Commodity and Community: Institutional Design for the Networked University

Philip E. Agre

ie]A Instituto de
Estudos
Avançados da
Universidade de
São Paulo

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1. INTRODUCTION

Information technology and its uses unsettle the university as an institution. Institutions are shaped by the practicalities of information, and they exist largely to mitigate information problems (Melody 1987). Now, however, we are confronted with radically improved technologies of information. It stands to reason that the university as an institution will change. But how? Proposals are strikingly diverse. Some proposals treat the university as a purveyor of human capital; they envision a micromarketplace in learning services. Other proposals treat the university as a site for the pooling of knowledge; they envision the Internet as a tool to amplify this pooling on a global basis. Each type of proposal isolates one feature of the university as we know it today. Call them the commodity model -- the university as a competitor in a marketplace -- and the community model -- the university as an idealized microcosm of society. Despite the inherent tension between them, the commodity and community models have always coexisted in the institutional design of the university. And no matter how radical the changes in technology become, I will argue that the university must continue to manage this tension.

2. THE COMMODITY MODEL

The university is understood under the commodity model when people speak of higher education as an "industry" (e.g., Duderstadt 1997), or of the "competitive advantage" of universities (Daniel 1996: 67-85), or of "just-in-time" education that can be consumed in increments anyplace a student happens to be (Dolence and Norris 1995: 4, Halal and Liebowitz 1994: 22, Perelman 1992: 22). Educational services are the principal commodity, with students as the customers. But other commodities are involved as well,

such as the intellectual property generated by research. In the university as we know it, students actually purchase a large bundle of commodities: not just years' worth of interconnected classes, but career counseling, athletic facilities, library services, and much else. Competition among universities is already vigorous, but it is competition among bundles, and also to some degree among choices within a bundle.

If precedents from corporate banking and other industries are a guide, however, Internet-mediated competition will lead to unbundling as competitors arise to provide particular elements of the bundle more efficiently (Evans and Wurster 2000). A new market structure might emerge, segmented by some combination of subject matter and educational philosophy. Individual courses might be purchased a la carte (Dolence and Norris 1995: 46), and complementary services such as access to digital libraries might be purchased from separate firms. That, anyway, is the picture that emerges from a radicalization of the commodity model.

A radicalized commodity model would also surely hold consequences for the higher education workforce, including professors (Neubauer 2000, Skolnik 2000). Lectures, for example, are widely regarded as an endangered species that can easily be replaced by video or interactive multimedia. Faculty might be deskilled in such a scenario, reduced effectively to the status of teaching assistants who tutor students on the material in the video (Noble 1998). Or their skills might be expanded, as they become responsible for managing the ever more complex educational programs being pursued by the students they advise (e.g., Dolence and Norris 1995, Halal and Liebowitz 1994: 23).[1]

From a commodity perspective, the faculty's role is strictly a matter of value added. If well-produced multimedia content can find an audience in the millions then it can be sold very cheaply (Agre 1999); as a result, every increment of one-to-one interaction between students and teachers may add a significant proportion to the overall cost of an education. The most appealing technology-intensive educational program that requires 10 hours of student-teacher interaction might be quite different in its structure from the most appealing such program that requires 20 hours. But will students pay the extra cost to get the virtues of the more labor-intensive program? That is how the commodity model would frame the question.

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[1] Many authors, such as Duderstadt (1999: 15) and Tsichritzis (1999: 97, 99) imagine a division of labor between star teachers whose lectures are brought into classrooms through technology and rank-and-file teachers who actually interact with students. "Universities need to decide the areas for which they will be global content providers" (Tsichritzis 1999: 100).

3 THE COMMUNITY MODEL

The university has also been viewed as a community. It is through the community model that the university upholds norms of collegiality, provides a forum of debate, and maintains structures of democratic governance. From this perspective the university is not an artificial bundle but an organic whole that refracts the tensions and controversies of the larger society.

It is unclear, and usefully so, where the boundaries of the university community lie. Is each university a community unto itself, or do communities form along disciplinary lines, or do the universities of the world form a single cosmopolitan community? All are clearly true to some degree, and the institution is designed to manage this multiplicity. Universities and disciplines recognize one another's degrees, at least ritually. Research disciplines are global communities, the famous invisible colleges that cut across the boundaries of universities (Crane 1972), and Alpert (1985: 253) remarks on "the power exercised by the national disciplinary communities in setting the standards and scholarly goals of American universities". University governance deliberately assembles committees from faculty who work in entirely different fields. Visiting speakers from other universities are accorded ritual deference. Students are positioned as probationary members of the community, with graduation paradoxically a ritual assumption of full membership and a rite of departure at the same time.

When students do graduate, most of them will join professions that form communities of their own. Some professions have stronger senses of community than others, as evidenced by strong collective identities, active professional societies, involvement in political activities, meaningful accreditation of professional programs, and requirements for continuing education (Abbott 1988, Derber 1982, Larson 1977). From the perspective of information technology and institutional design, the linkages between the university and these larger communities are crucial.

Brown and Duguid's (1998a) community-of-practice framework generalizes these ideas, and suggests that the Internet will be used to make the communities stronger and, in a sense, more real. Communities of practice correspond to disciplines, occupations, and professions: experimental physicists are a community of practice, and so are urban planners, cardiologists, and social historians. But communities of practice also arise spontaneously whenever people have common concerns and a way to share their knowledge (Orr 1996). As the name suggests, a community of practice shares not simply a

body of knowledge but a complex of practices: ways of working, writing, speaking, teaching, learning, organizing, and pursuing a career (Toulmin 1972). To join a community of practice is not simply to learn something; it is also to become someone. In addition to acquire knowledge, one acquires an identity (Lave and Wenger 1991, Wenger 1998). Learning, on this view, is a matter of immigration and acculturation.

Brown and Duguid (1998a: 46) call communities of practice the "essential and inevitable building blocks of society", and the community-of-practice theory makes numerous predictions about the institutional dynamics of knowledge. Because knowledge is bound up with practices, knowledge can be transferred more efficiently within a community than across the boundaries of different communities (Brown and Duguid 2000). This transfer of knowledge does not happen automatically; most communities of practice have institutions, both formal and informal, for producing and sharing knowledge. By facilitating these institutions, the Internet helps communities of practice to develop more robust mechanisms of collective cognition (Agre 1998). It becomes easier to pursue professional relationships and collaboration at a distance (Finholt and Olson 1997, Wulf 1993; cf. Star and Ruhleder 1996). This development will have both positive and negative consequences. The benefits are clear enough in the efficiency of knowledge production. But as communities of practice grow closer, they may become insular, or they may tear apart the cross-disciplinary bonds within local university communities (Agre in press).

From the community-of-practice perspective, "the central thrust of any attempt to retool the education system must involve expanding direct access to communities, not simply to credentials" (Brown and Duguid 1998a: 46). The natural consequence of this approach to education is that the university will take advantage of the distance-spanning capacities of the Internet to negotiate closer relationships with the various professions. As new forms of community interaction become possible, each profession's ongoing community life might become more integrated with lifelong learning at the university. The point is not that individual students will take continuing education courses at a distance, though that will surely happen. The point, rather, is that the profession's very institutions (conferences, journals, social networks, everyday information-seeking and collaboration) may grow together with the disciplinary community of practice of the university. This already happens in engineering fields where practitioners attend research conferences, and when those conferences are organized by professional societies rather than societies devoted specifically to research. But the process can be deepened through shared libraries and new structures of consulting. Universities can develop new forms of instruction in

which students learn in an organized way while immersed in their own work settings, and professional institutions of publication and peer review can be extended to occupations that have not historically organized their own conferences and journals.

4. HOW THE MODELS COMPLEMENT ONE ANOTHER

The commodity and community models complement one another, and the university has always combined them in complicated ways. In many early universities, individual scholars attracted students based on their own reputations, and were paid accordingly. Scholars with ill-attended lectures could starve. To this day, competition helps to maintain standards and encourages programs to communicate a coherent philosophy. Students vote with their feet, and everyone has an interest in affiliating with the programs that have the best people. Competition in the academic labor market is a force for high intellectual standards. On a more basic level, university communities consume many commodities in their daily operation: pencils and computers, janitorial services and online services. But the community also supports the market: the most basic mechanism of academic community is peer review, and the magazine reputation rankings that increasingly drive the agendas of professional schools (e.g., Alpert 1985: 255) are (in part) a kind of peer review. The professional networks that communities cultivate also facilitate competition by spreading reliable information about the quality of individuals and programs. Requirements to publish in the research literature obligate teachers to remain current in their fields; peer review within a discipline also provides each university with an efficient way to evaluate the research work of its faculty. In each case, the research community reduces the need for an administrative hierarchy.

The balance between commodity and community, however, is not uniform. For freshmen, the main priority is socialization into the university community as a whole, not into a particular disciplinary community. This is one reason why it makes more sense to outsource introductory major courses (that is, contracting with an outside firm to offer Chemistry 101 and Sociology 101 on a distance basis using multimedia courseware packages) than to outsource freshman core courses or major courses at the senior level -- assuming that it makes any sense at all. (Other reasons include the low level of faculty interest in such courses and the potential for economies of scale.) Working professionals, on the other hand, are already socialized into their discipline, and so their continuing education can presuppose that socialization. This is one reason why distance education

makes more sense for continuing education than for entry-level professional degree programs. (Other reasons include working professionals' greater access to computing equipment and lesser ability to travel.) The community model makes more sense when students are being socialized into a community of practice, and the commodity model makes more sense when they are not.

The commodity and community models also play complementary roles in the university's production and use of intellectual property. Intellectual property law does not give authors absolute control over their writings, or inventors absolute control over their inventions. Intellectual property protections are limited in part because certain aspects of a writing or invention simply cannot be turned into a commodity. Copyright law can protect a text against unauthorized copying, but it cannot protect the ideas in the text against unauthorized thinking. Patent law, likewise, provides an inventor with legal tools to prevent unauthorized persons from practicing the invention, but it cannot prevent anyone from being inspired by the invention to create a different invention. Indeed patents are made public precisely to promote that downstream inspiration. In economic terms, these non-commodity aspects of intellectual products are called public goods: everybody can use them, and nobody can be prevented from using them once they know about them. The commodity model thus provides incentives for creative work, but it does not provide incentives for the production of public goods. Fortunately, the community model does provide such incentives: whereas the commodity model rewards the creation of texts and inventions with money, the community model rewards the creation of ideas with credit in the literature (Latour and Woolgar 1986, Merton 1957). Where the commodity model provides its rewards through the market, the community model provides them through peer review and the obligation to cite prior relevant work. Both models, commodity and community, must function correctly for the university system to work.

Intellectual property disputes map the boundary between commodity and community. The complementarity between the two models is always being renegotiated, and it can shift. Thus, many observers have expressed concern about the commodity model's steady invasion of the institutions of research as proprietary interests shape research agendas and hinder the publication of research results (Press and Washburn 2000, Slaughter and Leslie 1997). Many university faculty, particularly in scientific and technical subjects, establish parallel lives, using commodity institutions to extract monetary capital from their research and community institutions to extract academic capital -- credit and stature in their field. Universities have sought to manage the tensions that these

arrangements inevitably bring, not least by formalizing the university's relationships with industrial firms that collaborate on research projects. The obvious danger is that the commodity logic of the market will undermine the community institutions of research. The integrity of those community institutions ought to provide a clear test for the admissibility of proposed extensions of the commodity model. In particular, it is a fallacy to argue that wealth is always increased by strengthening intellectual property rights, since the wealth created by intellectual property is equal to the sum of its value as a commodity and its value as a public good (cf. Cohen 1998). An intellectual property regime that interferes with the institutions that create public goods would probably decrease wealth rather than increasing it.

If the commodity model can invade the university community, the boundary can also move in the other direction. Open source software employs a peer review model similar to that of academic research. Open source products such as Apache already have a strong position in the Internet server market, and the open-source operating system Linux is a credible competitor to Microsoft in some market niches. This development may seem paradoxical from the perspective of the commodity model: if nobody owns the code, where is the incentive to create it? Raymond (1999) argues that the paradox dissolves once one understands that, even with a huge industry selling powerful software packages, the vast majority of code is actually written by user organizations for their own in-house purposes of integration and maintenance. This code would be hard to sell, but it is easy to share. The institutions of open-source software facilitate this sharing by providing quality control through peer review. Organizations that have similar software needs thereby form themselves into a community to provide those needs on a cooperative basis, and companies such as Cygnus and Red Hat arise to provide complementary services on a commodity basis. Just as the commodity model is limited in its spread by the inherent limits of commoditization (new technologies make it easier to install toll booths on formerly public roads, but any attempt to turn ideas into commodities would be impossible to administer in practice), the open-source community model is limited to those niches where incentives are structured to encourage sharing.

5. THE MODELS COMPARED

To understand how the relationship between the commodity and community models may evolve, it is also helpful to compare them.

The commodity and community models are both challenged by diversity. For the commodity model, the issue is economies of scale. When customers are homogeneous, fewer fixed costs are required to produce goods that everyone wants. When consumers are heterogeneous, businesses and industries must find ways to segment the market to achieve economies of scale within each segment while still approximating each consumer's wants. With information goods like multimedia courseware, the payoffs from a one-size-fits-all product are enormous. Small market segments are likely to be ill-served: the fixed costs of production can be distributed among so few customers that prices are likely to be high.[2] Present-day universities cross-subsidize less remunerative areas of study in the name of human knowledge as a whole, but a radical unbundling of university teaching would eliminate these cross-subsidies and the beneficial side-effects they produce.

Communities, for their part, thrive on commonality. Shared worldviews and customs facilitate communication, coordination, and solidarity. But just for that reason, communities can become exclusionary. Even when a discipline does not overtly discriminate, its culture can be biased. A strong disciplinary culture might provide a ritual foundation for working together and sharing knowledge, but it also makes life harder for people whose personality does not fit the norm. It is also likely to close off avenues of research that do not fit in symbolic terms with the culture. For example, a cultural emphasis on abstraction is useful when it provides a common theoretical language, but a field can be impoverished if it discounts more concrete styles of thought. What is more, an excessive degree of integration within a disciplinary community can suppress diversity of philosophy and organization among the different university departments in the field (Alpert 1985: 269). Every community needs ongoing critical reflection about whether its culture and practices are based on shared values that are legitimate, or whether they are outdated or arbitrary.

The commodity and community models suggest different ideas about knowledge and therefore about lifelong learning. Whereas the commodity model regards knowledge as a "thing" that can be bought and sold in discrete units, the community model regards knowledge as a provisional turn in a dialog. Commodities are modules of capital, but

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[2] It is true, as Evans and Wurster (2000) among others have observed, that interactive multimedia can alleviate this problem by adapting itself to the needs of particular students. But this extensibility only goes so far. Interactive multimedia courseware to teach papyrology will always be a niche market, if it is economically feasible at all. Even when courseware products can be designed to accommodate a variety of learning styles, the resulting code and content will be more complex. The incremental costs of providing this additional complexity must themselves be recovered somehow, and a competing product could be produced and sold more cheaply by focusing more tightly on the largest market segments.

communities shape the identities of their participants and encourage emotional investments. Commodities are acquired in zero-sum transactions, but communities depend on lasting bonds of reciprocity. Each view has its elements of descriptive and normative truth. Neither view is adequate.

The commodity and community models each include self-regulatory mechanisms, and these mechanisms have complementary strengths and limitations. The commodity model regulates itself through competition, but this self-regulatory mechanism fails when consumers cannot readily obtain enough information about the commodities and their sellers. Asymmetrical information about the goods can lead to situations of adverse selection, a type of market failure whereby low-quality goods push out high-quality goods because consumers cannot tell the difference until it is too late (Akerlof 1970). The community model regulates itself through peer review, but this mechanism fails when narrow circles of like-minded peers are allowed to review one another for extended periods. The institutions of research are therefore designed to provide several types of peer review, some of them more wide-ranging than others. (Examples include journal and conference refereeing, promotion and tenure reviews, program planning at funding agencies, and articles that senior scholars write about neighboring fields.) Despite their surface dissimilarities, each of these self-regulatory mechanisms has an internal structure into which individuals must be socialized. Both market cultures (Smelser and Swedberg 1994) and research cultures (Humphreys 1997) vary across national traditions.

Both models present dangers of monopoly in a networked world. Although the Internet is often described as the herald of Adam Smith's idealized market, globalization of both political economy and computer networks interact to increase economies of scale. The Internet makes it easier to coordinate activity in a large global firm, and the increasing worldwide homogeneity of language, law, and technology rewards firms that can distribute their fixed costs on a global basis. Other things being equal, the likely consequence is increasing concentration in a variety of industries (Bryan, Fraser, Oppenheim, and Rall 1999). In the case of higher education, an organization such as the Open University that is equipped to distribute educational services on a global basis could emerge as a natural monopoly -- probably not for higher education as a whole, but certainly for the segments where its greatest competence lies, and where economies of scale are greatest. (On the Open University see Daniel (1996).)

The community model can lead to monopoly because of the economic virtues of enclosing a community of practice in a single organizational framework (Brown and

Duguid 1998b). In a fragmented world, organizations that promote innovation and learning do not capture the full value of their investment because researchers in other organizations can benefit from the ideas as they they become publicly known. But if all of the world's geneticists (for example) worked for a single organization, then only that organization would be capable of benefitting from most of the public goods that the geneticists create. Thus, as communities of practice become more integrated through real-time network connections, they may become increasingly distinct in organizational terms as well.

The institutions of commodities and communities are both decentralized in many ways. Markets operate through the interactions of numerous buyers and sellers within a framework of legal rules and customs, and the overall result of those interactions would be impossible to predict or design (Hayek 1963, North 1990). Academic communities can likewise operate with little central coordination because of the incentives that peer review creates. But in each case, the picture is more complex than it seems. Economies of scale produce great concentrations of economic power, and one excellent example is the small number of textbooks that dominate lower-division undergraduate courses. Network effects -- tendencies toward homogeneity that derive from customers' needs for compatibility -- also produce concentrations of economic power (Shapiro and Varian 1998). Examples in the realm of market commodities include stock exchanges, which thanks to the Internet are rapidly consolidating on a global basis (Varian 2000), and standards for information technology such as Microsoft Windows. Examples in the realm of academic communities include theoretical languages such as that of Michel Foucault, which apart from their intellectual virtues become widely used because they provide a lingua franca for researchers investigating diverse topics. Both the commodity model and the community model, then, reflect a continuing tension between forces for centralization and decentralization.

Finally, the commodity and community models are similar in the considerable incentive-shaping role of government. The legal system, for example, sets rules for markets, not only in the form of controversial regulations but also in the historical development of commercial law. Government research funding is likewise a powerful force in the development of academic communities. The internal politics of civilian and military funding agencies obviously shapes the research agenda, but more subtly the policy of awarding research grants directly to researchers strengthens the role of academic departments at the expense of the university administration (Alpert 1985).

6. INSTITUTIONAL DESIGN

The institutional design of the university, then, has always combined elements of the commodity and community models in complex ways. Yet most of the visionary proposals for the information-age university emphasize one model or the other, or they mention both models without a clear plan for integrating them. Perelman (1992: 205-214), for example, advocates a radically commoditized vision of education based on "microvouchers" for the purchase of small increments of learning services. Along the way, he also endorses the community-of-practice theory (1992: 142-146). Yet apprenticeship within a community is a lasting commitment, not something that can be purchased in increments. Starting from the community-of-practice theory, Brown and Duguid (1998a) envision competition among a plurality of "degree granting bodies" (DGB's). These DGB's occupy the entire spectrum from modern-day research universities with physical campuses to distributed organizations with no geographic locality, physical facilities, or permanent instructional staff. Yet Brown and Duguid's proposal, in its generality, abstracts away from nearly every question about the institutional relationship between commodity and community in the new order. It is not even clear that diverse institutional forms can coexist (DiMaggio and Powell 1991).

How will the university manage the tension between commodity and community in a time of dramatic technological change? It is too early to tell, but we can do a thorough job of asking the question. To start with, information technology creates little that is new in the world. Instead, applications of information technology tend to amplify existing forces (Danziger, Dutton, Kling, and Kraemer 1982). People shape the technology to let them do more of what they already have incentives to do. The Internet is already being used to amplify both the commodity and community aspects of the university. These trends will continue, and the two models of university life will need to find some new accommodation.

The shape of this new dispensation, however, is not foretold. Many scenarios are possible. Marxists and capitalists, at least of the cruder varieties, imagine progress as an inexorable march of commoditization. Both ideologies imagine that the endpoint of commoditization is utopia, and they both advocate revolutions to that end, even if they disagree on the details. The university might undergo radical commoditization in many ways. Here are four possible scenarios:

Political. Legislatures may be persuaded that the commodity and community models are opposites, that the community model represents the collectivist past, and that the commodity model represents the libertarian future. Any number of government policies could help make this invidious tilt toward the commodity model into a self-fulfilling prophesy.

Technological. Although quantitative improvements in information technology are predictable, in qualitative terms the technology is exceedingly malleable. The architecture of future educational technologies will be affected by the interplay of many institutional factors. The design of the wired university is, in other words, political. "Reinforcement politics" (Danziger, Dutton, Kling, and Kraemer 1982) is the process by which the dominant political coalition in an organization inscribes its interests into the workings of new information technologies, and new technologies of higher education could be shaped the same way.

Economic. For-profit education companies distribute commodities based on public goods (namely, ideas) that were developed by universities that combine the commodity and community models. If these new competitors manage to impose the commodity model on higher education as a whole, they will undermine the mechanisms that produce the public goods. The new competitors would be parasitic upon the public goods without cross-subsidizing them.

Cultural. Many students, especially those who grew up in working-class environments where discrete job skills put food on the table, may only be able to imagine the commodity model. This emphasis on vocational job skills is strong among undergraduates even at public research universities. If higher education companies arise solely on commodity-model lines, then students who do not understand the community aspects of their career -- being socialized into a profession's ways, joining professional networks, participating in collective processes for generating and propagating new knowledge -- may make bad market choices that, taken in aggregate, destroy the hybrid institutions of the university.

Despite these fourfold dangers, however, the community model will not die, for the simple reason that knowledge lives in communities. Communities of practice are spontaneous results of commonalities in people's lives. They are increasingly valued by industry (Wenger and Snyder 2000), and many of them are well-institutionalized. Research will continue to be organized around them. If the commodity and community models

become disarticulated then severe institutional pathologies may result, but it is hard to imagine either side disappearing altogether.

Indeed, a serious recommitment to the community model may address the hardest problems of institutional transition. The same peer-review mechanisms that create powerful incentives to conduct original research might also be employed to repair the university's oft-alleged bias against teaching (Cuban 1999). The university community might found a "teaching literature" that operates using the same principles as the research literature, with refereed teaching journals to which any teacher can submit articles. Different journals would arise to reflect different philosophies of teaching, but each would encourage faculty to design each course as a research project in itself, thereby formalizing what Boyer (1990) has famously called "the scholarship of teaching". Promotion and tenure could based on the sum of one's teaching and research productivity as measured by the journals, or even by their product, as well as peer review of the individual's record as a whole.

That said, institutional design is almost a contradiction in terms. Social theorists have increasingly come to see institutions as emergent phenomena that sustain themselves and evolve over long periods through processes that transcend the consciousness of any individual (e.g., Hodgson 1999, Powell and DiMaggio 1991: 8-9). New institutions do not take hold unless they are congruent with the underlying culture, and institutional change projects face a culture that has long been reinforced by the existing institutions (Offe 1996). This is one reason why institutions often remain stable for centuries. Old institutions can be discredited when their values collapse, or when they cease to deliver practical benefits to their participants (Offe 1996). But new institutions require a broad consensus, and this consensus must run deep: not just shared ideas but a shared way of life.

New institutions evolve in various ways, but ultimately they are shaped by contending interests. A pure commodity model would suit many organized interests, and a pure community model would no doubt suit many others. Every institution is a routinized accommodation among interests (Knight 1992), and the institutional design of the networked university will arise in the same way. But interests can be misunderstood. Those who wish the university to survive will uphold the values of community against the invasion of commodity, but they will also manage the tension rather than trying to eliminate it.

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