Open Technologies and Resources for the Humanities – and Cooperative Consequences

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ABSTRACT

The proliferation of open technologies and content in higher education is motivated by broad embrace of a principle of sharing that is consonant with various contemporary economic, pedagogic and policy drivers. At the same time, open technologies and content present the possibility of a departure in the culture of humanities research and teaching. The open frameworks celebrate and facilitate collaborative and cooperative modes of working which are, to a degree, alien to a traditional 'individualist' conception of work in the Humanities. But such collectivity and collaboration yield new benefits to individual humanist scholars and so are not a source for concern.

KEYWORDS *collaboration, competition, content and source, Humanities, individualism, Open Access, scholarly communications, technology*

INTRODUCTION

THERE ARE great expectations in many colleges and universities for 'open' technologies and similarly open elements of research resources and curricular materials. Can these have any significant effects on the Humanities, with respect to the contents of curricula delivered or the nature of research pursued? Can developments in technologies – typically thought of as tools for promoting efficiency – actually bring about changes in the *content* or *nature* of instruction and scholarship? Proponents of these technologies have suggested that all this is possible, and more, even claiming that the new ways of creating and sustaining technological tools can foster innovations in the

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basic operations and goals of organizations using those tools (e.g. Raymond, 1998; DiBona et al., 1999). The bold claim entailed here is that open technologies and content could bring about change in the basic modalities of university instruction and research (see, for example, Ginsparg, 2001)

How might this bold claim be realized in the academy, and what are the consequences for the Humanities in particular? The open frameworks for academic, instructional and research-oriented technologies are popular tools in higher education, in development and use, because they represent significant promise for sharing resources. As these new technologies and their conceptual frameworks begin to shape academic life, they are likely to steer the Humanities towards greater sharing too. To help grasp these frameworks, I offer a brief overview of the varied notions of 'open' technological applications and content. Next, I explore some reasons why colleges and universities are attracted to tools and resources that help facilitate sharing. Finally, I suggest how the general impetus to increasing resource sharing may fashion a cultural shift in humanities scholarship and instruction, by moderating the time-honored individualist practices of humanist scholars. I argue that, notwithstanding minimal challenges to the gauging of merit and the autonomy of scholarship, humanists can comfortably embrace the open tools and resource frameworks as innovative and powerful means of gaining insights and understanding from new worlds of partner-scholars.

A TAXONOMY OF OPEN CREATION AND DIFFUSION

To explain the sorts of impact that open resources and diffusion may have, it is important to distinguish between three different kinds of 'openness' and the ways such openness in the structure and content of information technologies have been realized for the academy.

1. Open Source

Open Source (hereafter 'OS') is a legal framework for the licensing of technology, wherein the rights of owning an artifact (such as a software package) entail rights not only to use it but also to be able to know and change the rudiments of its design.

While there are many OS variants, the core notion is that one's created intellectual property has a structural design that is transparent, such that it can be freely (without constraint or cost) manipulated or altered, generally towards the goal of improved versions of the design. The best known example of OS software, quite apart from academic use or design, is the general-use software platform for personal computers, Linux, which was designed as an alternative

to Windows and the Macintosh operating systems (see linux.org, 1994–2006). Linux has a significant user base worldwide, enormous numbers of contributing programmers, and is frequently cited by other OS project leaders as an inspirational success with respect to proliferation, extensibility, efficient governance, and speedy correction of problematic coding (per the OS mantra, 'given enough eyeballs, all bugs are shallow': see Raymond, 1998). Sometimes the primary motivation cited for the open source framework is direct financial savings, on the grounds that OS products or content are more often than not free of charge. This can be compelling as an institutional motivation for adopting OS creations. But the underlying reason for OS regimes from the perspective of the developers is typically an interest in unencumbered possibilities for collective processes or modes of creation. Furthermore, these creations offer a form of technological or product stability that does not depend upon the well-being or long-range intentions of a commercial developer.

AN EXAMPLE:

- SAKAI (see sakaiproject.org, 2004–2006) is an open-source project to create a course management system by and for universities and colleges. The SAKAI software competes with existing commercial alternatives such as Blackboard or WebCT. SAKAI is also highly modular and compatible with these most popular commercial products. An inner ring of programmers based at a handful of universities leads the primary software development, though developers at yet other universities and colleges build additional pieces of coding or related applications that (as is typical for open-source projects) may be supplemental to the core code or else eventually be incorporated into the code for future releases. At the University of Cape Town, for example, a team of programmers set about to marry pedagogic design elements of their locally-developed course management software – which they believe to respond well to South African needs and interests – to the underlying open architecture of SAKAI. Though such a project might not enter into the SAKAI core, it could well prove useful and desirable at other universities in the region.

The examples of Linux and SAKAI suggest two noteworthy possible connections to, or kinds of impact upon, the Humanities from the OS movement. First, as I have suggested, tools used in research and teaching are being built in this collaborative and shared fashion. To the extent that such collaboration incorporates the insights of the instructors and researchers themselves, the hope is that the new tools will be more carefully tailored to teaching and research needs in the Humanities than whatever like products

are bought off the shelf.[1] Second, the OS movement provides a model of collaboration and sharing for research and teaching (I return to this point later).

2. Open Access

Open Access is the organizing and presenting of freely-available scholarly materials on the Internet (and presumably any successor mode of information repository and delivery), according to a set of principles and protocols developed in information science. The original focus was on 'gray' materials such as pre-prints and e-prints; some new electronic journals now fit under this rubric (Bailey, 2005).

AN EXAMPLE:

- PhilSci Archive (2003) is an e-print archive sponsored by the Philosophy of Science Association, the University of Pittsburgh Library System and the University of Pittsburgh Center for Philosophy of Science. The archive aggregates papers from various sources, including a general user-group of philosophers of science worldwide as well as participants of numerous conferences. As is characteristic of such archives, it is possible to find here scholarly papers that have not yet appeared, or may never appear, in print media. As an author depositing a paper in the archive, it is also possible to gain insights from readers on early versions of the paper.[2]

There are numerous open access journals as well: see the Directory of Open Access Journals (doaj.org, 2006) which lists 63 such publications in languages and literature alone, including journals as diverse as *CiberLetras* (1999–2005), *Early Modern Literary Studies* (1995–2005), the *Japanese Journal of American Studies* and the *Revue Flaubert* (2001–2005).

3. Open Content

Open Content is any unrestricted scholarly materials on the Internet, irrespective of whether they follow Open Access protocol or even fit the format of text-based media. Such materials include dissertation archives, teaching resources, interactive tools, general and specialized repositories, and materials supplementary to published articles such as illustrations or video and audio recordings.

EXAMPLES:

- OCW (OpenCourseWare, 2005) is a Massachusetts Institute of Technology (MIT) project to make available most courses' resources, in digitized format, for public use worldwide. The OCW materials can be repackaged, repurposed, translated, and otherwise altered by any academic institution for local teaching purposes. Such resources come from courses from East Asian Cultures to Philosophy of Film (though, as this is an MIT project, most courses are *not* from the Humanities), and range in format from course syllabi to lecture notes to web-based instructional tools, and beyond. The materials do not, in themselves, constitute courses, and MIT is not offering instructional guidelines of any kind. Yet such materials can serve as the basis of new courses or else supplements to the curricula of existing courses. After only a couple of years, a recent MIT assessment reported tremendous use of these resources by schools and individuals from every corner of the world.[3]
- Gallica is a project of the Bibliothèque National de France to digitize all or most of their holdings currently out of copyright (see gallica.bnf.fr). This phenomenal project has, in its short existence, been a massive boon to scholarship on France and French language resources. It may be considered as a model, or at least an inspiration, for the Google project to digitize massive numbers of English-language books (for general discussion of varying views of the Google project, see Roush, 2005).

These three kinds of 'openness' cover a range of academic functions, from production to organization to distribution, and their development and use in the academy offer great potential for shaping practices in teaching, research and management. Whether a matter of structure (OS), protocols for informational organization (Open Access) or pure content (Open Content), the core principle undergirding all these forms of 'openness' is that *we have a better information environment where the possibility of sharing is maximized*. In what follows, I explore how that principle is attractive to higher education, and what import it has for the Humanities in particular.

THE ACADEMY'S MOTIVATIONS FOR OPEN PROJECTS

In the world of higher education, a primary motivation for building and using the various sorts of open resource is the common and broad commitment of the builders and users to a new kind of rights regime regarding intellectual property that embraces the core principle of sharing. Although open resource frameworks are not wholly uniform in adhering to one or another rights regime – even within the open source movement many variants have emerged

(see Willinsky, 2005) – they all uphold the basic tenet that public and free access to content or code does not impinge upon ownership rights. Moreover, the different forms of 'openness' typically incorporate the notion that reproduction also does not impinge upon the owner's rights. In this light, it would be odd if institutions of higher education – pressed for resources as they are – did not seek to join the community of open resource users, as a matter of institutional effectiveness and in the hopes of attaining efficiencies and cutting expenses.

Low- or no-cost resources can only tell part of this motivational story, though.[4] Two other factors to account for are the apparent rapidity with which such open tools and resources have been developed by many different programmers and content-builders based in higher education, and the phenomenal degree to which they have actually been used in scholarship and teaching. Some piece of an explanatory account may point to self-conscious efforts to pursue open processes in the academy, perhaps owing in part to Eric Raymond's influential essay on OS development, 'The Cathedral and the Bazaar' (1998). Even more compelling than the canons of open ideologies, however, are the benefits from somewhat organic teaching and research behaviors that make effective use of open tools and resources. (One would expect this to be particularly true of the Humanities, yet here the ideological arguments have made the least impact and development and deployment of such tools and resources is the least concerted among all disciplines.[5]) It is reasonable to suppose that the educational and scholarly effectiveness of unrestricted resources should move us to use them. If those resources can be found on the web, and are useful for teaching Professor Jones's course, it is only a matter of time before they show up on Jones's syllabus (and one could tell a similar story regarding research); given the scale of 'webtime', this may be a very short time span. However, this is not to suggest parity between the desire to use open resources and the ease of their competent or efficient use. It is trivial for faculty to point students to such resources, but less trivial for them actually to integrate those resources into their scholarship or teaching in creative and innovative ways. (Thanks to Diane Harley for this point; see also Kirkwood, forthcoming.)

Another piece of the explanation for recent increases in building or using open digital resources in the academy is the interest and ability of scholars to seek solutions that, if not immediately satisfactory, can be refined in iterative fashion. This point emerges in a recent study by the Center for the Study of Higher Education at UC Berkeley (*Digital Resource Study*, 2005), which sought to map the universe of digital resources available to instructors of undergraduate courses in the Humanities and Social Sciences in a range of American institutions, determine who uses the resources, and how, and

examine why those instructors integrate or neglect such resources in their teaching. The Berkeley study suggests that many instructors are willing to use many and diverse resources, despite needing to overcome a number of obstacles to their use including availability, navigability, reliability and overall sustainability. They are willing to do so because they have sufficient confidence that they or others in the academic community will be able to resolve the difficulties of sustaining and organizing the resources. Some part of this confidence is as yet unfounded. The US report of the National Commission on Cyberinfrastructure in the Humanities and Social Sciences (a project of the American Council of Learned Societies (ACLS) and the Council on Library and Information Resources) indicates that much work, time and funding must be committed to building an adequate technical, social or policy infrastructure for scholarly digital resources (see the ACLS Report, 2006, and also Smith and Wheatley, 2004).

One such policy hurdle noted by the Commission is that standard measures of academic accomplishment do not normally include digital scholarly resources and their development, which may in turn have deleterious consequences for the open resources community. Thus, tenure decisions and similar assessments are typically made on the basis of traditional research output, which in the Humanities is still very much characterized in terms of non-open channels for publication. Among the reasons for this, open journals may be seen as unlikely to last long or to fail to compete with other, established journals; and other forms of open content may be seen as ephemeral and not bearing obvious relationships to traditional presentations of scholarship. As a result, evaluation of open resources is not yet fully integrated into formal judgments of scholarly merit and progress. Negative feedback may result, with diminished impetus for scholars to participate further in the building and development of content for those resources. The established means of judging scholarly research thus can have a dampening effect on the advancement of open resources.

Nonetheless, other elements of the policy landscape – beyond the academy – represent forces for such advancement. Many open projects, particularly on the tools side, have received critical start-up support from a mix of government agencies and private foundations.[6] Government agencies are keen to support such projects in order to catalyze development of national cultural and information resources. For example, in the United Kingdom the Joint Information Systems Committee (JISC) has funded a range of projects that build a national infrastructure (notably including middleware, digital libraries, and distance learning structures), as well as content-oriented digitization projects to support open access journals and preserve and distribute representations of British cultural and historical treasures, including sound, video, and print media (see the JISC web pages on Open Access programming and

support, JISC, 2005). Private sources of funding often address other, complementary motivations, such as promoting sector-wide development in higher education, or individual research projects. Thus, in recent years, the Mellon Foundation has sought to bring universities together in the projects they support, as a function of their open collaborative character, and to bring those projects together to seek out programming and design commonalities and synergies, as a function of their open coding structures. The grand hope is to foster a community-based focus among universities and colleges as both creators and users of open tools and resources. (See mellon.org, 2005; in the UK, the Wellcome Trust has been a strong supporter of open access in scientific journal literature: see SQW Limited, 2003, and Wellcome Trust, 2005.) This community building offers straightforward utility, as does the promise of possible advancements in pedagogy, research, or cost savings from particular open applications and resources. Yet this communitarian brand of development in US universities also reflects a larger, traditional American ideal, of independent higher education institutions which together form groups with common purpose and, broadly speaking, shared ethos. Among colleges and universities, not all is, or should be, competition.

POSSIBLE IMPACTS ON THE HUMANITIES

Aside from such general expected (and hoped-for) consequences for higher education and its institutions, what are specific ways in which open tools and resources may shape the Humanities? One already visible impact likely traceable to the character of developing open structures, is an intensification of extant collaborative processes as mark the development of the humanities disciplines by scholars located at different universities and joined by largely 'virtual' structures, like scholarly societies (such as the Society for Eighteenth-Century Music, born to the digital age: see secm.org) and publishing enterprises (such as the Stanford Encyclopedia of Philosophy: see plato.stanford.edu). Such collaborative processes seem especially productive for highly specialized domains, like the study of early Provençal literature, where scholarship can be pursued across institutions independent of their contingent departmental strengths in the domain. Collaboration as facilitated and enhanced by digital environments allows a group of scholars, who may represent few and dispersed forces, to focus their attention efficiently on the particularities of their shared intellectual projects.

A range of other possible consequences of open resources and tools involves encouraging a greater collaborative culture at the core of what are traditionally seen as highly individualistic scholarly research and teaching practices in the Humanities. This encouragement might take several forms.

1. *Research habits may become less isolated.* Long a feature of translations and editions, other forms of research in the Humanities may well become more of a group exercise. This is something humanists already do in oral media, and such is the stuff of scholarly workshops. The challenge is to articulate an equally valuable research product in written form (though *not* workshop transcripts!).
2. *Authoring may acquire more diffuse agency.* This is the most obvious way, perhaps, in which research products can become more collaborative, though in such cases the research itself need not be. Natural scientists and engineers are well accustomed to long lists of authors for what are often patchwork and team publications. This model may well gain currency in the Humanities as the culture of creation changes. Indeed, the possibilities for attributing partial authorship are already far advanced, thanks to improvements in tagging code and tracking the different versions of documents. But these will need to be improved further, since who deserves credit for what is a serious matter in the Humanities given the focus on individual contributions. In addition, the reward structures will need to adjust to gauging collective efforts.
3. *Teaching habits may become less individualistic.* As vast file drawers of teaching resources like OCW become readily available, there is no reason to create all courses *de novo* or insist arbitrarily on a 'not made here' syndrome for many courses (or at least parts of courses) of a broad and common nature.[7] This is markedly so in the natural, formal, and even social sciences, and the case can be made for certain heavily canonical introductory courses in the Humanities.
4. *Publishing may be more of a collective enterprise.* There is much in publishing that already reflects the open culture of collaboration: university presses work together on a number of common technical problems, and there are, as I noted earlier, numerous open access and open content journals and even monographs available. The question is whether there can be much more 'openness' or collaborative and constraint-free endeavors in humanities publishing without a further withering of revenue streams among the non-profit publishers (many of which are already in poor financial condition).[8] This is a puzzling issue for scholarly societies like the MLA which have a vested interest in 'openness' for various reasons, yet which also operate as scholarly publishers and may stand to lose under more open regimes (thanks to Steve Wheatley for this insight, and see Willinsky, 2003).

All these types of collaborative and cooperative behaviors may be augmented and accelerated by open regimes. But is openness *necessary* for such results? Joseph Esposito (2003) has suggested that a fully robust and

interconnected vision of textual content (what he refers to generically as 'books'), such as yields collaboration and cooperation in authorship and publishing, is a consequence of simply setting texts in networked contexts. The openness of the text or the resource or collection in which it resides is a less critical factor in this regard than its brute fact of constituting a node on a network. Yet while networking texts alone creates tremendous possibilities for collaboration and cooperation, openness allows further enrichment, in exposing existing texts to new users without rights-based restrictions and by infusing new texts with a maximal range of diverse inputs and correctives. What humanists stand to gain in open resources over merely networked resources is access in practice, rather than simply in principle.[9] One may wonder about the merits of such access and the shared and common nature of the work it allows (see the following section) but there should be no question as to the broadening and deepening of the phenomena as a consequence of more open regimes.

WHAT HAPPENS TO INDIVIDUALISM, COMPETITION AND SOLITUDE?

In light of prevalent stereotypes and myths about the nature of the Humanities and humanists, it is easy to see possible downsides to elements of such open scenarios for cultural and scholarly assets. But is it *truly* a loss if the Humanities shift to more collective and collaborative work modes? Consider the following putative losses.

- *Individualism.* It may be thought that the whole point of *reflecting* on a novel (as against, say, writing a novel) is to bring one's particular insights to bear on the nature and essence of the literary work in question. It may be further supposed that such an exercise has its clearest social value when the audience for such reflection can identify, in most perspicuous fashion, the author of such reflection. Thus, the social feature capturing the interest of readers of Professor Smith's critique of Professor Thibaud is that it is Smith (rather than anyone else) who is critiquing Thibaud. (There will presumably be many other features of Smith's critique which may capture the attention of the reader, but the one social element consists in the interpretation of the two social nodes of the scholarly research network, Professors Smith and Thibaud.) More broadly, an aspect of humanist pursuits entails drawing on the well of one's personal experiences in learning, teaching, and as is occasionally relevant, living. On the other hand, it seems clear enough that another dimension is relational – built on the nature and content of our interactions with others. Further, any such losses to individualism as may be incurred by a more collaborative culture in the Humanities are

likely to be mitigated by publicly acknowledging individual contributions to collective efforts. At all events, it is difficult to imagine a future world of scholarly publishing or libraries – much less other consumers of scholarly writing – where interest in the voice of the individual author diminishes (to any great degree).[10]

- *Competition.* Another aspect of being a humanist, consonant with individualism of a not entirely extreme form, is the willingness to insist to the bitter end on one's own interpretation of the matter, to the exclusion of anyone else's, and to lay great stakes on such matters of disagreement. It is sometimes thought, and even occasionally uttered, that it is a mark of brilliance, talent, or at least insightfulness, if one's views are demonstrably and regularly more competitive than those of others. (Conceivably, this view is expressed in, or governs, some fields of the Humanities more than it does others: analytic philosophy comes to mind as a prominent instance.) Against this background, the fear of a culture of collaboration is that it may promote cooperation in lieu of competition. At this point the notion of judging comparable merit becomes less important than making sure that all parties (whatever their scholarly merit) work together and benefit. Should collaborative culture evince this sort of strict tendency to egalitarianism, then such a culture would seem to have a chilling effect on the determination of quality in humanistic scholarship. This scenario provides clear benefits: scholars share their work, contribute to others' projects, circulate mutual praise, and work towards common goals. However, because their framework for judging scholarship is collective and egalitarian, they discount the notion that valuing the work of some individual scholar x means that the work of other scholars, y, z, and so on, is of lesser quality.
- *Solitude.* Another prototypical feature of humanistic pursuit, according to the biographies of all great humanists, is the lonely and focused nature of the quest. Sitting in quiet in one's garret, attic or dungeon, or the library, is highly conducive (if not necessary) to putting one's thoughts together and confronting them with unmediated critique.[11] One may reasonably suppose that, minimally, the lack of outside signals greatly enhances one's concentration. And so, this worry has it, a move to greater collaboration in humanities research may well undermine a key piece of such research behavior, as traditionally conceived and as is typically associated with scholarly productivity. On the other hand, it may be asked in response whether even the most collaborative of humanists foregoes altogether solitary scholarly activities.

Where have we seen the elements of this scenario before? The mere mention of collective investigative enterprise may conjure the vision of Soviet

science, at least in its ludicrous idealized form, wherein the glory of the centrally established research goal is the supreme end, trumping the significance of any contrary or even stray goals or claims of participating individual researchers. We would do better to recall the Mertonian norm of scientific 'communism' (small 'c'), in which natural scientists share methods, data and results as broadly as possible, in order to promote mutual comprehension and work towards voluntarily shared goals of research programs (Merton, 1973 [1942]). Merton's proposed (prescribed) norm has been criticized on the grounds that, beyond not describing any actual scenario – relative to the modern science of his focus or any other period or place in the history of science – natural scientists *ought not* to behave in that way, given the importance of competition and dissent to the scientific endeavor. But whatever the merits of those criticisms, there is surely a place for such behavior in the Humanities and, more broadly, in all of higher education. Two ongoing views of behavioral modes present possible and relevant perspectives on the place of collaboration and cooperation in humanist academic endeavor – a strategic defense of cooperation and an evolutionary defense of altruism.

Consider a strategic perspective. In the Humanities, we frequently find participants in a competition of ideas who work together towards common solutions to shared problems; for example, those concerned with different sorts of representation and holding very different views as to what counts as representation may labor together to understand its common nature. Those who cooperate may avoid penalties borne by those who do not work together. Among the possible disincentives facing the non-cooperator, his or her research may have diminished perceived value simply on the grounds that it has been created as a wholly solo effort. Scholars often hold a folk theory of humanistic research, loosely modeled on Popperian verificationism, that says work created in isolation is more likely defective than if created in the cauldron of a research community. The suggestion is that those researchers who share their subjective insights early and often, say, on Tintoretto's place in the Venetian School, are more likely to converge on an objectively (or, at least, optimally inter-subjectively) viable account of his actual role in that regard.

Looking beyond perceived value, the non-cooperator must expend more resources on shared problems than cooperators expend, at least to the extent that they are cooperating. One may expect that cooperating scholars will be correspondingly closer to a solution (with at least some common features) – and able to get there sooner – than the non-cooperator. Of course, if the non-cooperator's proposed solution is correct whereas the cooperators are barking up the wrong tree, then any such disincentive should fall away, and the correctness of the solutions is not likely determinable in advance. Indeed, the common view of the Humanities is that there is general disagreement about

what the particular problems are, much less what their solutions (if there be such) should look like. It is often the case that particular research problems – as, for example, determining the consequences of the Second Battle of the Marne, or early influences on Pirandello – are not widely shared. However, there should be no question that the Humanities features broadly-shared problems of a grand scale, such as determining whether wars have common causes and whether early 20th-century drama marks a radical departure from or continuity with the past. Moreover, whether or not there are common solutions to such problems, the non-cooperator is likely to be disadvantaged in the competitive search for *any* solutions, for lack of access to the best available reasoning and evidence outside of what he or she can muster. Collaboration, then, looks to be necessary to avoid losing ground in even a competitive construal of humanistic scholarly pursuit.

An appeal to the benefits of collaboration is also at the heart of an evolutionary perspective. The failure to be *giving* when appropriate can corrode the shared environment, and slow the advance or prevent the survival of those starting off with the greatest advantage. As an example, consider a group of scholars engaged in an interpretative exercise with clear communal benefit, such as translating a scroll from a heretofore unknown ancient dialect. If a participant fails to freely distribute his or her best ideas regarding an interpretation to the rest of the group, then there is distinctly less reason for anyone else to participate in the group effort, which deteriorates accordingly. Worse still, if that scholar's best ideas are really the best ideas overall, then the ungiving scholar misses opportunities to promote their interpretation first, and others may lay prior claim. In the Humanities as in the Sciences, priority counts a great deal, and those with the best ideas are most likely to be known for having had the best ideas if they exploit the broadest ways to communicate those ideas with others in the field.

In sum, the strategic and evolutionary perspectives suggest that for even the strongest, sharing may minimize costs, and caring can build advantage. This sketch of an analysis says why we should expect even the mightiest to benefit from open source and content regimes that accelerate and promote collaborative and cooperative behavior in the Humanities. It says nothing, looking beyond such strategies, of why we in the humanities *should* act in such ways – that is, 'why' in the morally prescriptive sense. The answer to *that* question is to be found in the close analysis of our humanistic subjects.

CONCLUSION

I have suggested that the proliferation of open technologies and content in higher education is motivated by a broad embrace of a principle of sharing

that is consonant with various contemporary economic, pedagogic, and policy drivers. At the same time, open technologies and content present the possibility of a departure in the culture of humanities research and teaching. The open frameworks celebrate and facilitate collaborative and cooperative modes of working which are, in some forms or fashions, alien to a traditional 'individualist' conception of work in the Humanities.

In the main, I have indicated how such technologies and their new modes of creation and distribution might introduce change in the Humanities relative to the work of individuals, considered separately and in relation to one another. A further question may be posed as to how open frameworks might effect yet broader changes at the institutional level, with repercussions for the Humanities. In particular, it may be thought that diminishing the role of the individual humanities scholar and heightening a sense of collective scholarship may lead to an increased reliance on institutional guidance and a decreased intellectual autonomy among humanists. The pessimist here will look for an analogue with 'big science' and lab units which, dependent on outside funding, gear their research to outside interests. The heroic lone humanists, contends this pessimist, have until now stood independent of external influence on their research. By the pessimist's reckoning, this is precisely because the humanist's modalities of teaching and research lack the mark of group thinking and are not tied down by interlocking relations with, or commitments to, other scholars and, accordingly, administrators and funders. This view is likely false in both directions, overemphasizing the role of external influences in natural science and underestimating such influence in the Humanities. More to the point though, a great deal of collectivity is already a feature of the Humanities, in the form of disciplinary, subdisciplinary and interdisciplinary groupings for purposes of furthering research, pedagogy, documentation, professional goals, social progress in the domain, and many other goals. So the heroic image of the arch-individual scholar is something of a myth.

Moreover, while open frameworks may well push the Humanities further along the road of collective and collaborative work, there is no *inherent* connection between the collective and collaborative on the one hand and heavy-handed *dirigiste* control of research agendas on the other (as we see in the great diversity of research programs in the natural sciences supported by governments of the wealthiest nations). To the extent that open frameworks facilitate scholarly interaction across institutional and national borders, there should be little concern about an impending loss of autonomy for humanists as we advance across new and open technological frontiers.

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NOTES

1. While there are many useful and well-designed web sites created by publishers to accompany textbooks, instructors often teach selectively from textbooks and fashion amalgam curricula from a variety of sources. For such instructors, it is best to have a range of options – perhaps including the publishers' 'canned' web sites – extending to resources and technologies developed for other, similar courses, very possibly taught at other institutions.

2. The first efforts to develop pre-print and e-print resources were in the natural and formal sciences, including the Cogprints archive http://cogprints.org (accessed February 2006) and Las Alamos arXiv physics archive http://www.arxiv.org (accessed February 2006). OAI (Open Archives Initiative); http://www.openarchives.org (accessed February 2006) is a project to create and deploy effective protocols for the provision and diffusion of open access materials.

3. According to the MIT study, the number of unique visitors to the web site from November 2003 to October 2004 was 2.3 million. For details on use statistics and an evaluative assessment of effectiveness, see MIT Report (2005).

4. It is undoubtedly too early to offer a deep or comprehensive historical perspective on the creation, diffusion and use of digital scholarly resources. See, however, Roger Schonfeld's (2003) short-term micro-history of JSTOR, a vastly valuable (albeit restricted and non-open) resource which has been an early leader among projects to digitize, store and distribute major scholarly journals.

5. Peter Suber (2004) analyzes reasons for the weak state of the open movement in the Humanities, and recommends strategies for fashioning a robust open humanities landscape. One clear factor in favoring heavier development of open resources in the Sciences is the far superior general funding for science resource development (digital or otherwise), which has a natural residual effect of supporting development of specifically open resources in those domains. A major recommendation of the US National Commission on Cyberinfrastructure report is to increase funding for development of humanities digital resources.

6. In the USA, such government agencies would typically include the National Science Foundation, National Endowment for the Humanities, and the Institute of Museum and Library Services. American private foundations that have been particularly active in this domain include notably the Mellon, Hewlett, and Niarchos Foundations. The Mellon Foundation has been especially dedicated to helping to contribute to initial development of open tools and resources through its Research in Information Technology program, which has provided support to such projects as SAKAI, OCW, and OAI.

7. Although some teaching resources are shared by their authors, as in the institutionally driven case of OCW, it is by no means certain that all faculty members are generally inclined to share their curricular materials. Diane Harley suggests that the inclination may be greater in non-research institutions, where there is less of a premium on authorship and more of a premium on teaching. Important places to monitor trends in sharing curricular resources are the inter-institutional course material repositories, including Connexions http://cnx.rice.edu (accessed February 2006) and Merlot (Multimedia Educational Resource for Learning and Online Teaching) http://www.merlot.org (accessed February 2006).

8. There is an extensive literature on the economics of digital scholarly publishing, and much recent discussion of the open access and open content regimes in that context. See, for example, the advocacy literature of Paul Ginsparg and Stevan Harnad, for example Ginsparg (1996) and Harnad (2001–2003); see as well the analytic literature, for example Odlyzko (1998) and Varian and Kahin (2000).

9. The question may be pushed back one step: Is it essential to any knowledge and research sharing of these sorts that we rely on the new technologies? Here, too, the answer is that we gain in degree if not necessarily in kind, as we can see from the tremendous importance of all manner of like phenomena in the history of ideas. Such phenomena range from the interactions of the Agora to the scholastic exchanges of medieval thinkers to early modern correspondence circles (not to mention non-western traditions of communicating and trading ideas). What one purchases with sufficient progress, however, may be enough to produce qualitative change – in the academy and in the world beyond. In this regard it is instructive to recall Horowitz's assessment (1991) of the new technologies as a democratizing force with the potential to promote broader access to diverse audiences.

10. It is also not in the interest of publishers to place too great a premium on collective authorship. As Horowitz (1991: 31–5) pointed out, one of the publishers' value propositions in offering publishing services to authors is their contribution, through their selection process and judgment of innovation and worth, to the academic evaluation of individual scholars.

11. Another critical step – ensuring that one's thoughts are indeed the product of one's own output and not anyone else's – may be clearer in isolation, but also may be more easily verified in a collective environment owing to the possibility of drawing on other's knowledge of the terrain. Thanks to an anonymous reviewer for this point.

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