groups 1 and 2 received manuscripts from which the authors' names and affiliations had been removed, while groups 3 and 4 were aware of the authors' identities. Groups 1 and 3 were asked to sign their reports, while groups 2 and 4 were asked to return their reports unsigned. The fifth group was sent the paper in the usual manner of the journal, with authors' identities revealed and a request to comment anonymously. Of all five groups, the median number of errors spotted was two, nobody spotted more than five and 16% did not discover any. The authors concluded that neither blinding reviewers to the authors and origin of the paper nor requiring them to sign their reports had any effect on rate of detection of errors. Such measures are unlikely to improve the quality of peer review reports.
- 7 Peer comment can be helpful and rigorous; but it may not always be so. The most developed commentary on this is probably that of Stevan Harnad, quoted above, and also his numerous contributions to the debate on discussions boards. See the Harnad e-print archives at <http://www.ecs.soton.ac.uk/~harnad/>. The process of developing the Wikipedia—an example of social computing in action—may at first glance be a model of peer review; but there are significant differences. A wiki is really an example of an open community of writers adding and editing text indefinitely, and creating a blend of voices. In addition, writers are exhorted to take a neutral and descriptive stand on issues. They also describe the physical and conceptual world, rather than adding to the sum of knowledge within it.
- 8 See for example, S Hitchcock, L Carr, Z Jiao, D Bergmark, W Hall, C Lagoze & S Harnad 'Developing services for open eprint archives: globalisation, integration and the impact of links' Proceedings of the 5th ACM Conference on Digital Libraries, San Antonio, Texas, June 2000, at <http://www.cogsci.soton.ac.uk/~harnad/Papers/Harnad/harnad00.acm.htm>. For an experiment from the *British Medical Journal* in such online peer review, see *British Medical Journal*, web site, <http://www.bmj.com/cgi/shtml/misc/peer/index.shtml>.
- 9 See for example Harnad, op cit, note 1. For a successful example of Harnad's vision, see Paul Ginsparg's work on a global preprint archive, on which the world high energy physics community relies, at <http://arxiv.org/corr/home>.
- 10 For an example of a wiki, see the online encyclopaedia, wikipedia, at http://en.wikipedia.org/wiki/Main_Page.
- 11 *Journal of Interactive Media in Education*, <http://www.jime.open.ac.uk/index.html>. We should point out that the review processes of this journal came to our attention only after the experiment described in this paper.
- 12 See F W Lancaster 'The paperless society revisited' *American Libraries* Vol 16, No 8, pp 553–555, 1985. Lancaster's taxonomy is as follows:
 - 1 computers used for print production
 - 2 journal distributed in both print and electronic formats
 - 3 publication design is rooted in print, but articles are developed solely for electronic

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distribution

4 interaction between authors and readers is possible; publications can evolve as a result of such interactions

5 the inclusion of multimedia content

6 both interactive participation and multimedia capabilities are supported.

Quoted in S Buckingham Shum and T Shumner (2001) *JIME: An Interactive Journal for Interactive Media*. Simon Buckingham Shum and Tamara Sumner, *First Monday* Vol 6, No 2, 1985. Q7

13 See <http://www.sweetandmaxwell.co.uk/index.html>, where editorials and contents listings can be found.

14 See <http://www.lawteacher.ac.uk>.

15 Guidelines regarding review transparency are given by the Committee on Publication Ethics, at www.publicationethics.org.uk. The Committee's advice and recommendations on author dispute, for example, are very useful—see <http://www.publicationethics.org.uk/cases/zerozeroseven>.

16 Although the website was hosted at a public site, its status as a private forum was essential to its character. We comment on the effect of this below.

17 The editors of the special edition also intended to post papers to a public website post-publication in *The Law Teacher*, but this did not occur. *The Law Teacher* currently does not exist in a web format, and the discussion forum was part of the Glasgow Graduate School of Law website. While this was appropriate for a private discussion forum area, the special edition editors did not feel, in retrospect, that authors would have felt comfortable about final articles being posted on the same publicly-accessible site as their draft papers and discussion – though they did not collect opinions on this so the matter remains open.

18 REFERENCE BURBULES. Q8

19 See for instance V M J Robinson 'Dialogue needs a point and purpose' *Educational Theory* Vol 45, No 2, pp 1–17, 1993. Robinson argues that Burbules requires to prove how 'our normative models of dialogue can show how dialogical values can be convincingly integrated with the human imperatives of purpose and instrumentality' (p 17).

20 Quoted with the permission of Professor Peter Martin, Cornell University Law School.

21 S Van Rooyen, F Godlee, S Evans, N Black and R Smith 'Effects of open peer review on quality of reviews and on reviewers' recommendations: a randomised trial' *British Medical Journal* Vol 318, pp 23–27, 1999. Much of the literature stems from the medical fields, and the findings are mixed. See R A McNutt, A T Evans, R H Fletcher and S W Fletcher 'The effects of blinding on the quality of peer review. A randomised trial' *Journal of the American Medical Association* Vol 263, No 10, pp 1371–76, 1990, where it was found that blinding improves the quality of reviews.

22 The author concerned was in the process of moving post from one institution to another, and had problems accessing the journal's site because of altered authentication processes.

23 G Salmon *E-moderating: The Key to Teaching and Learning Online* Kogan Page, London, 2000.

24 G Salmon *E-tivities: The Key to Active Online Learning* 2nd edn, Kogan Page, London, 2004. See also J Pavey and S W Garland 'The integration and implementation of "e-tivities" to enhance students' interaction and learning' *Innovations in Education and Teaching International* Vol 41, No 3, pp 305–16, 2004.

25 See H Lefebvre *The Production of Space* Blackwell, Oxford, 1991; P Bourdieu 'Social space and symbolic power' *Sociological Theory* Vol 7, No 1, 14–25, 1989.

26 C Crook and P Light 'Virtual society and the cultural practice of study', in S Woolgar (ed), *Virtual Society? Technology, Cyberbole, Reality* Oxford University Press, Oxford, 2002, pp 153–75, 156.

27 Those invited by journal editors to act as reviewers may be interested to note that it is not uncommon for the articles sent to them for review to have already had an editorial eye cast over them.

- 28 This position is promoted by groups such as the Scholarly Publishing and Academic Resources Coalition, who work to correct what they describe as 'market dysfunctions in the scholarly publishing system'. See their website: <http://www.arl.org/sparc/>.
- 29 The position is quite complex. Early research showed online journals did not have much impact, eg S Harter 'Scholarly communication and electronic journals: an impact study' *Journal of the American Society for Information Science* Vol 49, No 6, pp 507–16, 1997. There is research that shows attitudes re paper journals/online journals is changing; eg C McKnight and S Price *Journal of Documentation* Vol 55, No 5, pp 556–76, 1999. As McKnight and Price comment, 'the results of [their] questionnaire suggest a small but increasing willingness to submit articles to electronic journals, but also suggest continuing concern about the permanence of such media. Almost a third of the sample felt that the addition of multimedia to their articles would be beneficial but few had the necessary skills to produce and incorporate multimedia objects. [They] concluded that authors should be involved more in future research and debate in electronic serial publishing'. Others have come to broadly the same conclusions. For example, Eason, Richardson and Yu categorised users into eight categories (the searcher, the enthusiastic user, the focused regular user, the specialised occasional user, the restricted user, the lost user, the exploratory user and the tourist). [K Eason, S Richardson and L Yu 'Patterns of use of electronic journals' *Journal of Documentation* Vol 56, No 5, pp 477–504, 2000.] Their research showed that the contents (both coverage and relevance) and ease of use of a system as they were perceived by the user were the most significant factors affecting patterns of use. Users' perceptions of both factors were affected by a range of intervening factors such as discipline, status, habitual approach towards information management, availability of alternative electronic journal services, purpose of use, etc. Their paper demonstrated the need for a service to meet the requirements of users with these varied patterns. Lawrence points out that there is on average 336% more citations to online articles compared to offline articles published in the same venue [S Lawrence 'Free online availability substantially increases a paper's impact', *Nature*, Vol 411, No 6837, p 521, 2001. See <http://www.neci.nec.com/~lawrence/papers/online-nature01/>].
- 30 D Hunter, *Walled Gardens*, 2004, which can be accessed at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=635141.
- 31 Ibid at p 20.
- 32 JISC Disciplinary Differences Report, http://www.jisc.ac.uk/index.cfm?name=scholar_comms_reports, Point 24.
- 33 Ibid, Point 32.
- 34 Ibid, Points 42 and 43
- 35 C Howell-Richardson and H Mellor 'A methodology for the analysis of patterns of participation within computer mediated communication courses' *Instructional Science* Vol 24, pp 47–69, 1996.
- 36 See for example F Becker and F Steele *Workplace by Design: Mapping The High Performance Workspace* Jossey-Bass, San Francisco, 1995. The literature on 'situated learning' also emphasises the effect of physical and social contexts. For them, learning is more likely to be deep and effective when situated in discipline-specific and authentic tasks. See J S Brown 'Growing up digital: how the web changes work, education, and the ways people learn' *Change* March/April, pp 11–20, 2000; J S Brown, A Collins and P Duguid 'Situational cognition and the culture of learning' *Educational Researcher* Vol 18, No 1, pp 32–42, 1989; S A Barab, K E Hay and T M Duffy 'Grounded constructions and how technology can help' *TECHTRENDS* March, pp 15–23, 1998. For a definition and discussion of authentic activities, see J Herrington, R Oliver and T C Reeves 'Patterns of engagement in authentic online learning environments' ASCILITE Conference, Australia, at <http://www.ascilite.org.au/conferences/auckland02/proceedings/papers/085.pdf>.
- 37 See R W Rohfeld and R Hiemstra 'Moderating discussions in the electronic classroom', in Z L Berge and M P Collins (eds) *Computer-mediated Communication and the On-line Classroom*

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in *Distance Education* Hampton Press, Cresskill, NJ, 1995; and M Hughes and N Daykin 'Towards constructivism: investigating students' perceptions and learning as a result of using an online environment' *Innovations in Education and Teaching International* Vol 39, pp 217–24, 2002.

- 38 M De Laat and V Lally 'It's not so easy: researching the complexity of emergent participant roles and awareness in asynchronous networked learning discussions' *Journal of Computer Assisted Learning* Vol 20, pp 165–71, 171, 2004. Some of the literature on student discussion forums is useful here. See W R Klemm 'Eight ways to get students more engaged in online conferences' *The Higher Education Journal* Vol 26, No 1, pp 62–64, 2001, also at http://academics.css.edu/PITL/resources/Eight_Ways.htm; N Prammanee 'Understanding participation in online courses: a case study of perceptions of online interaction' ITFORUM discussion paper, <http://it.coe.uga.edu/itforum/paper68/paper68.html>. See also Garrison, Anderson and Archer's model of community inquiry, which (following Dewey's practical inquiry model) divides community-based learning into three overlapping areas: social presence, cognitive presence, and teacher presence. See D R Garrison, T Anderson and W Archer 'Critical thinking, cognitive presence, and computer conferencing in distance education' *American Journal of Distance Education* Vol 15, No 1, pp 7–23, 2001, citing J Dewey *How We Think: A Restatement of the Relation of Reflective Thinking to the Educative Process* D. C. Heath, Boston, 1933.

- 39 Harnad, op cit, note 1.