Chapter Six

Intellectual Property Meets Information Technology*

Dennis Thompson

Thompson sheds light on the intellectual property issues raised by the products of information technology by shifting focus from the nature of the products to the circumstances of their creation. Thus, for example, rather than asking whether a Web-based course is more like a book, which generally a faculty member would own, or like an invention, to which an institution often retains rights, the more appropriate question is whether the institution has contributed significantly to the making of the product. Beyond this assessment of ownership, Thompson urges that attention also focus on the important financial, intellectual, and reputational interests of the institution.

Among the challenges that information technology is posing to universities, none is more contentious than the issues it raises for intellectual property. The controversy pits administration against faculty, scientists against humanists, and academic values against financial interests. Some administrators seek control of the products of information technology in order to use the potential profit for the benefit of all members of the university rather than for the gain of individual faculty members. Some scientists see an opportunity at last to make sure that humanists' books are treated in the same way as the products of scientific research (either by giving the university control of both, or of neither). And both administrators and faculty face temptations to compromise academic purposes for financial gain. The battleground is intellectual property policy, and the hope is that victory, or at least a peace treaty, will finally resolve the dispute.

* This article draws on my experience chairing a year-long series of meetings of a university-wide committee addressing the implications of information technology for policy on intellectual property. I benefited significantly from the work of this committee and its staff, but my comments and conclusions do not necessarily represent the views of the committee, its members or staff, or the university, except where explicitly indicated.

Much of this controversy, I believe, is misconceived, and most of the hope is misplaced. Information technology raises important new problems, some of which should be addressed by changes in university policy on intellectual property. But the changes should not deal only with the products of information technology, and some of the problems that may seem to be about ownership go beyond the province of intellectual property.

Beyond Information Technology

"Is a CD-ROM more like a textbook, or more like an invention?" This was one of the first questions my colleagues and I faced as members of a committee to explore the issues of intellectual property at Harvard University. The first meeting of our Intellectual Property Committee had hardly begun when the members found themselves engaged in a spirited argument about the true essence of the products of information technology. The stakes seemed high. If we concluded that CD-ROMs should be treated like textbooks, the faculty who created them would own them, but if we decided that they were inventions, the university could claim them. Like most universities, our intellectual property policy grants faculty ownership of copyrightable work, but gives the university the option of taking title to most patentable products.

The rationale for the different treatment is not entirely clear, but it appears to rest on several considerations. Inventions are less likely to be developed if they are not patented, and patents are relatively difficult to secure; inventions usually involve substantial use of university resources allocated exclusively to the inventor. Copyright is less necessary to promote the dissemination of ideas (though it may be necessary to encourage their production), and is easy to secure. Copyrightable works are generally assumed to draw less on substantial university resources assigned exclusively to their creators.

The committee quickly recognized that the sensible answer to the question with which we began is that CD-ROMs and almost all products of information technology are like textbooks in some respects, and like inventions in others. By focusing on the distinctive features of information technology, however, this answer fosters the temptation to create a new category, a special set of rules just for "encoded" or "digital" works. Some universities have followed this approach, but their policies seemed to us to reproduce the problem that prompted the revision in the first place. Under these policies, the university sometimes claims ownership of information technology policies (for example, if the expected profits of a piece of software are high), and sometimes does not (for example, if a chemistry professor produces a jazz video). The bases for the distinctions may or may not be arbitrary, but they have little to do with the nature of the product itself—its status as information technology.

The fundamental problem is that what makes the products of information technology distinctive (to the extent that they are distinctive) does not correspond to what usually justifies a property claim. An interactive Web page may be easier to

produce, and its contents more readily reproducible and accessible, than traditional forms of scholarly and pedagogical communication. But none of these factors in itself offers a reasonable basis for determining who should own the Web page or profit from it (though they may be relevant to determining who should control some aspects of its use, as I suggest below).

The question of whether information technology products are more like books or more like inventions is therefore precisely the wrong one to ask. It focuses attention on the nature of the product instead of the way it is created. A simple shift of perspective—from the attributes of the product itself to the circumstances of its creation—is an essential step in developing a coherent policy for information technology products. Once that shift is made, it becomes clear that the policy must reach beyond information technology. The policy can then be based on general principles that appeal to the core interests of the university and therefore apply to all kinds of products created by faculty, staff, and students.

If the university contributes substantially and specifically to the making of a product, the university should share in its profits and have some control over its uses. This principle in some form is widely accepted, and indeed is at least implicit in many existing university policies. The principle states sufficient though probably not necessary conditions for a university claim. There may be other factors, such as effects on the university's reputation, which could justify some control in the absence of a specific contribution. Even using the principle as statement of sufficient conditions, we still have to decide what contributions should count as substantial and specific in particular cases. But discussions about these questions are more likely to be fruitful when they take place against a background of agreement on this general principle.

The university may contribute to the creation of a product by providing any or all of three kinds of support: financial, intellectual, and reputational. In return, the university and its members have a legitimate claim on some of the profits of the product, some access to it for using in teaching and research in the institution, and some control over any effects it might have on the university's own reputation. This reciprocal relationship is a matter of fairness. It should not be thought of as a relationship only between two parties—an individual faculty member and the university—but rather as one that exists among faculty and other members of the university, both present and future students and colleagues. That important point can be further reinforced if the university's proceeds from intellectual property are not consigned to general funds, but are directly and visibly allocated to promoting further research and teaching.

Each of these three kinds of support provides a basis for some claim by the university on an intellectual product, but the claim does not apply only to information technology products, and it is not necessarily one of ownership. Even if the university has a legitimate claim, its interests may be satisfied by retaining control of the product for certain purposes, such as for use by the library, students, and other scholars.

Financial

Why should the university not treat products created by faculty members in the same way it treats products created by staff members—as "work for hire," which belongs entirely to the university? The answer is not so obvious as many faculty would like to think. Tradition exempts teachers from the "work for hire" provisions of the copyright law. But the literal language of the statute does not support the exemption for faculty, which exists mainly because judges have declined to overturn the tradition. The only strong justification for the tradition is the protection of academic freedom, but that would not require faculty to receive all or even any of the profits derived from their work. (It does require giving faculty some control over the content and use of their work, even when they do not own it.)

If we were creating a university system ab initio, we might well decide that educational goals could be better served by allocating all profits to the university to promote the overall educational mission of the institution, while giving faculty sufficient control over the content and uses of their products to protect academic freedom. But in practice we begin with an existing system, with a complex set of benefits and burdens already in place, and we need to justify any departures that significantly shift the balance in favor of the university (or the faculty). A fair reform would require changing far more than the package of intellectual property rights. Changes in levels of compensation and patterns of work would also need to be considered—and not only in one university but (to avoid the problem of competitive disadvantage) in all comparable universities.

A more constructive approach would rely on principles already embodied in current practice, and seek to generalize them to new situations and new kinds of products. The most promising basis for such an approach is the principle already cited—that the university has a legitimate claim if it provides substantial and specific support. The principle is implicit in current practice, and can be independently justified on grounds of reciprocity, as suggested earlier.

Reciprocity might of course also justify the university's sharing the proceeds of products created with collective resources that are not specifically dedicated to an individual faculty member (such as the library). But determining how much or even whether such a resource was used in the creation of the product would be difficult if not impossible in practice. In addition, such a policy would be vulnerable to the general objection, mentioned above, that changing one part of a system of benefits and burdens without making compensating adjustments in other parts would be unfair.

What should count as a substantial and specific contribution may be contestable in particular cases, but the general distinction it implies is clear enough. On the one side, the ordinary benefits of employment (such as salary, office, and usual library usage) should not count as contributions. On the other side, some facilities assigned to an individual faculty member (such as a laboratory) should count. The reason is not simply that not all faculty members receive the contribution, but that the contribution is

relatively large and relatively exclusive. Unlike a salary of an individual faculty member, the marginal cost is high enough that the expenditure represents an allocation that could have supported some other major priority. Unlike a contribution to a collective good such as the library, the expenditure supports a resource that is not accessible to other faculty and students. When the university decides at the margin to expend funds to provide a faculty member with an exclusive resource instead of allocating the same funds to a collective resource, it has a legitimate claim on the products created using the exclusive resource.

A principle that grants the university a claim if its support is substantial and specific would in many cases yield the same result as the current practice of treating copyrightable and patentable products differently. Most textbooks, software, and CD-ROMs are produced using ordinary facilities, and most patentable inventions come out of large research labs. But the principle cuts across the distinction between patent and copyright, and provides a broad standard that can apply to all kinds intellectual property, not only information technology products. When the creation of copyrightable materials draw on substantial and specific university resources, the university would be justified in making a claim. The proceeds of a multi-media encyclopedia that employs extra university staff and occupies exclusive space, for example, should not belong only to its faculty producers.

"Substantial" cannot be defined in advance for all cases, but its indefiniteness is actually an advantage, as it permits variations in the sharing of resources depending on the extent of university contribution (as well as the other factors considered below). The best approach may be to adopt a general template for dividing royalties and fees (such as many universities already have in their patent policy), and negotiate departures from it. The important point is that the negotiations focus on the nature of the university's contribution, not the character of the product.

The university's financial contribution may be sufficient to support a claim to intellectual products, but it is not necessary. Some patentable works that do not consume substantial or specific university resources may still be subject to university ownership. Universities generally have the right to acquire the title to products of sponsored research supported by the federal government. In this respect, the university acts as an agent of the government, which sets the terms of the contract to ensure that the university adequately oversees the research. Furthermore, there is a public interest, shared by universities, in encouraging the commercial development of scientific knowledge. As noted above, most scientific discoveries, unlike most copyrightable work, are not likely to be turned into useable technology unless they are patented.

Intellectual

The disputes about intellectual property tend to neglect the most important kind of support that faculty members enjoy in a university—the intellectual resources provided by a professor's students, colleagues, and the shared activities of university life such as performances, conferences, and museum

exhibitions. To some extent this neglect is understandable. This kind of support is part of the background culture to which faculty themselves contribute. No policy could possibly capture the value of such a diffuse contribution.

Nevertheless, some kinds of support are specifically linked to a particular work—support without which it could not have been produced at all. When a faculty member publishes a catalog of a special collection in a university museum, posts the proceedings of a university conference on the Internet, or produces a video of a concert by the university orchestra, the university has a legitimate claim. This is so even if the main value of the work is the result of the creative contribution of the faculty member.

Where students play a significant role in the production of a work, the university has a special responsibility for regulating both the creation and the subsequent use of the product. The university's interest is not simply in ensuring that the students and the institution receive fair compensation if the work turns out to have commercial value. The more important concern should be that the role of the students and the use of the product is consistent with the educational mission of the university. The students' contribution should also be acknowledged in any publication or dissemination of the work, but because this does not require university ownership or control of the product, it should be addressed through policies other than those of intellectual property (such as those mentioned below).

In other instances, the students' contribution may not be very creative, but their role is still sufficient to give rise to a university interest in the product. If a faculty member uses students to test course materials in ways that go beyond ordinary classroom practice and then distributes the materials for commercial gain, the faculty member cannot reasonably complain that academic freedom is jeopardized if the university asks whether the students consent to being used in this way, and whether the students and the institution are receiving a fair share of any profits resulting from the sale of the materials.

Reputational

Paul Samuelson's name may bring more value to a textbook than the name of any institution, be it MIT or Harvard. But for most faculty members the value of the name of the institution is at least as great as their own. Publishers, producers, and Web page sysops seek to identify the author's institution, sometimes to increase profits or at least audiences, and sometimes just to enhance the authority of the content.

The main concern should not be the commercial value of the name, or even the extent of its recognition, but rather the effect of the use of the name on the university as an institution and its members. The reputation of any university is a collective good, easily damaged by the actions of individual members, to the detriment of the other members, present and future. By attaching the university's name to a product, a faculty member makes use of that collective good, for good or for ill.

The rationale here is based not on the nature

of the university's contribution (whether it is substantial or specific, for example), but on the effects of the individual's use of a collective good. The university, on behalf of the other members of the university, takes a legitimate interest in the use of its name. It has a responsibility to ensure that the use of the name (and phrases and symbols that carry the same implications) meets at least three standards that express core values for any educational institution.

Accuracy. Attaching the university's name to an event, project, or publication implies a close connection, usually sponsorship or endorsement. That means that phrases like the "Princeton Primer on Basketball Defense" or the "Yale Guide to God and Country" should be used only when they refer to activities for which the institution or one of its officers is accountable. Participation by individual students or faculty should not, by itself, be enough to attach the institutional name. Rather, the activity should be one for which the university takes institutional responsibility.

Appropriateness. The university also needs to make sure that even if the connection with the university is accurately represented, the activity is consistent with the educational mission of the university. The UCLA Association for the Promotion of Tattooing may be objectionable quite apart from whether it is a recognized university organization. Even some activities that meet relevant standards of quality and serve educational goals may still not be appropriate (for example, partisan political activities or certain outside commercial ventures carried on by individual faculty or students). In the case of most academic activities, the normal processes of review should be sufficient to maintain standards of appropriateness. But for other activities some special procedures may be necessary. In general, groups and organizations should be encouraged to use the more precise name: Harvard Divinity School Students for Peace and Quiet, or Cornell Hotel School's Guide to Careers in Wine Tasting.

Fairness. The university has a responsibility to protect its assets by seeking a fair share of the commercial value that the use of its name produces. Any commercial fruits of its reputation are largely attributable to the contributions of many generations of faculty, students, and staff, and therefore should be allocated for the benefit of the university as a whole and its individual members, present and future.

Beyond Intellectual Property

To deal with the emerging problems generated by information technology, intellectual property policy, I have suggested, should embody principles that apply beyond information technology. The extension no doubt complicates the task of revising the policy, but it offers the advantage of a more coherent and equitable set of principles and practices than found in current policies. I turn now to the other side of the relationship, and show why policies dealing with information technology should go beyond intellectual property. Information technology raises questions that are not best addressed by policies that speak mainly the language of ownership and control.

Consider first the critical problem that university libraries are now confronting—the increasing costs

of serials and other forms of scholarly publications. Faculty members sign over the rights to their articles to journal publishers, who then require university libraries to pay high prices for the hard copies they would rather not have in order to gain access to the digital versions they prefer. Many academic publishers reap large profits while university libraries struggle to cover their increasing costs. Faculty in their role as producers benefit little, and faculty in their role as consumers suffer much, along with their colleagues, students, and institutions.

As important as this problem is, attempts to solve it by changes in intellectual property policy are not likely to succeed. If the university were to hold the copyright on all articles, it would of course enjoy a stronger bargaining position in negotiations with publishers. But such a change would be difficult to implement and would not address the root of the difficulty. The problem calls for a collective response by all universities and the scholarly community to reduce dominance of traditional journals in academic advancement. One of the more promising approaches is the effort to establish an alternative medium for dissemination of research on the Internet, which would include the equivalent of refereed processes. If such a medium becomes an affordable and widely accepted method for communicating and assessing the results of scholarship, the question of who actually owns the copyright to most scholarly work of this kind will become less important.

Another set of issues that goes beyond what universities should attempt to resolve in their internal policies on intellectual property concerns international agreements to protect the copyright of digital work. The U.S. government has been a leader in seeking such protections, but many of the proposals do not necessarily serve the interests of universities, their faculty, or their students. Faculty are not only producers but also consumers of intellectual property, and they care at least as much about having access to others' scholarly work for the use of their students and their own research as keeping control of and profiting from their own work. Broad license for "fair use" is therefore more important than strict guarantee of fair profits. Universities should certainly take an active role in these discussions, but the action that counts is that which shapes legislation, treaties, and trade agreements in national and international forums, not the university's own policies and procedures.

A third group of issues that go beyond intellectual property more directly raises questions for a university's own internal policies. As advances in information technology encourage the expansion of distance learning, some educators are promoting a grand vision of a virtual university, in which faculty's lectures are digitized and distributed to students scattered throughout the country and the world, connected only through their PCs. More than lectures in a classroom, these cyber-encounters will encourage students to interact if not with virtual professors themselves at least with the sequence of questions and responses they have programmed.

The fears that the virtual university may replace the real university are surely exaggerated. More likely for most universities, distance learning will supplement their regular offerings by reaching

mature students and alumni who might otherwise rarely return to the classroom. Distance learning may simply expand the market for higher education, attracting new students without displacing the traditional ones.

But one fear is not so easily discounted: distance learning vastly increases the opportunities for faculty to distribute their own course materials, and in effect to offer on the Internet what may appear to be the equivalent of the courses they teach at their own university. These opportunities, though not entirely new, pose some potentially new problems because of the scale and flexibility of the new technology. This is what may be called the courseware problem—the control of lectures, syllabi, study questions, exercises, case studies and exams prepared by faculty for their own courses, but offered in various forms, virtual and otherwise, to students at home or at other institutions. The problem is important in itself, but it also serves to illustrate why information technology challenges are not best handled by changes in intellectual property policy.

Some changes in intellectual property policy can help with some aspects of the courseware problem, specifically those that raise the same concerns as with other kinds of products. But for at least three reasons it is a mistake to go further and assert a university claim to own Internet courseware produced by faculty.

First of all, it is difficult to justify any principled distinction between courseware presented on the Internet and courseware distributed in more traditional forms. The audience may be greater, and therefore all the potential effects, including financial gain, are likely to be greater. But it does not follow that the university is entitled to ownership.

Even if we accept the optimistic assumptions about the commercial future of Internet courseware, we should doubt whether any of these potential effects in themselves justify separate treatment on the basis of the medium. If the large profits are the concern, then we should have a policy setting a limit on outside income from courseware in whatever form. If the concern is possible distraction of faculty or lack of availability of materials, the effects may go in the opposite direction. It is easier for faculty to distribute and for students to retrieve material on the Internet. As for the university's reputation, it is at stake no less when courseware is distributed in traditional media, perhaps even more so when its professors give lectures in person at other institutions.

Second, in the absence of any principled distinction, problems of equity arise. Faculty members who distribute their courseware on the Internet will legitimately feel unfairly treated compared to those who do not, if the university claims ownership in the former case but not the latter.

Third, treating Internet material differently may create an incentive to distribute it by other means, and thereby discourage the use of the Internet for purposes we should seek to encourage. The university itself could and should find ways to encourage Internet education in the right ways, and should provide assistance for doing so. But these efforts do not require university ownership of courseware, and are likely to be more effective without it.

A more sensible approach is to define the courseware problem not in terms of the faculty members' rights to own their creative products but rather in terms of their responsibilities to their students, colleagues, and the institution. The general policies regulating outside activities, especially those dealing with conflict of interest and conflict of commitment, thus become the more appropriate instrument for dealing with the problem.

Following that approach, these are the key considerations on which we should focus, and some ways in which we could begin to deal with them:

Financial

The chief concern here is that the distribution of Internet courses might deny the university a fair share of the commercial proceeds. Intellectual property policy could certainly address part of this concern. A policy that grants the university some claim to profits when the institution provides substantial and specific support for developing courseware would take care of the financial interest in those cases where the university's claim is strongest. Going further would run into the problem of distinguishing Internet courseware from more traditional teaching materials.

Intellectual

The concerns relevant to the intellectual life of the university are the most important. Two kinds deserve special attention: those involving the commitment of the faculty, and those affecting availability of materials for students and colleagues.

The worry about faculty commitment refers to the danger of creating a conflict or competition between what the faculty members offer their own students and what they offer elsewhere. Even in the absence of economic competition, there is the possibility that some faculty members could be distracted from giving due attention to their own courses and students, or could shape their courses more in response to market imperatives than to educational goals.

Most universities have rules governing the outside activities of their faculty. To deal with the problem of faculty commitment posed by courseware, they could amplify these rules to make clear that the objection to teaching at other institutions is not simply the absence from campus. Universities also have a legitimate interest in avoiding self-generated competition and in preventing divided loyalties such as those that could distract, or appear to distract, faculty from giving full attention to teaching at their own institution.

Specifically, we could include a provision describing a limiting case that would be clearly prohibited—such as a faculty member's offering an Internet course for which another institution gives credit—and indicate that the closer any arrangement comes to that case, the more it is subject to university oversight. The risk that the content of the faculty's own courses might be excessively shaped by market forces probably cannot be prevented by any direct regulations, but could be adequately handled by the normal procedures of review and the informal culture of collegial opinion.

No less important is the need to make sure that any outside arrangements faculty members make to distribute courseware do not affect its availability to students at their home university. To deal with this problem, faculty could be required to make available at cost, at least to their own students and to the university library, any courseware distributed on the Internet.

Reputational

Courses presented by a faculty member on the Internet pose a danger of conveying the impression that the material is being offered as the equivalent of a course taught at the home university, or is otherwise endorsed by the university and subject to normal collegial accountability.

An intellectual property policy that controls the use of the university's name (and other language or symbols that imply institutional sponsorship) is probably sufficient to deal with most of the reputational problems that courseware creates. Phrases such as "the same course that Professor Smith teaches at Cal Tech" or "just like being in a class at Duke" run against the spirit of any adequate name policy. They could be specifically prohibited unless the faculty member entered into partnership with the university to produce the courseware (as in a licensing arrangement).

Making such partnerships more attractive is a desirable part of any intellectual property policy for more general reasons. They can help bring distribution and advertising more under the control of the university, thereby providing better protection for all of its interests, whether reputational, intellectual, or financial. And they can help make available to many more people the benefits of high quality teaching and research, which is an increasingly important part of the educational mission of many universities. An enterprising office that is prepared to assist faculty in converting their creations, whether inventions or CD-ROMs, into marketable products is an essential part of an effective intellectual property policy.

Conclusion

Universities—and their faculty, students, and staff—have a great deal at stake in the efforts to meet the challenges posed by developments in information technology. The problems the new technology presents, as well as the opportunities it offers, implicate some of the central values of the university. Teaching and research, in their individual as well as their institutional modes, take on new forms that are forcing changes in traditional practices and established procedures throughout the university.

The question of who controls the products created by and for this new technology naturally comes to the fore, and quite properly prompts reviews of internal policies on intellectual property. But the framework of intellectual property does not adequately capture many of the serious concerns we should have about the products of information technology, and those that it does capture are more general than the preoccupation with information technology suggests.

We should keep our attention on the significant financial, intellectual, and reputational interests of the university as they affect its central educational mission. If we do, we will see that changes in intellectual property policy should follow principles that go beyond information technology, and we will recognize that problems of information technology call for policies that go beyond intellectual property.