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MOOCs as "Semicommons" in the Knowledge Commons Framework

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Abstract
The commons approach to knowledge governance is an increasingly popular and successful model for mediating and explaining the ways in which knowledge producers and users, institutions, and shared information resources, interact in social and cultural domains. There is a growing body of literature on the knowledge commons, to which this article seeks to contribute by offering an analysis of massive open online courses (MOOCs). The study outlined in this article deployed the knowledge commons research framework developed by Madison, Frischmann and Strandburg (2010). This framework attempts to align studies of knowledge commons by providing a structured yet flexible set of research questions that emphasise the dynamic relation between default governance regimes (such as proprietary intellectual property rights), tools and infrastructure, and social and cultural norms. The study determined that the MOOC environment exhibits some characteristics of a knowledge commons, and thus the Madison et al. (2010) framework can be productively applied in this context. In addition, the study found that, due to the generally conventional copyright paradigms and varying degrees of openness within the proprietary MOOC platforms, MOOCs can be considered a type of what Madison et al. (2010) term a "semicommons". Furthermore, because access to learning resources, a key element of access to knowledge (A2K), is an important driver of development, and because openness is an important facilitator of that access, the semicommons status of MOOCs (as learning resources) to some extent mitigates their contribution to increased A2K.

Keywords
knowledge commons, semicommons, massive open online course (MOOC), copyright, access to knowledge (A2K), development

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1. Introduction

In the context of increasing levels of openness in society and access to information precipitated by the rise of the World Wide Web (Weller, 2014), models are needed to explain the ways in which knowledge producers and users, shared information resources, and institutions, interact in social and cultural domains (Madison, et al., 2010). The knowledge commons research framework (Madison et al., 2010) provides one such model, and has been productively applied both by the framework's authors (to such varied contexts as Wikipedia, patent pools and open source software) and by other researchers (Frischmann et al., 2014). The framework has not, however (to the best of my knowledge), been applied in the context of education.

This study is informed by the fact that education and access to knowledge (in the form of educational materials) are major drivers of economic and social development. Given the apparent democratising potential of Internet-enabled open education (OE) and OE-adjacent models such as the so-called massive open online course (MOOC), there is a need to question how effective these models may be in promoting access to knowledge, or in serving as knowledge governance regimes in and of themselves.

The study outlined in this article examined the MOOC phenomenon through the lens of the knowledge commons research framework offered by Madison, Frischmann and Strandburg (2010). The Madison et al. (2010) framework was adapted from the Institutional Analysis and Development (IAD) framework developed by Ostrom (2005). The research took the form of a desktop case study, using MOOCs as a site for the application of the knowledge commons research framework.

In order to provide a complete account of the study, the next section of this article (Section 2) provides a general introduction to the concept of commons, followed by presentation of the Madison et al. (2010) knowledge commons research framework. Section 3 briefly establishes the link between education and development. Section 4 explains the rationale for using the Madison et al. (2010) research framework in the context of MOOCs, and describes how the study applied the framework to the MOOC environment, generating the article's analysis and, as outlined in Section 5, its conclusions.

In order to populate the knowledge commons research framework and address representative research questions provided by the framework authors, the study used existing research and literature on the history and development of MOOCs. In the analysis, the study gave particular consideration to the functions of intellectual property (IP) – specifically copyright, as the default knowledge governance regime governing many educational resources – in what Benkler has termed the "increasingly permeable boundaries between the university and the world" in "the networked information economy" (2008, p. 55). Among the conclusions that emerged from the study, as outlined in Section 5, were that there are copyright tensions inherent in

MOOCs, chiefly in respect of:

- how conventional notions of copyright "ownership" are disrupted with regard to course content and user-generated content, specifically in relation to MOOC platform-providers' terms of use and institutional (IP) policy frameworks; and
- use of third-party content within MOOCs, including fair use/fair dealing.

Accordingly, the study was able to reach the conclusion that the generally proprietary copyright environment around MOOCs means that, when scrutinised via the knowledge commons research framework, MOOCs appear to represent a type of what Madison et al. (2010) call "semicommons".

2. Understanding the commons

The commons approach

The commons approach to resource management has its origins in the biophysical realm, as a means of ensuring long-term availability, sustainability and (usually) equity of access to natural or physical resources (or infrastructure). The resources are not owned but rather held "in common" by a community, and all members of the community have an equal claim in supporting the resources' survival. Examples from the physical environment include communal grazing lands; agricultural fields and forests; rivers, seas and oceans; the atmosphere and electromagnetic spectrum; and roads, highways and bridges. Access to these resources is generally free, but the resources themselves are rivalrous, meaning they are subject to depletion and exclusion if not managed correctly. In addition, because – in a "commons" sense – the resources interface with a community, they are subject to the behaviours and intentions of human actors (Hess & Ostrom, 2007, p. 4).

The concept of commons, therefore, transcends consideration at a purely physical level, as Frischmann, Madison and Strandburg (2014) point out in their general definition:

> Commons refers to a form of community management or governance. It applies to resources, and involves a group or community of people, but commons does not denote the resources, the community, a place or a thing. Commons is the institutional arrangement of these elements. (Frischmann et al., 2014, p. 2)

Much of the foundational work on commons as sites of scholarly research is provided in the work of Ostrom, whose IAD framework offers a useful tool for empirical study of commons of various kinds and in various contexts (Ostrom, 2005). The IAD framework disaggregates the constituent elements of a commons: the resources, the community, the rules that govern the interaction between these, the "action arenas" where these interactions play out, the outcomes and results of the interactions, and

how those outcomes feed back into the initial conditions of the system (Ostrom, 2005). In addition, the work of Hess and Ostrom (2007) provides an initial attempt at implementing the study of commons in the realm of intellectual resources – although as Hess and Ostrom point out, the study of so-called "knowledge commons" has a distinct origin in the historical narrative of enclosure and openness.

Delineating the knowledge commons

In contrast to a biophysical commons, a knowledge commons consists of "resources" that are non-rivalrous by nature, placing a different set of imperatives on the management or governance of these resources and making a different set of assumptions about the reasons for participating in such commons (Hess & Ostrom, 2007). In this context, any piece of information, body of knowledge, or result of creative activity, at whatever level of construction – essentially any product of the mind or intellectual effort – can be considered a resource in a knowledge commons. Madison et al. (2010) consider knowledge commons as

> environments for developing and distributing cultural and scientific knowledge through institutions that support pooling and sharing that knowledge in a managed way […] with limitations tailored to the character of those resources and the communities involved rather than left to evolve via market transactions grounded solely in traditional proprietary rights. (Madison et al., 2010, p. 659)

Thus, for Madison et al (2010), the defining characteristics of a knowledge commons, i.e., those characteristics that distinguish it from a biophysical commons, are the nature of its resources (i.e., non-rivalrous cultural or scientific knowledge), and the specific way the management of those resources departs from the default rules (i.e., in this case, IP rules) that typically govern such resources when they are in non-commons-oriented conditions.

The terms "knowledge commons", "information commons", and "cultural commons" can be, and are, used fairly fluidly and interchangeably in the literature (Hess & Ostrom, 2007). In their foundational work for the systematic study of knowledge commons, Madison et al. (2010) provide the clearest formulation of the concept, referring to "constructed commons in the cultural environment" (2010, p. 659). This formulation conveys both the wide range of resources that can be considered as part of a commons, as well as the inclusive nature and rationale for the systematic study of such environments. The terminology also hints at an underlying characteristic of a knowledge commons: since "knowledge" is constructed, knowledge is both the input and the output: it is both the "raw material", if you will, and the "end product" of the activities within a knowledge commons. For the purposes of this study, the term "knowledge commons" is preferred.

Central to operation of a knowledge commons is the fact that not only is a common "store" of knowledge not depleted by one person's appropriation of any particular "piece" of it; the cumulative nature of information and knowledge means that whatever a person may produce as a result of her or his interaction with that knowledge can be considered a public good, so long as it is contributed back into the common store (Hess & Ostrom, 2007). This is what Frischmann (2008, p. 305) refers to as "spillover", i.e., "benefits realised by one person as a result of another person's activity without payment". (This spillover effect assumes, of course, that the commons in question has an open nature, which is not necessarily a given.)

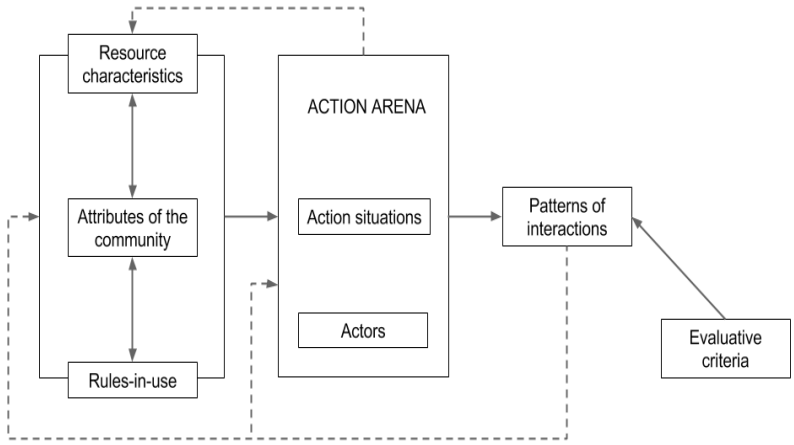
The term "commons" "can be constructive […] [b]ut a commons is not value laden – its outcome can be good or bad, sustainable or not […]", depending on the particular social dilemmas that act on or arise from it (Hess & Ostrom, 2007, p. 14). This foregrounds the need for an understanding not only of the background history and narrative of a particular commons, but also of its objectives and motivations, specifically the objectives and motivations of its members. That is where the Madison et al. (2010) knowledge commons research framework departs most significantly from the IAD.

In addition to the "classical" knowledge commons (in as much as one could imagine such a thing), Madison et al. (2010) argue that there also exist many " 'semicommons' – complex combinations of private rights and commons, some of which are constructed at the 'macro, system level' of law, and some of which are constructed at the 'micro, contextual level' of cultural commons" (Madison et al., 2010, p. 668, internal citations omitted). A "semicommons" combines features of a knowledge commons with social norms and formal knowledge governance regimes such as IP regimes (Madison et al., 2010).

The knowledge commons research framework

As stated above, the Madison et al. (2010) knowledge commons research framework (hereinafter referred to simply as "the framework") is adapted from the IAD framework developed by Ostrom. The application of the IAD framework to the domain of knowledge commons was in many respects fairly obvious, but Madison et al. (2010) found that some refinement was necessary in order to capture all of the nuances and complexities inherent in the information environment. The basic layout of the framework remains similar to the IAD framework in its disaggregation of the constituent elements of a commons environment, but with less focus on outcomes and more opportunities for dynamic interaction and feedback between elements. This results in a less linear progression than that of the IAD framework, and more opportunities for "nesting" of a particular commons within a larger cultural environment (Madison et al., 2009) – or, indeed, for nesting of a smaller "semicommons" within a larger commons (Madison et al., 2010). The framework is represented graphically in Figure 1 below.

Figure 1: The knowledge commons research framework



Source: Madison et al. (2010, p. 682)

As well as a graphical model, the authors provide a suite of representative research questions to consider when applying the framework in conducting a case study (Frischmann et al., 2014, p. 20). The questions are clustered into the broad categories of:

- background environment: e.g., what is the context and "default" status of the particular commons environment?
- attributes (both of resources and of community members): e.g., what is pooled, who may contribute, and how do contributors interact with the commons?
- goals and objectives: e.g., what is the motivation for participation, and what are the history and narrative of the commons?
- governance: e.g., what rules govern interactions, and what institutional structures bear on the commons?
- patterns and outcomes: e.g., what benefits, costs and risks arise from the commons?[1]

The questions align with the areas of the graphical model in Figure 1, and can be applied selectively according to each particular case, as some questions may be more or less relevant depending on the specific characteristics of the commons under examination.

In order to consider the "action arena" component of the framework, it would be necessary to analyse a particular MOOC in detail, which is beyond the scope of

1 A comprehensive list of the research questions is available at http://knowledge-commons.net/publications/gkc/research-framework

this study. Thus, in deployment of the framework, the study considered MOOCs generally, paying particular attention to the first, second and third areas of the model as outlined in Figure 1, namely "resource characteristics", "attributes of the community", and "rules-in-use". The study also focused on the "patterns of interactions" and "evaluative criteria" components of the framework, as illustrated in Figure 1, when considering how effective MOOCs might be at addressing issues of access.

Frischmann et al. (2014) state that the "empirical approach must balance structured enquiry with interpretive flexibility" and foreground the "complexity of the interplay among the characteristics of particular resources, various communities and groups, and the social, political, economic, and institutional attributes of governance" (2014, p. 470). At the same time, Frischmann et al. (2014) state that the value of a harmonised set of questions and structured framework lies in their potential to generate a body of literature that is comparable across time and context, thus facilitating the selection of theories to explain the existence of commons and the rules and norms that govern them. To this end, although my inquiry was structured according to the schematic elements in Figure 1, it was the representative research questions – with their emphasis on narrative – that most strongly shaped the rationale for, and course of, the investigation.

IP dimensions

Madison et al. (2010) assert that theoretical understanding of knowledge commons

> is critical for obtaining a more complete perspective on intellectual property doctrine and its interactions with other legal and social mechanisms for governing creativity and innovation, in particular, and information and knowledge production, conservation, and consumption, generally. (2010, p. 657)

The same authors submit that the study of IP should accommodate nuanced perspectives on openness, so as to acknowledge the broad array of commons arrangements that exist between total enclosure and open access, where "[d]efault rules of intellectual property […] may be combined with licenses and contracts, with social norms, and with cultural and other institutional forms […]" (Madison et al., 2010, p. 669).

Furthermore, there is a growing understanding that the highly social and cultural nature of creativity and knowledge production – especially in a digital paradigm – means that they cannot and should not be governed or considered within "a simple set of property rules to incentivize individual innovative and creative efforts" (Madison et al., 2010, p. 669). Therefore, "[t]he question for both public policy and legal theory becomes how best to use legal and other tools to encourage the growth and

persistence of creative, sustainable, and equitable cultural environments" (Madison et al., 2010, p. 669).

As opposed to the biophysical paradigm, where the focus of resource management is generally on sustainability, a knowledge commons usually seeks, additionally, to foster growth and development. Thus, analysis of a knowledge commons should go beyond consideration only of the management and sharing of resources within the community, and extend to looking at resources that are potentially created by the community and transferred outside of the commons for the benefit of the general public (Madison et al., 2010). Madison et al. (2009) summarise the matter thus:

> Questions of knowledge production, distribution, and growth exist side by side with questions of the sustainability and stewardship of cultural institutions, disciplines, and forms of knowledge. In the cultural environment, commons play a key role, and perhaps a central role (along with proprietary rights and government subsidies, among other things), in mediating competing and complementary individual and social interests in each of these processes. (Madison et al., 2009, p. 373)

As indicated earlier, a knowledge commons is not necessarily "value laden", i.e., its value will depend on its outcomes and sustainability. But Madison et al. (2010, p. 708) assert that knowledge commons, in promoting "openness" – by deviating from the "default rules of exclusion" associated with IP regimes such as copyright – "are often welfare-enhancing in regard to promoting valuable spillovers of information and knowledge distribution". Such spillovers can be of particular benefit in the context of access to learning materials, thus making a knowledge commons a potentially valuable access to knowledge (A2K) vehicle.

3. Education and development

The relationship between education and development is well established, and increasingly well-understood. Okediji (2006) notes the importance of "education and basic scientific knowledge" to "creating an environment in which domestic initiatives and development policies can take root" (Okediji, 2006, p. 2). As Okediji puts it, "[a] well-informed, educated and skilled citizenry is indispensable to the development process" (Okediji, 2006, p. 2). There can be no doubt that education is essential not only to poverty reduction and economic development at national and global levels, but also to human development, by enabling people to make choices that fulfill their human potential. And when development is considered not only on an economic basis, but also in social and cultural terms, then education becomes even more essential. According to Drache and Froese (2005):

> Developing skills for the information economy requires raising literacy rates with a greater investment in education – an area of primary

> importance for developing nations. As literacy levels rise, culture becomes more than entertainment; it becomes part of a strategy for social cohesion and inclusion. (Drache & Froese, 2005, p. 28)

Indeed, Article 26 of the United Nations Universal Declaration of Human Rights (1948) frames education unequivocally as a basic human right, stating that "[e]veryone has the right to education […]" and "[e]ducation shall be directed to the full development of the human personality […]".

Effective and meaningful education is heavily dependent on the availability of, and access to, suitable learning materials (see Armstrong et al., 2010). The Cape Town Open Education Declaration (2007) envisions "a world where each and every person on earth can access and contribute to the sum of all human knowledge", and where "everyone should have the freedom to use, customize, improve and redistribute educational resources without constraint". The emergence of a global open education movement, linked to the rise of information and communications technologies (ICTs), has gone some way to increasing and democratising access to educational materials (Armstrong et al., 2010). However, significant cost and other barriers to access remain, especially in developing countries, where huge numbers of people still lack Internet access (Internet.org, 2014). Inequities in access to education are often exacerbated by geography, socio-economic status, and gender (Armstrong et al., 2010). It has been shown that

> [a]s […] societies redefine gender roles, corresponding values, rules, institutions, and family practices are transformed in new ways. Identity becomes a strategic resource to facilitate the active participation of both genders in the public life of southern societies. Rising literacy rates are a close ally in this process. (Drache & Froese, 2005, p. 28)

Thus, from the foregoing, it can be seen that access to learning materials is a key driver not only of socio-economic development, but also of increasing equality. Notwithstanding the challenges mentioned above and those that will be presented in the following analysis, MOOCs – as a form of knowledge commons – present an opportunity to expand access to learning materials, and thus to knowledge.

4. Application of the knowledge commons research framework to MOOCs

Although MOOCs do not necessarily fit squarely into the knowledge commons paradigm, the inquiry proceeded from the premise that the MOOC environment exhibited sufficient commons characteristics to justify an application of the knowledge commons framework. It was anticipated that framing MOOCs in this manner could contribute to future development of fruitful comparisons, e.g., placement of the MOOC phenomenon into context alongside other (more or less) effective commons models, in order to compare governance structures and the respective models'

potential for long-term sustainability, optimisation of benefits, and impact. The aim was for the application of the framework to the MOOC environment to yield a structured and contextualised view of the resources because, as Madison et al. (2010, p. 677) point out, "[t]he framework approach recognizes the crucial importance of the interplay between the characteristics of a commons resource and the social, political, economic, and institutional arrangements for its governance in which it is embedded".

Let us now turn to the outcomes of my initial attempt at applying the framework to MOOCs. It is important to mention at this point that there are two more-or-less distinct streams of MOOC: (1) the so-called "connectivist" MOOCs, or "cMOOCs", which were the earliest prototypes, emphasising connections between participants in order to fulfill some of the learning requirements; and (2) the more common "constructivist" or content-based "xMOOCs".[2] The emphasis in cMOOCs is less on content and more on the learning experience and elements of human interaction, which are much more difficult to provide at scale. It could be argued that cMOOCs, by relying more on interaction between community members, place more emphasis on the "action arena" aspect of the model presented in Figure 1 above, and thus exhibit different commons characteristics from the more "content-heavy" xMOOCs. In any case, it is the arguably less-pedagogically-open and less advanced xMOOC model that has achieved greater prominence (Weller, 2014), having been adopted as the model of choice by the three major MOOC providers introduced below in the "community attributes" section. This model therefore informed the course and focus of this study.

MOOCs' resource characteristics

As indicated earlier, the MOOC acronym refers to "massive open online courses". Although there is some contention, it is generally accepted that in relation to MOOCs:

- "massive" typically means large numbers of enrolment;
- "open" means that the courses have no formal requirements for participation;
- "online" means that the content is offered in a digitally mediated, generally Internet-based, environment; and
- "course" means that it is a structured learning experience, conceived and delivered as a coherent and cohesive whole.

Since their inception, various types and definitions of MOOCs have emerged, and various sub-models have been identified, as a result of providers and institutions combining MOOC elements in novel ways to produce MOOC variants, e.g., open boundary courses, and wrapped MOOCs, both of which function in a relatively formal curricular space (Czerniewicz et al., 2015). Although the approaches vary,

2 For a thorough analysis of this point, see www.elearnspace.org/blog/2012/07/25/moocs-are-really-a-platform

the four elements suggested by the acronym and enumerated above – massive, open, online, course – are generally common to all MOOCs. This inquiry focused on MOOCs produced by universities, and, accordingly, adopted the following definition, from Jones and Regner (2016), of a university MOOC:

> (1) a free educational course – (2) delivered entirely online – which is (3) designed and taught by professors at accredited universities yet (4) not necessarily part of a degree program or resulting in credits that can be counted towards a degree. (Jones & Regner, 2016, p. 5)

The term "free" requires some clarification, as there is a distinction to be made between "free to access" and "free to use". The term "open access" is a common trope in the discourse around openness – and, by extension, the commons – and is specifically used in relation to access to scholarly research articles. But in the context of this study it is used more generally, i.e., to discuss the degree of openness of access to MOOCs and their constituent elements. The distinction between free to access and free to use is often characterised as *gratis* versus *libre*, the former indicating free to access without cost, and the second indicating not only free to access without cost but also free to use and re-use with limited restrictions only. The ability to freely use, re-use and adapt resources is seen by many as a central tenet in the open paradigm (Weller, 2014). As shall be seen in the analysis below of rules-in-use, although the university MOOC model necessarily operates on a *gratis* basis with regard to resources, many MOOCs adopt a fairly conventional "all rights reserved" copyright paradigm, i.e., not a *libre*-oriented paradigm. However, at the same time, many MOOC providers do make use of open licensing (e.g., Creative Commons licences) to facilitate *libre* use of the resources within their courses. This analysis proceeded on the assumption that *gratis* access is sufficient for a MOOC to be analysed via the knowledge commons research framework, i.e., a *libre* approach is not an essential feature of, or prerequisite for, existence of a commons. There is, however, a tension here with the ideal that a commons should transfer benefits outside of the community, and this distinction informed my eventual finding that MOOCs may be more accurately defined as a kind of "semicommons".

The first MOOCs to be named as such appeared on the higher education landscape in 2008 – although people had been running open courses and releasing open courseware before then.[3] The format only really came to wider public attention in

2012, which Pappano (2012) has called the "year of the MOOC". Courses typically consist of a combination of video/audio lectures, text documents, and assessments graded either by a computer or by others enrolled in the same course. Delivery and

3 MIT's OpenCourseWare project (http://ocw.mit.edu/index.htm), an early precursor to MOOCs and the first open educational resource (OER) initiative to really achieve global recognition, was first announced in 2001.

facilitation are typically online, either through a purpose-built learning environment or an ad hoc assemblage of digital tools and platforms such as blogs, forums, and video hosting sites like YouTube. Importantly for the copyright discussion below, each of the course elements may have a separate and different creator or owner.

The generalised nature of the content and structure means there are no institutional or pedagogical limits to the number of students who can enrol in any given course, and although MOOCs are typically developed by university faculty along traditional syllabi and curricula, they are generally taught with minimal intervention or involvement from the developers (Jones & Regner, 2016).

MOOCs' community attributes

The infrastructure provision for MOOCs is usually outsourced to independent platform providers. These providers host the course content, control access, and offer support and administrative assistance, usually through proprietary software solutions. Most of the providers also offer course participants some sort of formal certification, usually for a fee, for courses they have completed. Many of these providers are commercial, for-profit enterprises, attempting to develop a workable business model out of the MOOC phenomenon.

At the global level, the three largest MOOC platform providers are:

- US-based Coursera, which has roughly 50% market share in terms of participants (some 17 million registered users globally);
- US-based EdX, with EdX and Coursera together controlling roughly 50% of the MOOC market in terms of courses offered (to date around 4,200 courses have been developed by over 500 universities); and
- UK-based FutureLearn, which grew by 275% in 2015, and is now ranked, in terms of enrolments, as the third-largest platform provider behind Coursera and EdX (Shah, 2015).

Of these three, only EdX is non-profit and has a commitment to open source ideals, i.e., the software for the EdX platform – Open EdX – is available for use under an open source software licence. According to the Open EdX website:[4]

> Open edX is the open source platform that powers edX courses. Through our commitment to the open source vision, edX code is freely available to the community. Institutions can host their own instances of Open edX and offer their own classes. Educators can extend the platform to build learning tools that precisely meet their needs. And developers can contribute new features to the Open edX platform.

The arrangements between content providers and platform providers are contractually managed, and are usually mutually beneficial: the platform providers cultivate huge

4 See https://open.edx.org/about-open-edx

audiences, and – seeking to develop brand cachet – use the promise of massive publicity and exposure to recruit content from the top institutions (Weller, 2014).

Although MOOCs are still, by and large, free to access, they are not, of course, cost-free in terms of development. Most of the investment – such as capital, time, and resources – comes from the institutions, which have their own motivations for participating in commons of this sort, including, potentially, the ability to reach significantly higher numbers of learners; to showcase high profile teaching and increase formal enrolment; and, in certain cases, to meet an institutional "social responsiveness" mandate through community engagement with outward facing courses. MOOCs offer universities and other institutions the opportunity to provide informal learning to virtually limitless numbers of people around the world, at no cost to the participants and more or less on the learners' own terms (Czerniewicz et al., 2015). While the early rationale for MOOCs included a very strong open education component (Reich, 2012), the MOOC provision space has subsequently come to be dominated by commercial interests – with a concomitant impingement of *gratis* open access – which some feel severely mitigates MOOC potential for providing access to education (Boga & McGreal, 2014; Weller, 2014).

Much of the focus in developing nascent MOOC business models has been on charging for certification and value-added services, and some platform providers are now beginning to push back the openness of MOOCs by charging for certain core services such as assessment. In this regard, MOOCs exhibit common characteristics with so-called "online creation communities", where open access to resources within the community is contingent on their being made openly available online, but "the open-access condition of the resources does not imply openness when understood as the degree of control and intervention in decision making of those conditions", and "[t]he level of openness to decision making about the conditions of use of the resources (as stated in the license and embedded in the platform of participation), here again, depends on the level of openness of the infrastructure provider" (Fuster Morell, 2014, p. 290).

MOOCs' rules-in-use

The territorial nature of IP means that this part of the analysis was necessarily situated in a specific national context, so for the sake of expedience South Africa's Copyright Act (No. 98 of 1978) (hereinafter referred to as "the Act") serves as an example of national legislation (RSA, 1978). Such territoriality notwithstanding, given the harmonising effect of international instruments such as the Berne Convention and the TRIPS Agreement on copyright legislation internationally, it is assumed that this national context could be easily generalised to other national contexts. The policies and practices at the University of Cape Town (UCT) provided a convenient case for this study, although, since all universities set their own policies, it is not assumed that these policies and practices are representative.

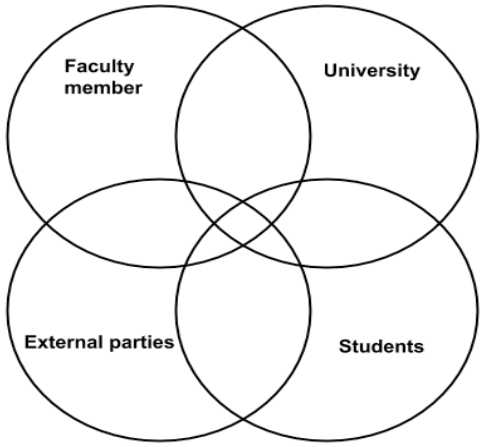
Ownership of copyright

Ownership of copyright in South Africa is conferred by section 21(1) of the Act, which states that:

> (a) Subject to the provisions of this section, the ownership of any copyright conferred by section 3 or 4 on any work shall vest in the author or, in the case of a work of joint authorship, in the co-authors of the work.

The ownership of copyright in university-level courses – be they formal or informal – is complicated by the nexus of interests for various stakeholders. First and foremost is the relationship between the course creators – i.e., the faculty members responsible for the development of the content – and the university that employs them. This is generally a straightforward employer-employee relationship, but may be clouded by special contractual or policy arrangements. Secondly, there is the relationship between the institution/course developers and the holders of copyright in resources that may be incorporated into the course. This relationship is typically managed by a licence agreement, be it a transactional licence for a specific individual use or a so-called "blanket" licence. Then there is the relationship between these parties and the students, or other users of the course, who may also be contributing their own IP in the form of written assignments or – in the online context – forum comments and discussion (see Figure 2).

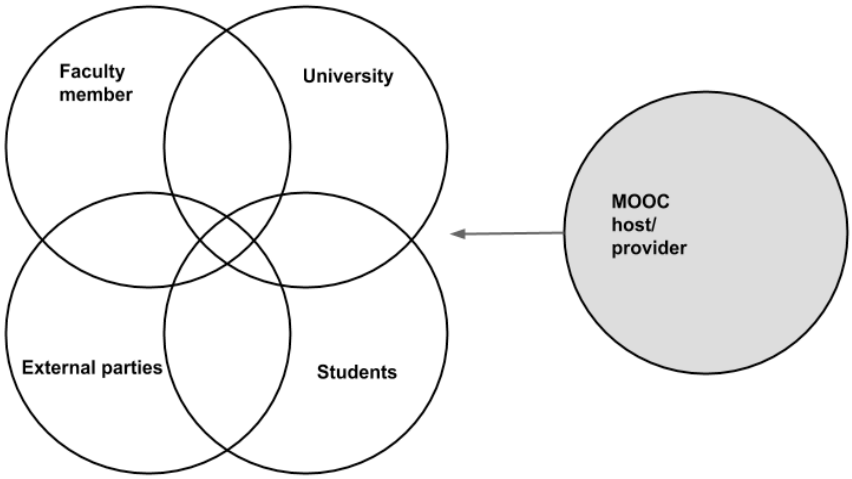
Figure 2: Copyright interests for typical college courses (online or face-to-face)



Source: Porter (2013, p. 11)

These relationships are complicated enough in and of themselves, but they are further complicated in the MOOC context by the introduction into this nexus of the platform provider (see Figure 3).

Figure 3: Copyright interests for MOOCs



Source: Porter (2013, p. 12)

The employer-employee relationship is governed by section 21(1)(b) and (d) of the Act, in this case specifically paragraph (d), which says that:

> Where […] a work is made in the course of the author's employment by another person under a contract of service or apprenticeship, that other person shall be the owner of any copyright subsisting in the work by virtue of section 3 or 4.

This strong assumption of employer ownership is supported by UCT's own IP Policy (hereinafter referred to as "the Policy"), of which section 8 considers "Copyright Protected Works and Course Materials", and says:

> 8.1 UCT holds copyright in:
> […]
> Syllabuses and curricula
> […]
> Specifically commissioned works and course materials that fall outside the scope of normal academic work (UCT, n.d.).

The Policy's section 8.1 is, however, potentially limited by section 8.2, which states that:

> UCT automatically assigns to the author(s) the copyright, unless UCT has assigned ownership to a third party in terms of a research contract, in:
> […]
> Course materials, with the provision that UCT retains a perpetual, royalty-free, non-exclusive licence to use, copy and adapt such materials within

> UCT for the purposes of teaching and or research (UCT, n.d.).

Thus, copyright in university courses would seem to be shared between the "author", i.e., the lecturer or instructor who creates the course materials, and the university which holds copyright in the syllabus or curriculum which determines how the course is taught. In the MOOC context, however, the creation of courses is governed by a contract between the platform provider, the institution, and the instructor. Section 3.2 of the Policy provides:

> […] should any Intellectual Property be created as part of a private contract, or private and professional work that falls within the technical scope of the Creator's employment at UCT, the Creator is bound to disclose this IP to RCIPS. In the absence of an agreement signed by UCT to the contrary, the Intellectual Property will be deemed to be owned by UCT (UCT, n.d.).

Furthermore, Porter (2013) writes:

> [c]reating an online course might well involve "significant use of university resources" – particularly if (a) the faculty member has been specifically given extra support to develop the course (e.g., in the form of course release or grant), or if (b) development of the course has involved significant personnel time of instructional designers, videographers, or multimedia specialists. (Porter, 2013, p. 7)

Thus, while the actual content of a course may be the IP of individual faculty members, since resources like video lectures and assessments are created together with a team of specialists, the copyright in these will be held by the institution, unless the contract between the three parties, i.e., the platform provider, the university, and the instructor, stipulates otherwise. Even within only the institutional context then, the matter of ownership is far from simple. Matters become further complicated when one considers that, as Porter (2013) writes:

> (1) a course is typically an assemblage of copyrighted (and uncopyrighted) materials from a variety of sources; (2) "the original work of authorship" in intellectual property law is itself a highly ambiguous foundational concept, particularly in the age of digital information and digital remix […]. (Porter, 2013, p. 11)

Use of third-party copyright material

The use of third-party copyright material of a literary or artistic nature at UCT relies on a blanket licensing agreement that the university has with the literary collecting society in South Africa, the Dramatic, Artistic and Literary Rights Organisation (DALRO). This agreement authorises the reproduction and distribution of limited numbers and quantities of learning materials on campus. According to the Guidelines

to UCT's Blanket Licence Agreement, the licence fee paid against this agreement is calculated on the university's number of Full-time Equivalent (FTE) students (UCT, 2013, p. 1). The agreement states that:

> [c]opying for people who do not contribute to the institution's FTE, is not covered. Extra-curricular courses e.g. short courses are not FTE contributory and clearance for reproduction for courses of this nature must obviously be obtained transactionally in the way that has been done before. (UCT, 2013, p. 1)

Since MOOCs are usually entirely extra-curricular, and most participants are in no way affiliated to the institution, third-party copyright material used in the development of a MOOC will not usually be covered by the licence, and use of such material must be secured through a transactional licence with the copyright-holder unless a so-called copyright exception and limitation applies. Use of certain copyright material in an educational context may be covered by section 12(1), (3) and/or (4) of the Act. This section provides the general "fair dealing" exceptions from copyright protection of literary and musical works, specifically:

> (1) Copyright shall not be infringed by any fair dealing with a literary or musical work –
>
> (a) for the purposes of research or private study by, or the personal or private use of, the person using the work;
>
> […]
>
> (3) The copyright in a literary or musical work which is lawfully available to the public shall not be infringed by any quotation therefrom, including any quotation from articles in newspapers or periodicals that are in the form of summaries of any such work: Provided that the quotation shall be compatible with fair practice, that the extent thereof shall not exceed the extent justified by the purpose and that the source shall be mentioned, as well as the name of the author if it appears on the work.
>
> (4) The copyright in a literary or musical work shall not be infringed by using such work, to the extent justified by the purpose, by way of illustration in any publication, broadcast or sound or visual record for teaching: Provided that such use shall be compatible with fair practice and that the source shall be mentioned, as well as the name of the author if it appears on the work.

The problem here – as is well known – is the ambiguity and uncertainty around the meanings of "fair dealing", "fair practice", "personal or private use", and "the extent justified by the purpose" (Schonwetter et al., 2010, p. 241). There is almost no case law in South Africa to provide clarity or guidance on these issues. However, it could be argued that these provisions would *not* apply in the – however tangential – for-profit context of a MOOC, and that the courts would, accordingly *not* consider use

in a MOOC to constitute a fair dealing (Educause, 2013).

In any case, the fair dealing exceptions apply only to literary and musical works. Use of all other third-party materials, e.g., artworks or video, would have to be provided by a transactional licence with the copyright holder, unless those materials are openly licensed, for instance with an appropriate Creative Commons licence.

Platform provider's terms of use

In spite of the "open" rationale behind MOOCs, most of the major MOOC platform providers (EdX being the exception) impose fairly restrictive IP policies through their terms of use. An examination of the three platform providers considered in this analysis is indicative. The largest MOOC platform provider Coursera's terms of use page states:[5]

> Subject to these Terms […] we grant you a *limited, personal, non-exclusive, non-transferable, and revocable license* to use our Services.
>
> You may download content from our Services only for your *personal, non-commercial use*, unless you obtain Coursera's *written permission* to otherwise use the content. […] Using our Services *does not give you ownership of any intellectual property rights* in our Services or the content you access. [emphasis added]

The wording of FutureLearn's terms and conditions page is fairly similar (section 6):[6]

> 6.1 Subject to your compliance with these Terms, we grant you a fully revocable, worldwide, non-exclusive, non-transferable, non sub-licensable limited right and licence:
>
> (a) to *access, internally use and display* the Website and Online Content and Courses *as an individual only* at your location solely as necessary to browse and/or participate in the Online Content and Courses as permitted by these Terms; and
> (b) to download permitted content from the Online Content and Courses so that you may exercise the rights granted to you by these Terms.
>
> 6.2 You must *abide by all copyright notices or restrictions* contained on the Website or the Online Content and Courses. You may not delete any attributions, legal or proprietary notices on the Website or the Online Content and Courses. [emphasis added]

5 See https://www.coursera.org/about/terms
6 See https://about.futurelearn.com/terms

But FutureLearn's terms do at least also make the offer that:

> 6.3 Certain Partner Institutions may, *at their own discretion, make available certain Online Content and Courses under a Creative Commons licence (non-Commercial)*. Should Partner Institutions choose to do this, it will be clearly identified on the appropriate Online Content and Courses page of the Website and *we acknowledge that the Creative Commons licence will override certain of these terms and conditions as appropriate*. A full copy of the relevant Creative Commons licence will be available from a link at that point. [emphasis added]

EdX has similar provisions on their terms of service page, but also notably with an express intent to make content openly available through open licensing:[7]

> Unless indicated as being in the public domain, the content on the Site is protected by United States and foreign copyright laws. Unless otherwise expressly stated on the Site, the texts, exams, video, images and other instructional materials provided with the courses offered on this Site are for your personal use in connection with those courses only. *We aim to*
>
> *make much of the edX course content available under more open license terms that will help create a vibrant ecosystem of contributors and further edX's goal of making education accessible and affordable to the world*. [emphasis added]

User-generated content

All three of these platform providers also make extensive claims to the content that users create and share on their platforms. Coursera states:

> To the extent that you provide User Content, you grant Coursera a *fully-transferable, royalty-free, perpetual, sublicensable, non-exclusive, worldwide license to copy, distribute, modify, create derivative works based on, publicly perform, publicly display, and otherwise use the User Content*. This license includes granting Coursera the right to authorize participating institutions to use User Content with their registered students and on-campus learners independent of the Services. Nothing in these Terms shall restrict other legal rights Coursera may have to User Content, for example under other licenses. We reserve the right to remove or modify User Content for any reason, including User Content that we believe violates these Terms. [emphasis added]

EdX has similar wording:

> By submitting or distributing your User Postings, you hereby grant to edX a *worldwide, non-exclusive, transferable, assignable, sub licensable, fully paid-*

7 See https://www.edx.org/edx-terms-service

> *up, royalty-free, perpetual, irrevocable right and license* to *host, transfer, display, perform, reproduce, modify, distribute, re-distribute, relicense and otherwise use, make available and exploit* your User Postings, *in whole or in part, in any form and in any media formats and through any media channels (now known or hereafter developed).* [emphasis added]

FutureLearn provides an acknowledgement of individual ownership of the content, but still with extensive licensing provisions (section 7):

> 7.2 *We do not claim ownership of any Learner Content you may submit or make available* for inclusion on the Website or Online Content and Courses. Accordingly, subject to the licence granted to us and any applicable Partner Institution, *the Learner will be the sole and exclusive owner of any and all rights, title and interest in and to the Learner Content*. [emphasis added]
>
> 7.3 With respect to any Learner Content you submit to us (including for inclusion on the Website or Online Content and Courses) or that is otherwise made available to us, *you grant us an irrevocable, worldwide, perpetual, royalty-free and non-exclusive licence to use, distribute, reproduce, modify, adapt, publicly perform and publicly display such Learner Content* on the Website and/or in the Online Content and Courses *or otherwise exploit the Learner Content, with the right to sublicense such rights (to multiple Learners), for any purpose associated with the provision of the Website and the Online Content and Courses*. We reserve the right to remove any Learner Content without prior notice at any time and for any reason. [emphasis added]

Given the above approaches to copyright and licensing, the MOOC model of provision at a macro level, and even individual MOOCs at a micro level, should most accurately be viewed as a type of what Madison et al. (2010) describe as a "semicommons" or "limited commons", i.e., a commons with resources and characteristics "that are partly open and partly closed, usable by members and sometimes by the public at large, though not always on a purely 'free' basis" (Madison et al., 2010, p. 669).

MOOCs' patterns of interactions

The MOOC phenomenon could be said to have arisen out of a crisis in higher education, although, as is discussed below, this narrative of crisis is somewhat problematic and limiting. Nonetheless, it can be persuasively argued that MOOCs increase education access not only in developing countries but also some of the most developed economies, such as Canada, the US, the UK and other OECD nations, where the supply of higher education cannot meet demand, and the cost of a university education outstrips the cost of inflation by a factor of 3 to 1 (Hill, 2015). In both developing and developed economies, government subsidy for higher education has steadily declined, leaving many students saddled with massive debt (Anderson, 2013). In this context, the availability of low-cost or free (at least to access), quality-

assured, university-level education would seem like a promising solution to a broken system.

Most of the major MOOC platform providers will credit at least part of their rationale to the democratisation of learning as a social good. Among the three leading platform providers mentioned above, Coursera states its mission as simply to "provide universal access to the world's best education",[8] while EdX offers to "[i]ncrease access to high-quality education for everyone, everywhere; [e]nhance teaching and learning on campus and online; [a]dvance teaching and learning through research",[9] and FutureLearn places a strong emphasis on "social learning", aligning themselves more with the connectivist paradigm.[10] Some commentators offer a more cynical perspective, however, citing the involvement of venture capitalism and the so-called "Silicon Valley" narrative of MOOCs as a disruptive technology panacea to the "broken system" for their phenomenal proliferation (Weller, 2014).

While some MOOC platforms have started to generate revenue – Coursera, for instance, was reported to be generating from certificate sales around USD1 million per month in 2014 (Shah, 2014) – the lack of a clear business model, and significant institutional investment with relatively little (at least financial) return for the universities and other institutions developing the content, seems to point to a different set of motivations for these institutions. Such motivations could include, most obviously of course, the democratisation of access to education, and the publicity and exposure mentioned above. The latter could be seen as a form of marketing, leading eventually to higher profile and a greater market share in formal enrolments. This is the so-called "shop window" effect, which could have the added benefit of demonstrating public good, thus justifying ongoing funding and support (Anderson, 2013). MOOCs also provide an innovative space for experimentation with curriculum and pedagogy, and an effective vehicle for embedding discussions about openness generally within an institutional culture. As Weller (2014) points out:

> Openness in education offers many real opportunities to improve education in terms of the opportunities for learners, developing pedagogies based on open practice, distributing free resources and democratising education. Many of these radical changes are being driven by those who work in education, but the Silicon Valley narrative wishes to exclude this part of the story. MOOCs have highlighted how the battle for narrative shapes the direction that an innovation can take. (Weller, 2014, p. 133)

As for the learners taking MOOCs, there is once again a wide range of possible motivations. MOOC-takers are a less homogenous group than is conventional in higher education (Hadi & Gagen, 2016), and can be divided into four broad

8 See https://www.coursera.org/about

9 See https://www.edx.org/about-us

10 See https://www.futurelearn.com/about/our-principles

categories of usage type: completing, auditing, disengaging and sampling. One of the most common arguments against the value of MOOCs is that they suffer from high dropout rates, with massive numbers enrolling in courses, but very few actually starting them, and even fewer completing (Weller, 2014). Although the courses are conceived and designed as complete units, the less formal nature of learning within MOOCs suggests that they should be viewed more as "learning resources (much as a library) that learners can use in very many different ways, with equally diverse learning outcomes" (Anderson, 2013, p. 6). As many MOOC-takers are using the courses in unconventional ways, research has shown that completion rates are perhaps the wrong metric to use in measuring the success of a MOOC, and that the wide range of motivations and demographic variation in the MOOC audience should be taken into account (Hadi & Gagen, 2016).

From the foregoing then, arguably the most obvious (indeed perhaps even the foundational) reason for MOOCs to be considered as knowledge commons is their generation of the spillover effects that Madison et al. (2010) characterise as a defining feature of a knowledge commons.

MOOCs' evaluative criteria

Measuring the outcomes of a knowledge commons is complicated by the fact that benefits are often derived by persons outside of the commons itself – the so-called "spillover" effects (Madison et al., 2010). This is particularly true in the case of MOOCs, where by far the largest constituency in the community is the general MOOC-taking public. Further complicating an assessment of the effectiveness of MOOCs is the fact that the majority of research on MOOCs has been conducted in the global North and developed nations. Very soon after their ascendance, MOOCs were being touted as a possible solution to inequity of access to education in the developing world (Liyanagunawardena et al., 2013). The massive nature and quality-assured origins of the courses provide an opportunity to fill knowledge gaps in the workforces of developing countries for key skills areas. And there has already been some successful experimentation in this regard (Boga & McGreal, 2014). Although, as indicated earlier, MOOCs have been criticised for their low completion rates (some studies finding as low as 4%) (Weller, 2014), current research from the developing world (Garrido et al., 2016) has shown that completion rates in these regions are much higher – upwards of 49% – and that MOOC participants are indeed using the courses as a means of gaining specific professional skills and certification, preparing for further education, and finding a new job. Furthermore, this research has found that MOOC participants in the developing world tend to be younger, from more diverse educational backgrounds, and from lower income populations than their counterparts in the developed world, and that women are more likely to complete courses than men (Garrido et al., 2016).

An oft-cited reason for poor completion rates is the "top-down" pedagogy employed in xMOOCs, and that when these courses are not actually running on the platforms, the contents are closed, greatly compromising their viability as commons resources. This problem does not afflict the fundamentally more open cMOOCs (Kop & Fournier, 2015), where emphasis is on the "action arena" element of knowledge commons analysis. Not everyone shares these misgivings, arguing that constructivist pedagogy has been a part of university education for generations (Anderson, 2013), and acknowledging that some students derive great benefit from "disembodied learning content that is well contextualized in a learning framework and supported by indicators of progress and self-administered assessments", and "do not need mediation of course materials by experts, guides, and peers." (Katz, 2012, p. 20) The affordances of the MOOC model are mitigated, however, by challenges of, for example, access and connectivity in the developing world, and continuing research has provided a more nuanced perspective after the initial hype and enthusiasm (Garrido et al., 2016). Furthermore, although they are developed and presented by accredited institutions, and most platform providers offer some form of certification for completion, MOOCs are not yet necessarily recognised as a legitimate form of higher learning (Anderson, 2013).

Many now see MOOCs as an interesting and innovative, if somewhat limited, solution, with shortcomings including: lack of representation of diverse global contexts, and even cultural imperialism (Boga & McGreal, 2014), with the "current hegemony of western knowledge systems being further entrenched across the world" (Czerniewicz et al., 2014, p. 124); language barriers, as most MOOCs have been developed, and are offered, in English (Boga & McGreal, 2014; Liyanagunawardena et al., 2013); and limitations on re-use of courses and course content due to established, and often restrictive, conventions of IP protection of resources by providers (Boga & McGreal, 2014). Of course, "[a]s is typical for educational technology development, the uses of the technology are running ahead of law and policy" (Porter, 2013, p. 15).

5. Conclusion

Commons-oriented approaches to knowledge governance offer insights into normative cultural methods of knowledge production and dissemination, which function alongside the formal institutional paradigms of IP. The knowledge commons research framework presents a method for analysing knowledge commons so as to better understand the features that define them.

From the foregoing analysis it can be argued that MOOCs exhibit certain knowledge commons characteristics, and combine these with the default copyright regime in such a way as to qualify as examples of "semicommons". Membership in the MOOC community is open to all, although formal contributions are limited to certain types of institutions. And although the course contents themselves are open for anyone to use free-of-charge and dependent only on one's ability to access the Internet, the

courses are generally subject to formal copyright.

Having established the "semicommons" status of the MOOC environment, it becomes possible to assess the effectiveness of the model in relation to the positioning of the study, namely that the openness inherent in the commons promotes access to educational resources. To a certain extent MOOCs are – although they could and perhaps should be doing so to an even greater extent – leveraging dynamic IP environments, vis-à-vis open licensing and commons-type arrangements, to open up access to educational resources and generate valuable spillovers in the form of increased access to knowledge, which in turn stimulates development. To co-opt a sentiment from Madison et al. (2009), speaking in the context of universities, MOOCs and their contributing "institutions and practices" can be seen as constituting "constructed commons", and "treating them as constructed commons offers a more nuanced basis for diagnosing their strengths and weaknesses in the cultural environment than models based primarily on theories of proprietary rights, government subsidies, or the public domain" (2009, p. 402).

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