



# Different Meanings of 'Knowledge as Commodity' in the Context of Higher Education

Critical Sociology  
2014, Vol. 40(3) 393–409  
© The Author(s) 2013  
Reprints and permissions:  
sagepub.co.uk/journalsPermissions.nav  
DOI: 10.1177/0896920512471218  
crs.sagepub.com



**Ilkka Kauppinen**

University of Jyväskylä, Finland

## Abstract

Commodification has been and still is one of the key processes within capitalist market economies. Since the 1970s, different forms of knowledge have increasingly been subjected to this process. In this paper the commodification of knowledge in the field of higher education is defined in a broad sense as an example of the intensive enlargement of capitalism. I argue that knowledge shares some features of public goods and can be subjected to commodification both as an educational product and academic research itself. However, the simple dichotomy of public vs. private good is not nuanced enough to understand the status of knowledge within higher education. How to reconstruct this dichotomy, whether knowledge should be commodified, and how to justify one's normative stance in this respect are three important issues for further study.

## Keywords

academic capitalism, commodity, higher education, knowledge, Polanyi

## Introduction

It is commonplace to note that knowledge has become an important, if not the most important, factor of production even though it is also reasonable to say that economies have always been based on inventions, creation and dissemination of knowledge (see e.g. David and Foray, 2002: 9).<sup>1</sup> One reason why it makes sense to use such terms as 'knowledge-driven economy', 'knowledge-based economy', or 'knowledge capitalism' is the increasingly systematized and broadened commodification of knowledge through intellectual property rights (e.g. Kauppinen, 2008). Other reasons involve, for instance, the acceleration of knowledge production and revolutions in information technology (David and Foray, 2002: 9–12; see also Jessop, 2007: 122).

Many see knowledge, and especially innovations, as of utmost importance in respect to firms' economic competitiveness in globalizing knowledge capitalism. Lyotard (1984: 5) claimed that in the commodity form knowledge has become the major stake in the global competition for power

---

## Corresponding author:

Ilkka Kauppinen, Department of Social Sciences and Philosophy, University of Jyväskylä, P.O. Box 35, FI-40014, Finland.

Email: ilkka.j.kauppinen@jyu.fi

(see also David and Foray, 2002: 11). This kind of claim can be supported by referring to transnational corporations and how they battle for control not only over raw materials and cheap labour, but also over high technology and scientific research around the globe (Kauppinen, 2012). As Bob Jessop (2007: 115, 122) has noted this makes one think about what kind of status knowledge might have as a commodity. However, it is not necessarily an easy task to articulate whether, and in which sense, knowledge can be treated as a commodity or exclusive property. Indeed, sometimes it has been stated that knowledge, and more specifically scientific theories, cannot be commodities because of public good characteristics of knowledge (see O'Neill, 1998: 149–51).

A further difficulty is that the words 'commodity' and 'commodification'<sup>2</sup> are used, for instance, in higher education research to refer to different institutions, activities, processes and entities such as higher education services, educational products, intellectual property rights (e.g. patents and copyrights), and start-up firms. For example, Noble (1998) uses the expression 'commodification of higher education' to refer to the transformation of the educational process into commodity form so that it can be subjected to commercial transaction. Furthermore, Shumar (2008: 73) has claimed that mall spaces found on campuses affect students' and faculty's consciousness and, consequently, how they perceive the production of knowledge: 'Like the commodities in the stores, students come to think of course work and research as another commodity form'. Moreover, Sappey (2005) has argued that the commodity view of higher education has been one of the most important structural changes in the field of higher education. Education is no longer seen mainly as a way to pursue socially valuable knowledge, but as a process wherein value is determined by how much direct benefit it will bring to the student-consumer. For this reason, the term commodification describes the task of the management and production process to increase the quality of educational products on the basis of student-customer satisfaction. More broadly, 'the implications are that higher education institutions are drawn into the market, producing and selling knowledge as a commodity. It also places the consumer, as constructed by management and their perceptions of customer needs and wants, at the centre of organisational focus and strategy' (Sappey, 2005: 496).

The previous discussion implies that 'not-for-profit institutions in the academy are taking on the characteristics and activities of profit-making organizations. Universities are not just servants of or suppliers to the marketplace. They are active players in the marketplace', for instance, by selling packaged goods such as patents (Rhoades and Slaughter, 1997: 13) as well as educational products (e.g. degrees). In other words, universities treat knowledge increasingly as 'raw material' to be produced, protected, and then sold in markets (Slaughter and Rhoades, 2004). Increased opportunity to treat knowledge as raw material to be eventually commodified is enabled, for instance, by the increasing financial and administrative autonomy of universities (Estermann and Nokkala, 2009).

## Clearing the Ground

### *Knowledge*

Ambiguity in the definitions of 'knowledge' and 'information' may cause confusion and misunderstandings if the meanings of these terms are not properly distinguished. Also, by way of analogy, I find Noel Castree's (2003: 275) formulation highly relevant. Qualitative differences among 'natural' entities,

can easily be glossed when the one category 'nature' is used as a shorthand to refer to ... substantively different things ... The reason is that the process of capitalist commodification is not necessarily indifferent to the natures being commodified. That is, the process of capitalist commodification (or its effects) might

operate rather *differently* depending on which particular natures are being commodified. So the lack of clarity I detect in Marxian accounts of nature's commodification stems not just from the variety of uses of the latter term (commodification) but from the semantic promiscuity of the former term (nature) too.

Indeed, similar points can be raised in the context of knowledge as commodity and commodification of knowledge, or higher education. Terms 'knowledge' and 'higher education' may refer to substantially different entities, activities or processes, and commodification of these is not organized necessarily similarly. In a similar vein as 'nature', 'knowledge' and 'higher education' can also be used as problematic shorthand for qualitatively different objects of study. These issues cannot be solved simply by providing the definition of commodity, because 'objects do not have a commodity status built into them' (Dant, 1999: 24). For this reason, the key question is not abstractly 'what is a commodity?' but rather 'what kind of characteristics do things take-on when they *become* commodities?' as Castree (2003: 277) has formulated.

Thus, one of the problems regarding questions like, 'can knowledge be treated as commodity', or 'in which sense is knowledge commodity' is that the term 'knowledge' is in itself ambiguous and there are different types or forms of knowledge. But before distinguishing between different types of knowledge it is necessary to distinguish between the terms 'knowledge' and 'information' instead of using them interchangeably.

As Peters (2001: 13) has pointed out, traditionally it has been thought that knowledge must satisfy three conditions: a belief, a truth and a justification condition. Information understood here 'as data transmitted from a "sender" to a "receiver"' does not have to satisfy these three conditions. Thus, 'information' refers in this paper to such objects as databases (e.g. lists of university students) and downloadable files (e.g. songs in mp3 format). Moreover, information is treated as a sub-category of knowledge since information can also be commodified.

Here it can be added that objects such as datasets, i.e. information, have to be activated and used by those who are able, partly due to their knowledge, to 'interpret and process' (David and Foray, 2002: 12–13) respective information. When seen this way, knowledge refers to something people possess, i.e. a cognitive capacity, while information refers to something passive that needs to be interpreted by those who have the cognitive capacity.

From this we can proceed to make a distinction between propositional (or explicit) knowledge and tacit knowledge (e.g. Polanyi, 1958; Ryle, 1949). The former refers to such knowledge that involves facts about the world and scientific knowledge,<sup>3</sup> i.e. know-what knowledge that can be expressed in sentences, is often formal and can be shared (e.g. Nonaka, 1991: 98) while the latter refers to know-how and know-who, i.e. knowledge of how to do something. Thus, in contrast to propositional knowledge, tacit knowledge (i.e. know-how and know-who) usually refers to skills and it is not necessarily easy to communicate this kind of knowledge (at low cost) to other individual actors, or between organizations (see Olssen and Peters, 2005: 334). Nonaka (1991: 98), in turn, has argued that tacit knowledge 'consists of mental models, beliefs, and perspectives so ingrained that we take them for granted and therefore cannot easily articulate them'. These are some of the reasons why it is sometimes argued that instead of tacit knowledge, it is factual and scientific know-what knowledge that 'come closest to being market commodities or economic resources that can be fitted into production functions' (Olssen and Peters, 2005: 334). However, this does not necessarily mean that propositional/explicit knowledge and tacit knowledge are disconnected from each other. Hildreth and Kimble (2002), for instance, have argued that explicit (or 'hard') and tacit (or 'soft') dimensions of knowledge are interwoven (i.e. knowledge is a duality) and tacit knowledge (e.g. linguistic rules as tacit subsidiary knowledge of a reader of some text) may become at some other context explicit knowledge (e.g. when a person is conducting research on linguistic rules).<sup>4</sup>

Here it is also worthwhile to recognize briefly Machlup's (1962) attempt to operationalize knowledge (involving both ordinary and scientific knowledge) by making a distinction between education, R&D, communication and information. Education refers to the distribution of knowledge through different channels. R&D, in turn, refers to the creation or production of knowledge. Communication refers to those channels or vehicles through which knowledge is distributed. Finally, information refers to information services (e.g. legal and accounting services) and information machines (e.g. information technology). From this point of view knowledge can be seen as a communication process that involves different phases such as production and distribution of knowledge. This kind of communication process can take place in many kinds of institutional frameworks, and between different institutional frameworks.

Finally, it should be noted that all forms of knowledge and information always have some sort of material basis. By this I mean that knowledge and information cannot exist or be used without some sort of storage medium (in a broad sense) whether it is a DVD, PC, book or human body. In other words, even though knowledge can be detached from the individual through different forms of codification (e.g. David and Foray, 2002: 13) knowledge still has to be stored somewhere. Knowledge and information (though they can be seen as intangible assets) never just float in the air, so to speak (see also Bunge, 1999).

### Commodity

Marx begins his book *Capital* by analyzing the nature of commodity, i.e. the basic unit of the capitalist mode of production: 'A commodity is, in the first place, an object outside us, a thing that by its properties satisfies human wants of some sort or another' (Marx, 1906 [1867]: 41). Here Marx is referring to the usefulness of commodities and their ability to fulfil some human want or need. It is the qualitative aspects of commodities that make them useful for humans. If a commodity is not perceived as having *any* use by some person, s/he will not be interested in buying it. In this sense, the use-value of a commodity comes prior to its exchange-value, i.e. in order to produce commodities for market-exchange one has to produce 'use-values for others, *social* use-values' (Marx, 1906 [1867]: 48, emphasis added). Hence, commodities without social use-values would not be exchanged in the market because there would be no one who would want to buy them. For instance, scientific knowledge that would be seen useful *only by producer(s)* would not survive the test of fictitious 'theory markets'. For the sake of the argument, here the social use-value would refer, for instance, to theory's usefulness regarding the internal development of science.

However, the fluent market-exchange of commodities with different use-values also requires something else. For Marx, this additional element was 'socially necessary labour', i.e. a common quantitative aspect of all commodities. According to him, socially necessary labour, i.e. human labour and 'dead' labour (raw materials and machinery) used during the production process, provides a common basis to assess the value of different commodities. Marx conceptualized this quantitative aspect of commodities as the exchange-value.

Moreover, in capitalism the labour process is subjected to competition that implies that there is pressure to reduce the time during which commodities are produced and how long it takes to realize the surplus-value that commodities embody (see Jessop, 2007: 118). In capitalism, the accumulation of capital and gaining profit becomes a purpose in itself. Hence, commodities' 'market-mediated monetary value for the seller' gains more importance in relation to commodities' use-value than their 'material and/or symbolic usefulness to the purchaser' (Jessop, 2007: 126). In a capitalist market economy only those commodities are produced for markets that have

exchange-value. For the purposes of this paper, exchange-value is equated with commodities' monetary value in markets.

Reflecting this, Lyotard (1984: 4) wrote that 'knowledge is and will be produced in order to be sold, and it is and will be consumed in order to be valorized in a new production: in both cases, the goal is exchange'. Continuing from this, Lankshear et al. (2000: 22) have noted that knowledge "'ceases to become an end in itself"; it loses its use value and becomes, to all intents and purposes, an exchange value alone'. Moreover, 'knowledge is exteriorized with respect to the knower, and the status of the learner and the teacher is transformed into a commodity relationship of "supplier" and "user"' (Lankshear et al., 2000: 22). Through the commodification process knowledge is transformed into such (desired) objects which 'can be captured through a monetary exchange relation' (Deflem, 2003: 71).

However, it is contingent on whether an object such as knowledge becomes a capitalist commodity or not. In Marxian terms, an object, such as knowledge, becomes a commodity only under certain social relations, i.e. what counts as a commodity is socially determined. Furthermore, commodification is in itself a complex process. For instance, Castree (2003: 279–83) has argued that the *capitalist* commodification process consists of the following elements: privatization (exclusive right to control an object), alienability (an object can be detached from its seller), individuation (separating an object from its context via legal/material boundaries), abstraction (assimilation of a specificity of an object to a broader type), valuation (monetization), and displacement (concealing involved social relations). All in all, 'capitalist commodification is a complex, polymorphous process that is promiscuous in space and time' (Castree, 2003: 283) and capitalist commodity, in turn, is a complex 'sociotechnical achievement' (Castree, 2003: 280).

## Complex Commodity Status of Knowledge

In Marxian tradition it has been argued that there are things that are use-values without having value. These include, for instance, air and virgin soil, i.e. the natural environment (Marx, 1906 [1867]: 47) because they are not produced by people. In this sense knowledge is a different kind of 'thing': it has always been produced by people. Despite this difference, there are also some similarities between land and knowledge as possible objects of commodification. By concentrating on these similarities we can start to recognize multiple meanings, and difficulties, of the expression 'knowledge as commodity'.

Karl Polanyi (1944: 71–3) argued that land, labour and money are *fictitious* commodities, i.e. originally they are not produced for a market exchange. For instance, land was seen by him as 'only another name for nature, which is not produced by man' (Polanyi, 1944: 72). According to Jessop (2007: 118), 'in contrast to a capitalist commodity, a fictitious commodity is not created in a profit-oriented labour process subject to the competitive pressures of market forces to rationalize its production and reduce the turnover time of invested capital'. For instance, labour is not produced in order to make profit after it has been sold to markets. In other words, people do not raise their children in order to sell them to labour markets at some point in time. However, in establishing and expanding the scope of the market economy during the 19th century, various actors described land, labour and money as real commodities that require their own actual markets. It was this actively developed and promoted 'commodity fiction' and the successful translation of it into policies that enhanced the development of markets where land, labour and money would be bought and sold like other commodities (Polanyi, 1944).

This is a highly important point and deserves a lengthy quotation from Polanyi. In the market economy:

... every element of industry is regarded as having been produced for sale, as then and then only will it be subject to the supply-and-demand mechanism interacting with price. In practice this means that there must be markets for every element of industry ... The crucial point is this: labor, land, and money are essential elements of industry; they also must be organized in markets; in fact, these markets form an absolutely vital part of the economic system. But labor, land, and money are obviously *not* commodities; the postulate that anything that is bought and sold must have been produced for sale is emphatically untrue in regard to them. In other words, according to the empirical definition of a commodity they are not commodities ... None of them is produced for sale. The commodity description of labor, land, and money is entirely fictitious. Nevertheless, it is with the help of this fiction that the actual markets for labor, land, and money are organized; they are being actually bought and sold on the market; their demand and supply are real magnitudes; and any measures or policies that would inhibit the formation of such markets would *ipso facto* endanger the self-regulation of the system. The commodity fiction, therefore, supplies a vital organizing principle in regard to the whole of society affecting almost all its institutions in the most varied way, namely, the principle according to which no arrangement or behavior should be allowed to exist that might prevent the actual functioning of the market mechanism on the lines of the commodity fiction. (Polanyi, 1944: 72)

Thus, for Polanyi, the translation of land, labour, and money into commodities to be exchanged in markets signified the birth of such social forms in which markets have become the key institution for the exchange of goods through the commodity of commodities, that is, money.

At least some of this also applies to knowledge: it has not been produced originally for market exchange. Historically the production of knowledge has not taken place in the market, but rather in guilds, universities, religious bodies and state institutions. Moreover, the production of knowledge was rewarded, for instance, 'through patronage, prestige, prizes, or income tied to rank or status rather than to economic performance' (Jessop, 2007: 121). In the framework of Polanyi's empirical definition of commodities, knowledge should also be seen as a fictitious commodity that might, however, become treated as a real commodity in the context of some specific social relations and belief systems. For example, in Medieval Europe knowledge was often interpreted as a gift from God, and for this reason ideas were seen as inappropriate objects of property (e.g. Hesse, 2002). This changed through the rise of capitalism and possessive individualism. These material and cultural changes have been traced back to late 15th-century Italy where we can also find the first signs of such patent systems that resemble modern patent systems in some meaningful way (see May and Sell, 2006: 57–65, 82–7). Patents and other forms of intellectual property rights are in turn key legal devices in the commodification of knowledge.

But when there is some commodity, there is also some kind of price. What is the commodity price of knowledge? We can start to answer this question by taking a look at how Polanyi treated land, labour and money in this respect. First, when land is bought and sold on markets, its price is rent: '... rent is the price for the use of land and forms the income of those who supply it' (Polanyi, 1944: 69). Second, 'interest is the price for the use of money and forms the income of those who are in the position to provide it' (Polanyi, 1944: 69). Third, 'wages are the price for the use of labor power, and form the income of those who sell it' (Polanyi, 1944: 69). In the case of knowledge, it is, for instance, royalties that can be defined as the market price for the right to use patented propositional knowledge. For example, universities are able to sell, that is license, their patents to corporations and so have established external revenue sources in the form of royalty payments.

But this does not mean that it would make sense to define knowledge as simply a commodity. Given that there are different forms of knowledge (propositional and tacit knowledge), it makes sense to expect that knowledge might also have different commodity forms in contemporary knowledge

economies and, more specifically, in higher education. This intuitively feasible supposition is supported by the insight that the capitalist market economy involves ‘impurities’ (Hodgson, 1988) in a sense that all production is not aimed at markets and thus some objects are also produced for non-market or quasi-market exchange. It has been argued in line with this that in capitalist economies knowledge can circulate via reciprocal gift-giving while it is also allocated through profit-oriented markets (see Jessop, 2007: 116–22). These modes of circulation can, and often do, coexist. It might also be the case that fluent allocation of knowledge through markets actually requires that there also exist other modes of circulation, e.g. reciprocal gift-giving, since the latter tends to create interpersonal trust. Trust, in turn, is seen in sociology as a non-economic basis of successful economic activities.

More specifically, and on the basis of Marx and Polanyi, Jessop (2007: 122–5) has argued that knowledge has a complex economic status in knowledge economies. By this he means that knowledge can circulate in various ways within and between social systems. First, knowledge can circulate as an intellectual commons. In this case knowledge is equivalent to a non-commodity especially if it is produced and distributed through non-market mechanisms (e.g. patronage). Second, knowledge can become a fictitious commodity when it ‘is enclosed through non-market mechanisms and circulates as private property within the market’. Third, knowledge becomes a quasi-commodity when knowledge production (intellectual labour) is formally subsumed under capitalist control and competition. Fourth, knowledge becomes a real capitalist commodity when the real subsumption of intellectual labour takes place, i.e. when knowledge is subsumed under capitalist labour processes. Fifth, knowledge may also become a basis of ‘fictitious capital’ or a form of ‘fictive capital’. This will be the case when revenue streams to knowledge producers (e.g. universities) are guaranteed by intellectual property rights.

Jessop’s categorization is certainly a more elaborated way to approach our topic than just to say that ‘if the production of knowledge has become a business, then knowledge itself has to some extent become a commodity’ (Hall, 1979: 394). However, in certain respects Jessop’s categorization is too broad for the purposes of this paper. Instead of concentrating on knowledge as commodity *per se*, certain categories refer more directly to the conditions of knowledge work. For this reason I do not base the forthcoming discussion systematically on it. For example, I do not discuss whether and in what sense it might be plausible to argue that the production of knowledge is subsumed under capitalist control and competition in higher education institutions. Instead, I approach the knowledge–commodity relation from the perspective of the universities’ key functions.

However, before I move on I want to briefly address the relation between commodification of knowledge and increased control of academic labour. Recently it has been stated that ‘personal and technological forms of surveillance in the production process are necessary elements of the capitalist economy’ (Fuchs, 2012: 14). In this respect it can be suggested that the commodification of knowledge is one process that has contributed to the increased surveillance of academic labour since this process is supposed to enhance corporations’ accumulation of capital in knowledge capitalism. Thus, academic capitalism (e.g. commodification of knowledge, and related integration between universities and market actors) ‘requires the direct and ideological control of employee behavior’ (Fuchs, 2012: 14) within higher education institutions, and in this way academic labour is becoming subjected to ‘the instrumental and competitive logic of accumulation’ (Fuchs, 2012: 15).

## **Knowledge as Commodity in Higher Education**

Commodification, or the commercialization of academic knowledge, and more broadly the marketization of higher education has been an extensively studied topic at least since the mid-1990s

(e.g. Baldini et al., 2006; Clark, 1998; Etzkovitz and Leydesdorff, 1998; Gibbons et al., 1994; Goldfarb and Henrekson, 2003; Leisyte and Horta, 2011; Mirowski, 2011; Mirowski and Sent, 2002; Naidoo, 2003; Radder, 2010a; Sappey, 2005; Shumar, 2008; Slaughter and Leslie, 1997; Slaughter and Rhoades, 2004).

We can start by noting that while academics do not usually sell such packaged commodities as journal articles, books, or book chapters in markets for money, they can sell some other kinds of packaged knowledge commodities such as consultation services, workshops or lectures in (quasi) markets. Moreover, they may patent (depending on legislative conditions) their research results, license them to some market actor, or establish start-up companies on the basis of those patents. In other words, academics are able to commodify propositional knowledge in various ways. Especially when they are patent-owners or have established start-up firms, they act like state-subsidized entrepreneurs and this controversial status is one reason why academic entrepreneurs may want to increase the financial and administrative autonomy of their universities, but do not necessarily support the privatization of their university (Slaughter and Rhoades, 2004). In other words, they want to retain their status as 'academics who act as capitalists from within the public sector' (Slaughter and Leslie, 2001: 154).

Articles, chapters, reports and books are, for researchers, pseudo-commodities (Shaw, 1975) since the price of these products of the knowledge industry is usually not as important as the publication in itself.<sup>5</sup> Indeed, it is uncommon to receive direct payments for published journal articles. In the case of patenting or establishing a start-up, the situation is different: the act of patenting and establishing a start-up firm is not as important as the revenue these acts might bring to individual researchers and higher education institutions. In these latter cases it can be argued that products of the knowledge industry are something more than merely pseudo-commodities.

These points imply that universities have various functions such as research, teaching and public service, or outreach. One important parallel between these three missions is that each of them involves gathering and sharing knowledge. Research is primarily about collecting data, conducting research and sharing research results with the research community through articles, chapters, books and conference presentations. Teaching, in turn, is primarily about disseminating analyzed knowledge to students through lectures and seminars. Public service refers primarily to collecting and analyzing knowledge in such a manner that it can be shared with some specific 'client group' outside academia (Sausser et al., 1994: 4). Sometimes there might be overlaps between these categories (e.g. in the case of technology transfer).

Now each of these functions may or may not also involve, depending for instance on the type and goals of higher education institution, national/international legislation and characteristics of respective national higher education system, such activities that are used to generate external revenue through selling knowledge in various forms.<sup>6</sup> The point is (again) that dissemination of knowledge can be based on different ways of circulating knowledge (e.g. gift and market exchange), and these may coexist within same organization. This is one reason why universities are internally complex organizations with contradictory aims, visions and strategies.

More broadly, the commodification of knowledge in the field of higher education is one example of the broader 'second enclosure movement' (Boyle, 2003). The first enclosure movement started in England in the 15th century and it refers especially to the process of fencing off common land and turning it into private property by different means and varieties of state involvement (Boyle, 2003: 33–4). In the second enclosure movement, knowledge (instead of land) is treated as a private good and subjected to commodification. Reflecting on this, Radder (2010b: 4) has pointed out that commodification of academic research can be seen as part of 'the economization,

or economic instrumentalization, of human activities and institutions, or even entire social subsystems' (Radder, 2010b: 4). In this sense 'academic commodification means that all kinds of scientific activities and their results are predominantly interpreted and assessed (dominantly) on the basis of economic criteria' (Radder, 2010b: 4).

Given that universities have different key functions it makes sense to think that in the context of higher education, there are at least two modes of the commodification of knowledge. First, the commodification of knowledge refers to 'commodification of academic research' (Radder, 2010b: 4). This category in turn refers to 'commercialization, that is, the pursuit of profit by academic institutions through selling expertise of their researchers and the results of their inquiries' (Radder, 2010b: 4). Second, commodification of higher education refers to commodified educational products as delivered by higher education institutions. Commodification of educational products implies that students are increasingly seen as customers whose 'needs and wants ... [are placed] at the centre of organisational focus and strategy' (Sappey, 2005: 496).

These modes of the commodification of knowledge in the field of higher education are not only examples of the second enclosure movement, but also, in a broader sense, of 'intensive enlargement' of capitalism (Robinson, 2004: 7), i.e. deepening the commodification of social relations. Or, to put it another way, through commodification of knowledge, money<sup>7</sup> also enters into those social interactions and relations (e.g. Simmel, 2004 [1907]) that were previously regulated by other means, or at least commodification of knowledge implies that the role of money in knowledge production acquires new dimensions.

Given the technological advancements since the 1970s, distribution of knowledge via global communication networks has become easier, which has in turn increased the opportunities to commodify educational products, for instance in the form of distance learning. In other words, technological development has increased the possibilities to develop activities through which higher education services can be sold in the global marketplace. Commodification of educational products can also be aimed to attract transnationally mobile students to respective universities and nation-states. This implies that those social processes that constitute commodification of educational products and academic research do not necessarily take place within nation-state boundaries, but transnationally. Furthermore, commodification of educational products and research has been promoted both in academia and policy circles through various hegemonic discourses and narratives such as the 'knowledge-based economy' (e.g. Kenway et al., 2006).

Also, and reflecting Polanyi's discussion on fictitious commodities, it has been argued that:

Most educational offerings, although divided into units of credit and exchanged for tuition, are fictitious commodities in that they are not created by the educator strictly with this purpose [to produce them for market exchange] in mind. Here we will be using the term commodity, not in this fictitious, more expansive, sense but rather in its classical, restricted sense, to mean something expressly created for market exchange. The commodification of higher education, then, refers to the deliberate transformation of the educational process into commodity form, for the purpose of commercial transaction. (Noble, 2002)

Finally, outreach or public service also refers to such activities and processes as continuing education programs, extension services, technical assistance, organized consultation efforts and so forth (e.g. Sauser et al., 1994: 3, 7) through which knowledge can be commodified. For example, if the content of outreach activity (such as workshops) is 'hot', or 'sexy', the speaker considered 'high profile' and people have some immediate need for knowledge, outreach organizations are able (other things being equal) to put an expensive price tag on the right to attend the service in question (Emil, 1995).

## Refusal of the Arguments Against the Idea of Knowledge as Commodity

At this point some may argue that previous discussion provides too simplified an account of the knowledge–commodity relation. I agree with this since knowledge is a very peculiar sort of commodity (see e.g. Stehr, 1994). For this reason, we need to take into consideration some of those arguments according to which knowledge *cannot* be treated as a commodity. Next I critically discuss some of these arguments in order to show that they are not watertight, for which reason the key question is not whether knowledge can be commodified, but *whether it should be* commodified as for instance John O’Neill (1998) has pointed out. This is a very important and complex normative question and, unfortunately, impossible to tackle within the limits of this paper.

First, it has been claimed that there is certain initial difficulty involved in thinking of knowledge as a commodity because ‘one cannot know its [use] value until one has access to it’ (O’Neill, 1998: 149). For this reason there is a paradox in determining the price for knowledge. As Arrow (1971) has pointed out, one (i.e. a buyer) cannot know the value of knowledge before one has access to it, but at that point (after having the access to it) one would have acquired it without cost. Hence, there would be no reason to pay for knowledge.

Indeed, when comparing to, for example, buying a car, the situation seems to be clearly different. One has access to a car in any meaningful sense only after one has bought it (i.e. when one is the owner of a car), but this does not seem to be the case with knowledge. If the content of knowledge is revealed to you or you have acquired it otherwise, you already have access to it even if you would not have paid for it. And once you know the content of knowledge (e.g. content of the lecture), there is no necessary reason to buy it: you are already in a position where you can enjoy the benefits of it. In contrast, you are able to enjoy the benefits (and perhaps also some disadvantages) of the car only when there has been a transfer of property rights.

However, it can be argued that it is not necessary to know the content of knowledge in order to be able to assess its value since it can be ‘measured in terms of behavioral capacities’ (O’Neill, 1998: 149). To know the content of knowledge is a different issue from knowing what an individual, i.e. buyer, would be able to do with this knowledge. The latter can be communicated to a potential buyer *without revealing the content* of knowledge. For example, if I am interested in some particular course (e.g. Medieval Arabic Philosophy and how it influenced European Philosophy) that is not offered free-of-charge, I do not have to know every detail of the course’s content before I am able to make an informed decision regarding whether it makes sense to pay for it. It might be enough if I have been told (by a reliable source) that this course would increase my chances in the labour market or that I would be better prepared to complete, for instance, my master’s thesis. And for this reason I would have an incentive to pay for it.

Second, some might also point out that it is not possible to commodify knowledge and information because they cannot be alienated (O’Neill, 1998: 149–50). This claim is based on the idea that one cannot sell knowledge in a same sense as one can sell, for instance, a car because after the transaction, ‘the seller retains the capacity to use and benefit from’ (O’Neill, 1998: 150) the knowledge; i.e. I, as a seller, can still use it. This is not the case with a car: when I have sold my car to another person, I have lost my capacity to use and benefit from it. However, this kind of argument is based on a mistaken view of property. Property is not a thing but rather a set of rights, a social institution. Moreover, during the modern era it does not make much sense to speak of property as a social institution without also referring to the legislative authority of nation states. In a modern sense, there is no property without nation-states (e.g. May and Sell, 2006).

Hence, alienation of property is not the same thing as the alienation of an object as such. The former refers, rather, to the alienation of property rights and the capacities to use an object. Of course, it is not possible to literally transfer knowledge during the exchange process, but it is possible to transfer property rights regarding knowledge, i.e. intellectual property rights that regulate who can use and benefit from knowledge. After I have sold my rights to use some piece of codified knowledge I still 'have' that knowledge (unless I have forgotten it) but I cannot legally use and benefit from it. For this reason it is reasonable to argue that knowledge can be alienated in terms of property rights.

Third, there is still at least one more possible, and related, objection against the idea of knowledge as a commodity that we have to deal with. Many have claimed that instead of being an object for exchange on markets, knowledge is an example of a (global) public good that is (a) non-rivalrous, and (b) non-excludable (see e.g. David and Foray, 2002: 19; O'Neill, 1998: 150). Marx (1906 [1867]) paid attention to the public good nature of scientific knowledge when he stated that once, for instance, the law of the magnetization of iron is discovered its use doesn't cost a penny.

Non-rivalrous of knowledge refers to the idea that the consumption of the knowledge by some person or persons does not decrease the possibility of others consuming it. For instance, when I use the theory of academic capitalism in my research it does not decrease, other things being equal, the possibility for others to use same theory in their research. Contrary to this, when I use some particular computer in writing an article manuscript, others' possibility to use the same computer has decreased.

Non-excludability, in turn, refers to the idea that other individuals cannot be excluded from the benefit of using the knowledge, or some other public good (e.g. [clean] air). Hence, the market would be an inadequate institutional framework for public goods such as knowledge since everyone 'has a reason to be a free-rider, to benefit from the consumption of the good without contributing towards its costs' (O'Neill, 1998: 150).

However, it has been argued that while codified knowledge approximates to the status of a public good, tacit knowledge, such as 'expertise', is a different matter since it is not accessible to all who would like to have it. Hence, in this view, tacit knowledge seems to be more open to the exchange process in the market, for instance, in the form of consultancy science aimed at both private and governmental actors. Despite this, and as O'Neill (1998: 150) has convincingly argued, it is not self evident that codified knowledge is beyond commodification or that it is a universal public good. The point here is that scientific, codified knowledge is accessible only to those persons who have the required skills and competencies to understand it. Otherwise, some scientific result or theory (e.g. game theory) would not be much more than a mere illegible scrawl on paper. For this reason it would be an overstatement to say that scientific knowledge can be possessed and used by everyone. In this sense, scientific knowledge should, perhaps, be seen as contextual, rather than a universal, public good. Everyone can enjoy the benefits of street lights, but everyone does not have in the same sense the capability (e.g. because s/he has not been able to pay tuition fees) to do research based on, for instance, statistical or discourse analysis. In other words, cognitive skills are scarce, their acquisition takes time and they cannot be transmitted as effortlessly as, for instance, information in the form of datasets (e.g. Stehr, 1994).

The claim that knowledge is a non-excludable public good can also be challenged by referring to intellectual property rights (IPRs) that give agents a possibility to control the use of knowledge. Hence, for instance, patents and copyrights are powerful institutional tools to commodify knowledge because they define rights and obligations of various parties and, therefore, what people can, and cannot, do with the knowledge. For example, patents are like invisible fences that provide exclusive rights to knowledge holders and put knowledge into private domains, i.e. make it a

non-public good, and in this way are key elements of the second enclosure movement. Due to this, IPRs are often able to prevent ‘collective knowledge enhancement ... [because] what is being passed around cannot be enriched, commented upon, and recombined by others’, i.e. IPRs generate ‘waste’ (David and Foray, 2002: 19).

IPRs do not merely make it possible to commodify knowledge and block access to various consumer goods such as poems and life-saving drugs; they have also made it conceivable to think, write and speak of knowledge as a commodity. Here, one can find the broader and more fundamental importance of IPRs: unless it is conceivable to think, write and speak of knowledge as a commodity in the first place, it would be hard to imagine and develop such institutional arrangements that would contribute to the commodification of knowledge. In other words, the commodification of knowledge has also required its own ‘commodity fiction’, i.e. there has been a need to produce and promote actively the idea that knowledge is a scarce resource because knowledge, indeed, is a peculiar sort of good (see also Stehr, 1994: 109–11). For this reason, Simmel (2004 [1907]: 442) seemed to think that knowledge, and specifically academic knowledge, would be most resistant towards commodification: ‘It has been rightly suggested that theoretical notions... are like a torch whose light does not become dimmer by igniting innumerable others from it. Inasmuch as their potential boundless dissemination has no influence whatsoever upon their importance, they elude private ownership more than any other contents of life.’

But as the decades, especially since the 1980s, have shown, deepening commodification of social relations (i.e. the intensive enlargement of capitalism) has become more and more apparent in the field of knowledge production including higher education. But, as Slaughter and Rhoades (2004) have pointed out, academics and universities cannot be reduced to a position of passive by-standers, or powerless victims of external social forces. Quite the contrary, they have actively contributed to this intensive enlargement of capitalism or second enclosure movement by developing and participating together with state and economic actors in such market and market-like activities that have made possible the commodification of academic research and education.

### **An Illustrative Example: The Tuli Program**

Lastly, I provide a short example from Finland of how the commodification of knowledge within higher education has been promoted by governmental actors. This example focuses only on the commodification of academic research. Finland is known for its free-of-charge higher education, but as it has recently been argued (Kauppinen and Kaidesoja, forthcoming), the Finnish higher education system has also taken significant steps, or perhaps great leaps, towards academic capitalism at least since the 1990s. One example of this is the so-called Tuli Program. ‘Tuli’ is the Finnish word for ‘fire’. In this context it comes from words ‘tutkimuksesta liiketoimintaa’ which can be translated as ‘transformation of research into business’, or ‘business from research’. This program was initially launched in 1993 (Kuusisto et al., 2004) and its current phase (2008) runs until 2012.

The program is funded mainly (60%) by Tekes (the Finnish Funding Agency for Technology and Innovation) and Tekes in turn is funded by the Ministry of Employment and Economy. The rest of the funding comes from the Universities which are funded mainly by the Ministry of Education and Culture (Hytönen and Tolvanen, 2011).

Tuli’s aim is to help ‘researchers and research communities to evaluate the commercial potential of research-based inventions or ideas and aids in the process of their commercialization’ (Tuli, 2012a). Moreover, ‘Tuli aims to give birth to new research-based business with the aid of license

agreements, know-how transfers and new companies. In other words, Tuli aims to commercialize research results in Finnish universities and research institutes' (Tuli, 2012a).

This program is based on cooperation with the technology transfer offices (or R&D and innovation services, as they are often called in Finland) of 14 Finnish universities, 21 polytechnics and five research institutes (Tuli, 2012a). Some of the universities have organized, for instance, 'commercialization clinics' for their researchers in order to facilitate their efforts in bringing their research-based ideas to markets.

Researchers are invited to bring their ideas and inventions to commercialization experts for research, i.e. 'to the able hands of Tuli' (Tuli, 2012a): 'We will evaluate your idea's potential, open the right doors for you, provide you with the relevant professional contacts and offer **funding up to 55 000 euros** – with no risk involved. Tuli helps you in the process of commercializing your research results. You won't need any funding of your own. Spark your idea into life and let Tuli help you in realizing new possibilities!' (Tuli, 2012b, emphasis in original).

In 2008, a total of 693 projects received funding from the Tuli Program. Twenty-six projects were commercialized through technology transfer and these projects brought a total income of €920,000. This amount is 34% of all the incomes reported for licensing and technology sales of Finnish universities in the same year (Tuli, 2012c). Between 2008 and 2012, Tekes funded the Tuli Program with €12m.

Thus, in this program, academic, research-based 'ideas' are seen as lifeless objects, but the program is there to help researchers 'spark' those lifeless objects into 'life' through commercializing them and, ultimately, by bringing them to markets as commodities (in the form of goods or services). In this way the commodification of academic research is defined as a more crucial process, or practice, than academic research that is seen more like an initial step towards market exchange.

This is rather problematic from the point of view of the internal goods of science (e.g. free circulation of knowledge) since the program is (naturally) based on 'professional secrecy' and 'non-disclosure agreements': 'Note: all Tuli-related operations and communication are strictly confidential. Every person involved in handling any project-related material is bound to professional secrecy or bound by a separate Tuli-related non-disclosure agreement' (Tuli, 2012d).

This case illustrates how governmental actors actively participate in the commodification of knowledge by making substantial economic investments. The main reason for this is that they see the commodification of knowledge as one precondition of a successful national innovation system which, in turn, is supposed to contribute to economic growth, new jobs and, more broadly, a successful Finnish knowledge-based economy. At the same it demonstrates how academic knowledge is valued on the basis of its commercial potentiality. In other words, the Tuli example reflects Radder's argument about how economic criteria start to (partially) dominate academic knowledge production when it is subjected to the process of commodification.

In more abstract terms, the Tuli Program case illustrates how academic capitalism, i.e. blurring of boundaries between universities, state, and markets, operates in the Finnish context. Moreover, the Tuli Program illustrates how the Finnish higher education system is adopting an academic capitalist knowledge regime in which knowledge is treated as a private good rather than a public good (e.g. Slaughter and Rhoades, 2004). However, an academic capitalist knowledge regime and a public good knowledge regime coexist (i.e. they should be seen as models representing different poles of the private–public continuum), and it is a fundamentally empirical question as to what extent knowledge circulates as a private or public good within academia, and between academia and the broader social world, or how these aspects (private and public good) are interwoven in any particular case.

## Conclusion

I hope this paper has contributed generally to higher education studies and other social scientifically oriented studies on the knowledge economy, and specifically to the conceptual basis of discussions on (transnational) academic capitalism since one key implication of this paper is that the term 'academic capitalism' is justifiable at least in a sense that knowledge can be (other things being equal) produced and sold to increase the economic capital of universities. And this economic capital can then be invested in other activities and processes that are aimed to bring further external revenues to the university.

Thus, if we accept that commodity form is a crucial aspect of capitalistic market economies, then the demonstration that knowledge can be, and is, treated as commodity within the field of higher education gives us reason to suppose that 'academic capitalism' is not merely a metaphor. Another related question is whether the term 'academic capitalism' is justified also in a sense that the production of knowledge in universities, or industry–university collaborations shares characteristics of the capitalist mode of production. This is an issue which requires further attention in academic capitalism studies.

However, in making claims such as 'knowledge has become commodity' or 'higher education has been commodified' one has to be careful, because the commodity status of knowledge is a many-sided question. For instance, marketing and selling higher education products to transnationally mobile students is a different kind of process than selling research results through patents to some (transnational) corporation. While the former is aimed at multiple consumers, the aim of the latter is rather to generate external revenue by licensing the product to some particular corporation.

Moreover, even if we are able to argue plausibly that knowledge has become a commodity, it does not necessarily mean that it has become a *capitalist* commodity. The expression 'knowledge as commodity' can mean several things and they cannot be assimilated to some overarching conception. This topic clearly needs further research on both theoretical and empirical levels. Overall, we need to be careful in our conceptualizations. In the field of higher education the economic status of knowledge cannot be dealt with through the simplistic dichotomy of public good vs. private good.

Finally, in this article I have attempted to articulate how contemporary university transformations and increasingly blurred boundaries between universities, states and markets can be seen as an example of the second enclosure movement. This movement manifests itself in the form of commodification of knowledge and this process poses a threat to any 'knowledge community' (David and Foray, 2002: 14–16) that is based on such rules as reciprocity and the free flow of knowledge. In this respect, the key implication is that higher education, and more broadly knowledge production, has become an increasingly important research topic for any social science that aims to increase our critical understanding of contemporary social transformations, and the continuing capability of capitalism to renew and expand its boundaries despite (or perhaps because) of its simultaneous crises. In this respect the main suggestion of this paper is that there is a need to update theories of global capitalism (see Sklair, 2002; Robinson, 2004) since they have failed to pay sufficient attention to one of the key processes that create tensions within contemporary capitalism, i.e. commodification of knowledge (Kauppinen, 2012, forthcoming).

## Acknowledgements

This research article was started at the University of Georgia (USA), The Institute of Higher Education where the author worked as a Visiting Fulbright Post Doctoral Researcher between August 2010 and February 2011. He thanks, with the usual disclaimer, Tuukka Kaidesoja and Sheila Slaughter for their helpful comments on earlier versions of this article. The author would also like to thank the anonymous reviewers of this article for their insightful criticism and suggestions.

## Funding

This work was supported by Fulbright Scholar Program [ASLA-Fulbright Research Grant].

## Notes

1. For a critical account of the concept of 'knowledge-based economy' and whether it provides an adequate description of current economic realities, see Jessop (2008).
2. The process of commodification in itself has been approached from both non-Marxist and Marxist point of views (e.g. Castree, 2003: 274).
3. Scientific knowledge is taught to include various specific characteristics: it is systematic, and it is collected, analyzed and synthesized through scientific methods, and the aim of science is often to produce generalizable knowledge. Furthermore, scientific knowledge can refer to the results of basic research and applied science.
4. However, since the question of how the relation between explicit and implicit knowledge should be understood is not the key question in this paper, I will not engage in a more detailed discussion on this topic. Suffice to say that I am sympathetic to Hildreth and Kimble's basic idea that all knowledge involves in varying degrees both soft and hard elements given the necessarily social nature of all knowledge.
5. Of course, the act of publication increases a researcher's academic capital which can be translated into other forms of capital such as money capital through promotion, increased salary, and so forth.
6. I do recognize that commodification of knowledge in the context of higher education has required legislative changes, but there is no room here to discuss them in any systematic sense. However, one example is the World Trade Organization's (WTO) trade liberalization agreement, the General Agreement on Trade in Services (GATS) that repositioned higher education as an attractive service industry and global export that can be sold in the global marketplace (e.g. Naidoo, 2003; Robertson et al., 2002).
7. Money and knowledge share one common feature that other commodities do not seem to have. Both money and knowledge can be made, or kept secret. Simmel (2004 [1907]: 388) writes, 'compared with all other goods, money can be made invisible and non-existent to others and thus has affinities with intellectual possessions. Just as the private and, as it were, solipsistic character of mental possessions both begins and ends with keeping silent, so the private individualistic nature of money finds its complete expression in the possibility of keeping it secret.'

## References

- Arrow K (1971) *Essays in the Theory of Risk-Bearing*. Chicago, IL: Markham.
- Baldini N, Grimaldi R and Sobrero M (2006) Institutional changes and the commercialization of academic knowledge: a study of Italian universities' patenting activities between 1965 and 2002. *Research Policy* 35(4): 518–532.
- Boyle J (2003) The second enclosure movement and the construction of the public domain. Available (consulted 30 June 2012) at: <http://www.law.duke.edu/pd/papers/boyle.pdf>
- Bunge M (1999) *The Sociology-Philosophy Connection*. New Brunswick, NJ: Transaction.
- Castree N (2003) Commodifying what nature? *Progress in Human Geography* 27(3): 273–297.
- Clark B (1998) *Creating Entrepreneurial Universities: Organizational Pathways of Transformation*. Oxford: IAU Press and Pergamon.
- Dant T (1999) *Material Culture in the Social World*. Buckingham: Open University Press.
- David PA and Foray D (2002) An introduction to the economy of the knowledge society. *International Social Science Journal* 54: 9–23.
- Deflem M (2003) The sociology of the sociology of money: Simmel and the contemporary battle of the classics. *Journal of Classical Sociology* 3(1): 67–96.
- Emil BB (1995) Customers, costs, and context: an integrated approach to funding university outreach programs and services. *Journal of Nonprofit & Public Sector Marketing* 2(2–3): 91–114.

- Estermann T and Nokkala T (2009) *University Autonomy in Europe 1. Explanatory Study*. Brussels: European University Association.
- Etzkowitz H and Leydesdorff L (1998) The endless transition: a 'triple helix' of university-industry-government relations. *Minerva* (36): 203–208.
- Fuchs C (2012) Political economy and surveillance theory. *Critical Sociology* 2 April (accessed 17 October 2012).
- Gibbons M, Limoges C, Nowotny H, et al. (1994) *The New Production of Knowledge: The Dynamics of Science and Research in Contemporary Societies*. London: Sage.
- Goldfarb B and Henrekson M (2003) Bottom-up versus top-down policies towards the commercialization of university intellectual property. *Research Policy* (32): 639–658.
- Hall BL (1979) Knowledge as a commodity and participatory research. *Prospects: Quarterly Review of Education* 9(4): 393–408.
- Hesse C (2002) The rise of intellectual property, 700 B.C.–A.D. 2000: an idea in the balance. *Daedalus* (131): 26–45.
- Hildreth PJ and Kimble C (2002) The duality of knowledge. *Information Research* 8(1), paper no. 142. Available (consulted 30 June 2012) at: <http://InformationR.net/ir/8-1/paper142.html>
- Hodgson G (1988) *Economics and Institutions: A Manifesto for a Modern Institutional Economics*. Cambridge and Oxford: Polity.
- Hytönen J and Tolvanen T (2011) *TULI Finland*. Available (consulted 30 June 2012) at: <http://www.seeplatform.eu/images/file/Case%20Study%20pdfs/TULI%20-%20SEE%20Case%20Study.pdf>
- Jessop B (2007) Knowledge as a fictitious commodity: insights and limits of a Polanyian perspective. In: Bugra A and Agartan K (eds) *Reading Karl Polanyi for the Twenty-First Century: Market Economy as a Political Project*. New York, NY: Palgrave Macmillan, 115–133.
- Jessop B (2008) A cultural political economy of competitiveness and its implications for higher education. In: Jessop B, Fairclough N and Wodak R (eds) *Education and the Knowledge-based Economy in Europe*. Rotterdam: Sense, 13–39.
- Kauppinen I (2008) [Owning knowledge is power: political moral economy of globalizing patent system and global capitalism]. Doctoral dissertation. *Jyväskylä Studies in Education, Psychology and Social Research* 338. Jyväskylä: University of Jyväskylä.
- Kauppinen I (2012) Towards transnational academic capitalism. *Higher Education* 64(4): 543–556.
- Kauppinen I (forthcoming) Academic capitalism and the informational fraction of the transnational capitalist class. *Globalisation, Societies and Education*.
- Kauppinen I and Kaidesoja T (forthcoming) A shift towards academic capitalism in Finland. *Higher Education Policy*.
- Kenway J, Bullen E, Fahey J, et al. (2006) *Haunting the Knowledge Economy*. London and New York, NY: Routledge.
- Kuusisto J, Kotala S, Kulmala R, et al. (2004) [Mid-term evaluation of the TULI program]. *Teknologiaohjelmaraportti* 8/2004. Helsinki: Tekes.
- Lankshear C, Peters M and Knoble M (2000) Information, knowledge and learning: some issues facing epistemology and education in a digital age. *Journal of Philosophy of Education* 34(1): 17–39.
- Leisyte L and Horta H (2011) Introduction to a special issue: academic knowledge production, diffusion and commercialization: policies, practices and perspectives. *Science and Public Policy* 38(6): 422–424.
- Lyotard JF (1984) *The Postmodern Condition: A Report on Knowledge*. Manchester: Manchester University Press.
- Machlup F (1962) *The Production and Distribution of Knowledge in the United States*. Princeton, NJ: Princeton University Press.
- Marx K (1906 [1867]) *Capital*. New York, NY: Modern Library.
- May C and Sell SK (2006) *Intellectual Property Rights: A Critical History*. Boulder, CO and London: Lynne Rienner.
- Mirowski P (2011) *Science-Mart Privatizing American Science*. Cambridge, MA: Harvard University Press.
- Mirowski P and Sent EM (eds) (2002) *Science Bought and Sold: Essays in the Economics of Science*. Chicago, IL: University of Chicago Press.
- Naidoo R (2003) Repositioning higher education as a global commodity: opportunities and challenges for future sociology of education work. *British Journal of Sociology of Education* 24(2): 249–259.

- Noble D (1998) Digital diploma mills: the automation of higher education. *Monthly Review* 49(9): 38–53.
- Noble DF (2002) Technology and the commodification of higher education. *Monthly Review* 53(10). Available at: <http://monthlyreview.org/archives/2002/volume-53-issue-10-march-2002>
- Nonaka I (1991) The knowledge-creating company. *Harvard University Review* 69: 96–104.
- Olssen P and Peters MA (2005) Neoliberalism, higher education and the knowledge economy: from the free market to knowledge capitalism. *Journal of Education Policy* 20(3): 313–345.
- O’Neill J (1998) *The Market: Ethics, Knowledge and Politics*. London: Routledge.
- Peters MA (2001) National education policy constructions of the ‘knowledge economy’: towards a critique. *Journal of Educational Enquiry* 2(1): 1–22.
- Polanyi K (1944) *The Great Transformation*. New York, NY: Beacon.
- Polanyi M (1958) *Personal Knowledge: Towards a Post-Critical Philosophy*. Chicago, IL: University of Chicago Press.
- Radder H (ed.) (2010a) *The Commodification of Academic Research: Science and the Modern University*. Pittsburg, PA: University of Pittsburgh Press.
- Radder H (2010b) The commodification of academic research. In: Radder H (ed.) *The Commodification of Academic Research: Science and the Modern University*. Pittsburg, PA: University of Pittsburgh Press, 1–23.
- Rhoades G and Slaughter S (1997) Academic capitalism, managed professionals, and supply-side higher education. *Social Text* 51: 9–38.
- Robertson SL, Bonal X and Dale R (2002) GATS and the education service industry: the politics of scale and global reterritorialization. *Comparative Education Review* 46(4): 472–496.
- Robinson WI (2004) *A Theory of Global Capitalism*. Baltimore, MD: Johns Hopkins University Press.
- Ryle G (1949) *The Concept of Mind*. London: Hutchinson.
- Sappey J (2005) The commodification of higher education: flexible delivery and its implications for the academic labour process. Paper presented at the conference Reworking Work, 9–11 February, Sydney, Australia.
- Sausser WI, Jr, Foster RS, Jr, and Self DR (1994) Marketing and university outreach: parallel processes. In: Sausser WI, Jr, Foster RS, Jr, and Self DR (eds) *Marketing University Outreach Programs*. New York, NY: Haworth, 3–22.
- Shaw M (1975) *Marxism and Social Science*. London: Pluto.
- Shumar W (2008) Space, place and the American university. In: Canaan JE and Shumar W (eds) *Structure and Agency in the Neoliberal University*. London and New York, NY: Routledge, 67–83.
- Simmel G (2004 [1907]) *The Philosophy of Money*, 3rd enlarged edn. Translated by Bottomore T and Frisby D from a first draft by Mengelberg K. London and New York, NY: Routledge.
- Sklair L (2002) *Globalization. Capitalism and Its Alternatives*. Oxford: Oxford University Press.
- Slaughter S and Leslie L (1997) *Academic Capitalism: Politics, Policies, and the Entrepreneurial University*. Baltimore, MD and London: Johns Hopkins University Press.
- Slaughter S and Leslie L (2001) Expanding and elaborating the concept of academic capitalism. *Organization* 8: 154–161.
- Slaughter S and Rhoades G (2004) *Academic Capitalism and the New Economy. Markets, State and Higher Education*. Baltimore, MD and London: Johns Hopkins University Press.
- Stehr N (1994) *Knowledge Societies*. London: Sage.
- Tuli (2012a) The Tuli-program. Available (consulted 30 June 2012) at: [http://www.tuli.info/eng/the\\_tuli\\_program.htm](http://www.tuli.info/eng/the_tuli_program.htm)
- Tuli (2012b) For researchers. The Tuli-program. Available (consulted 30 June 2012) at: [http://www.tuli.info/eng/for\\_researchers.htm](http://www.tuli.info/eng/for_researchers.htm)
- Tuli (2012c) Results. The Tuli-program. Available (consulted 30 June 2012) at: <http://www.tuli.info/eng/results.htm>
- Tuli (2012d) The Tuli-process. The Tuli-program. Available (consulted 30 June 2012) at: [http://www.tuli.info/eng/the\\_tuli\\_process.htm](http://www.tuli.info/eng/the_tuli_process.htm)