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BETWEEN THE VIRTUAL AND THE REAL:

LICENSING MODELS AND MODEL POLICIES FOR COLLABORATIVE CURATION AND DIGITIZATION IN HYBRID ENVIRONMENTS

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INTRODUCTION

This paper attempts to challenge the dominant digitization and curation model as one (a) instrumented in a top down, well planned and centralised fashion; (b) requiring vast initial investment; and (c) strictly separating the digital from physical experience. Instead, we propose a complementary model that (a) builds on the notion of the audience as curator (Bourriaud, 2000, Bourriaud, 2002) and increasingly demands its participation in the production of taxonomies (or *Folksonomies*) (Voss, 2007) of the displayed material (Adams, 1997); (b) makes extensive use of existing infrastructures for the classification of existing material, the communication with the public and the digitization of material (especially social software networks and cheap digitization techniques) and hence requires low initial capital investment; and (c) views the virtual experience as complementary and strongly related to the physical experience of the museum space (Kallinikos, 2006).

We argue that memory institutions increasingly have to produce and manage greater quantities of digitized or digitally-born material that invite a different cultural enjoyment

experience. They also have to use a variety of production, digitization and distribution channels ranging from digital cameras and centrally managed web-sites, to blogs and social software networks. Finally, they manage information infrastructures within the physicality of the cultural institution space, such as wireless networks, terminals and interactive installations.

As a result, the experiencing of a memory institution is often initiated before the visit to the physical premises of the relevant institution (e.g. by visiting the relevant web-site or blog), it has moments of hybrid interaction (taking of digital photos, participation in interactive on-line, in site exhibitions) and may be extended *post* the physical visit (e.g. through uploading of the digital or further material on relevant social software networks) (Doherty, 1998, Doherty, 2004).

Such experience involves (a) low/ mid-quality, mass-scale digitization, (b) the creation of massive in scale but micro in their production taxonomies of the material and (c) possibly the production of value-added material by social groups or individuals for existing or new exhibitions (Bishop, 2006). We call this new form of digitization a *second order* digitization precisely because it marks a substantial shift from centralized, hierarchical and well controlled *first order digitization.*

The management of this low-level, *mass-micro* digitization and *folk-curation* requires an alternative mode for managing the relevant material. It also questions the relationship between such new material and the existing traditionally made digital material. Finally, it calls for an investigation of the relevant legal infrastructures that could support such vision.

Such an understanding of this second order digitization cannot be viewed in isolation from the first order digitization: while the organizational, legal and curation problems that the two types of digitization present are distinct, they share some common ground, particularly in relation to the original stages of identifying the boundaries of property

rights on the works and documentation that is to be digitized. Hence, a great part of this paper is devoted in presenting legal and organizational issues related to traditional forms of digitization. These issues are then transferred in the realms of second order digitization, where the same questions are posed in a different context.

In this paper we present a four tier-model for fostering such a paradigmatic shift on the basis of existing practices in some of the key UK memory institutions: First, we present an analytical method for approaching the problem of first and second order digitization. Such scheme views the memory institution (MI) (White, 1992)(Bowker, 2005)(Hjerppe, 1994) as an organization at the core of a set of different flows, which it aims at managing. These flows include flows of physical artefacts, digital content, legal rights and value. The identification and tracing of such flows constitutes our core methodological approach. Second, we present the economic model underlying this participatory and digital-physical mode of experiencing memory institutions, the Commons Based Peer Production model (Benkler, 2002). Third, we explore aspects of existing organizational and techno-legal infrastructures used by a selected range of UK institutions embarking both to first and second order digitization process. Fourth, we identify the key processes and legal instruments (open content licences, contributors' agreements and copyright policies) that are most likely to support both digitization efforts.

The paper concludes by sketching our resulting understanding of the operation and interaction between the two digitization models. It also provides some basic insights about the nature of MI and curation experience and the role of virtual and physical environments. Finally, it presents a basic set of suggestions for the MI and identifies key areas where further research and experimentation are required.

RESEARCH DESIGN AND TERMINOLOGY

In this section we set the terminological boundaries of this research and explore the methodological approach and research design of this paper.

The focus of this paper is the way in which Memory Institutions (MIs) could manage different flows of rights, content, physical objects and value in the context of first and second order digitization. We use the term Memory Institutions (MIs), following Hjerppe's (Hjerppe, 1994) definition in order to describe to broad types of institutions: first libraries, museums, archives, cultural heritage institutions and all kinds of "collecting institutions"; and second journals, educational institutions and teaching practices that express different forms of passing knowledge from one generation to another (Bowker, 2005)(White, 1992). While we make extensive use the term MI, this paper is confined in work with strong visual elements that are primarily exhibited rather than merely stored in MIs and this limitation has to be taken into consideration by the reader of this research.

MIs institutions are of particular relevance for any study on the deployment of information infrastructures and its implications for the management of Intellectual Property Rights and Copyright in particular. This aspect of MIs is closely related to their increasing efforts to digitize their content. As their collections are transferred from the analogue to the digital environment and then to a digitally networked environment, the audience they are able to reach becomes much wider than it used to be. Such transition entails a series of changes in the way in which they interact with and perceive their audience. It also raises questions regarding their role and relationship with other commercial organizations or copyright owners of the material they host. These considerations are very clearly illustrated in the way Copyright law treats such organizations and is reflected in organizational structures, licensing documents and the IPR policies devised by MIs.

This is the reason why it makes sense to explore MIs in relation to different flows that reach such organizations. We identify four flows in relation to MIs: First flows of physical artefacts that enter and leave the MI. For instance physical copies of books, artwork, audiovisual documentation held by material carriers etc. Second, flows of digital

content that may be born in the MI (e.g. digital documentation), be re-introduced (e.g. digital copies of physical artwork), be acquired (digital acquisitions) or be held in a third party's infrastructure (e.g. Flickr) but having its physical presence in the premises of the MI. Third, there are all types of property rights that flow in and out of the MI. For example, physical property rights, IPRs on the works, rights to use works for specific publications, copyrights of material produced by the audience. Finally, there are flows of value that result from the packaging and exploitation of all the previous flows of rights.

Tracing the aforementioned four serves three objectives: first it provides as a map of the way in which IPRs and other forms of property flow within an MI and hence a first understanding of its IPR status. Second, it allows the identification of the main source of revenue or other forms of value (e.g. cultural value) in relation to flows of tangible artefacts, content and rights. In this paper we focus mainly on monetary value and we do not deal with cost issues, though these items could be the focus of further research. Third, after having identified such flows, it is possible for an MI to design its own policy on the basis of areas of priority, risks of various kinds and identification of value flows that are most relevant to them. In a broader scale, by identifying different flows types in various MIs and relation to first and second order digitization we have the ability to design IPR strategies on the basis of existing components.

Finally, in this research we refer to first and second order digitization in order to express two different but related modes of digitization. First order digitization features high quality, centrally and tightly controlled, institution initiated and high cost digitization. Second order digitization refers to the making of digital recording of works in the collection of an MI by the audience or to the creation of the audience of a set of meta-data and tags for classifying the MIs collection. These two categories may be termed as crowd digitization and crowd curation respectively.

Both the digitization and curation activities as described in this paper fit under the broader term "digital curation" that would include all forms of "active involvement of

information professionals in the management, including the preservation, of digital data for future use" (Yakel, 2007), however, we prefer the more specific terms of digitization and tagging that describe concrete activities and these are the ones we use throughout the paper.

In the following section we explore the main economic model behind our understanding of crowd digitization and tagging as expressed in the Commons Based Peer Production (CBPP) (Benkler, 2002). It also investigates its relation with the work on relational aesthetics (Bourriaud, 2002) that informs our cultural understanding of the same model.

FROM THEORY TO PRACTICE: COMMONS BASED PEER PRODUCTION AND RELATIONAL AESTHETICS IN THE FIELD OF MEMORY INSTITUTIONS

Commons Based Peer Production (CBPP) constitutes an abstraction of the way in which an increasingly growing part of the production occurring on digitally networked environments, such as the Internet, takes place. Ranging from Free/ Libre Open Source Software (e.g. Linux or Firefox) to Open Content (e.g. Wikipedia or ccMixter) and social networks (e.g. Facebook, YouTube or Flickr), CBPP describes a process where a great number of diverse contributors use some of their spare time and expertise and with the assistance of technological infrastructures contribute to the production of a common "artefact". This "artefact" could be any "generalized document" (Hjerppe, 1994) to use an Information Science term (Hjørland, 2000) (Schamber, 1996): from text (e.g. Wikipedia, del.icio.us), image (e.g. Flickr/ YouTube/ DeviantArt), sound (e.g ccMixter) or even mere communication and meaning (e.g. Facebook). The main concept behind CBPP is expressed in Moglen's Law, which refers specifically to software but could be extended to all types of content:

> "So Moglen's Metaphorical Corollary to Faraday's Law says that if you wrap the Internet around every person on the planet and spin the planet, software flows in the network. It's an emergent property of connected human minds that they create things for one another's pleasure and to conquer their uneasy sense of being too alone." (Moglen, 1997)

Moglen's law may be directly linked to Bourriaud's definition of relational aesthetics viewing the work in direct relation with the audience and its context, as "a set of artistic practices which take as their theoretical and practical point of departure the whole of human relations and their social context, rather than an independent and private space." (Bourriaud, 2002, p.113) Bourriaud is very much influenced by the hybrid environment (digital and physical) that the Internet produces and this is particularly expressed in his work on *post-production* (Bourriaud, 2000). The most important aspects of Bourriaud's work in the context of this paper are the open ended-ness he attributes to the work of art and the community nature of creation and aesthetic experience. Such concepts challenge the romantic concept of originality and authorship (Wershler-Henry, 2005) (Goldsmith, 2003) on which our Copyright systems are founded and have a profound impact in the way we approach the management of Copyright [see also (Rose, 2003, Rose, 1993, Rose, 2002)].

As technology changes, economic and aesthetic assumptions follow and together our legal system for supporting creativity, i.e. IPR laws is increasingly contested [see e.g. (Stokes, 2001) (McClean and Schubert, 2002) for art and e.g, (Boyle, 1997, Boyle, 2003, Boyle, 2006) and (Benkler, 2006) for science]. The discourse regarding the potential regulatory effects of such context are beyond the scope of this paper. However, this paper seeks to investigate the impact of such changes in the level of managing IPRs in MIs. It also acknowledges that the transition does not mean that the existing model of production is entirely redundant. On the contrary, it acknowledges its existence and explores its interaction with CBPP models.

The model of Commons Based Peer Production was initially proposed by Benkler to provide an abstraction of the organizational structures underlying the production of Free Libre Open Source Software (FLOSS) (Benkler, 2002, 2004, 2006, 2006). He highlights the role of necessary incentives for creative production (Moglen, 1999), their changing nature as a result of the advent of the Internet and the management of complexity that may arise (Raymond, 1999, Raymond, 2001). CBPP can be seen as resulting from the existence of excess capacity as a result of a great number of potential contributors and the natural tendency of this capacity to be transformed into something creative provided the right structures are in place. Thus Benkler's work is particularly significant as it helps identify those conditions under which CBPP is likely to be preferred over a hierarchy or market.

The CBPP model has three basic constituent parts: the kind of artefact that is to be produced by the project, the decentralized, non–hierarchical and self–selected mode of peer production and the integration of these contributions in some form of commons.

Benkler refers to features of a peer production project rather than simply an artefact or product as this allows CBPP to include the creation of services (e.g. ratings in a system like Amazon) or capacity (e.g. processing cycles in an application like SETI@Home) and not just products [such as software (Linux) or texts (wikipedia)]. Projects are also modular and the resulting granularity allows many contributors to operate in a parallel and more decentralized fashion and determines the level of effort required for a minimal contribution, again increasing the likelihood that individuals will join the project. Diverse modules are also likely to increase the number of contributors: a project that comprises of multiple modules is more likely to attract contributors with varying backgrounds and skills. Finally, the project should be open ended or potentially always unfinished: this provides space for continuous development and operates as an attractor for diverse contributions. For example, in a web browser such as Firefox or an encyclopaedia like Wikipedia there is always space for improvement.

In order to succeed, CBPP requires 'excess' capacity from contributions and whilst the modular structure of a project can facilitate this, structure alone is not a sufficient condition. Benkler identifies two conditions where this excess capacity can arise. The first is when there is unused capacity in terms of physical goods (e.g. car seats for car sharing, or processor cycles for computer processing). The second arises when the object of production is information and hence is non–rivalrous (e.g. software or content). It is important to highlight that in the case of information goods, the primary material gradually becomes the produced artefact. For instance, in the case of software development, the source code which is a non-rivalrous good is used to produce more source code. This is a key aspect of the CBPP model: excess capacity is a requirement but also an outcome of CBPP. Hence, we need to have in place mechanisms that ensure such excess capacity is both legally and technically available. This is the reason why Commons or Commons Based Property regimes, such as the ones sustained by Copyleft (Liang, 2004) (Stallman, 1999) (Free Software Foundation, 2004) licences are so important in the case of information goods: they ensure that access to common resources remains legally possible.

Zittrain's work (Zitrain, 2006) on *generativity* allows a better understanding of the importance of technologies that allow such access to a common resource while retaining the transactions costs of making contribution lower than the incentives for making contributions. The four conditions of generativity, namely (a) capacity for leverage (b) adaptability to a range of different tasks (c) ease of mastery and (d) accessibility, are essentially describing a technological environment that allows maximum access to the common or common-like resources.

Zittrain's generativity is mostly focused on the technology aspect of the production process whereas Benkler.'s CBPP is primarily interested in the organizational aspects of the production. However, both Benkler and Zittrain assume that once excess capacity and low integration costs are in place a decentralized and flat model of production will emerge. Such model implies a third type of excess capacity in the level of the individual

contributor. This is implicitly present in Moglen's law: the infrastructure and organization of the produced artefact may lower the threshold of creative input to such an extent that even miniscule contributions become valuable. In that sense, even the tiniest excess capacity that would be otherwise left under-utlized may now be captured. This is the reason why efficient integration mechanisms are necessary for the smooth operation of any CBPP system.

The final feature of Benkler's model is concerned with the integration. This refers to the process of gathering the contributions and positioning them in a coherent whole. Ideally such integration should be low cost and unobtrusive and may include co–ordination, channelling, filtering and error correction of individual contributions. Forms of integration include formal legal rules (e.g. GPL), social norms (e.g. netiquette), technical systems (e.g. CVS) or hierarchy (e.g. the editorial board of a scientific journal). An example of a centralized integration model is the peer review process for a scientific journal. FLOSS projects typically have more decentralized integration models.

CBPP appears to be a better production system than markets or hierarchies in cases where self–identification of the relevant talent is crucial for the achievement of particular goals, especially when complemented by effective error–correction mechanisms. The power of CBPP as an organizational model is its capacity to aggregate disperse contributions by peers that have excess capacity but are unable to produce any value on an individual basis.

CBPP is hence particularly relevant both in economic terms as the Benkler research (Benkler, 2002, Benkler, 2006, Benkler and Nissenbaum, 2006) indicates but also in aesthetic terms as the work by (Bourriaud, 2000, Bourriaud, 2002) suggests. Even more importantly, the use of such a system is of particular relevance for the organization of the digitization of the collections of MIs, particularly those holding collections of aesthetic value and those seeking to create an audience that takes advantage both of the virtual and physical aspects of their collections (Samis, 2008). Such institutions have an interest in

using multiple disperse contributions both for the production of digital copies of their works (Bernstein, 2008) and for their classification [see e.g. (Trant, 2007, Trant, 2008)].

MIs are becoming more and more platforms dedicated to researching, producing, presenting and encouraging their audiences being active during their visits in exhibitions, lectures, screenings, workshops, conferences and so on. MIs have turned to socially interactive spaces, labs or hubs engaging and involving the public in different activities, from educational events, feedback and advisory panels to collections interpretation and exhibition processes.

MIs use different platforms to reach audiences and in the last years we have seen the development of many technology-driven ways for engaging audiences and promoting their collections. There has also been an increasing development and use of heavily technology-driven educational initiatives. In fact many institutions adopt learning enabled by technologies such as web 2.0 sites, podcasts, wikis, blogs, etc. and we have also seen an increasing number of institutions promoting open source / open content.

The expansion of web 2.0 and user-generated content sites has created more opportunities for empowering the audience and enabling self-expression and has provided the right tools for MIs in order to reach bigger numbers of visitors (real or virtual). It has also significantly expanded the notion and practice of curation (Dietz, 1998).

Digital media are being used to form a link between physical space (institution) and virtual space; digital exhibitions or exhibition microsites accompanied by blogs or blog-like exhibitions (e.g. http://vercodigofonte.blogspot.com/) and additional material, resources, access to collections and more. However the introduction of Web 2.0 has opened up the possibility of new experiences through shared knowledge and participation. Web 2.0 offers cultural institutions new tools for facilitating the creation of communities, sharing and creating information and teaching and learning. Information is constantly re-mixed / re-used and redistributed.

Digital technologies facilitate many kinds of collaboration – between museum and learner, between different institutions and among learners themselves. Examples include those between real and virtual learners and of learners creating their own associations within and between collections.

Institutions integrate web 2.0. technologies in to their websites in order to:
- gain publicity; web 2.0, blogs, etc are cheap / free marketing tools and are quite easy to set up
- develop forums, wikis as ways for getting feedback and evaluating their activity
- Reuse existing content or highlight their collections
- engage bigger numbers of audiences; this includes also audiences on the move, using mobile devices. Web 2.0 bring new ways of engaging audiences and new experiences, e.g tagging, participating in institution staff discussions, accessing projects documentation etc
- become more accessible
- use open source

The use of web 2.0 technologies brings up some issues such as copyright infringement or audience interpretation that is often unreliable, increased moderation, tagging monitoring and more, but the positive aspects are far more important.

Museums already have a presence on platforms such as Facebook (e.g. ArtShare), Flickr, YouTube an many more and staff regularly use web 2.0 sites such as Facebook to create groups and send out news about their activities and invite people to join them.Even Second life has seen museum activity although this is quite limited as also Second Life audiences are small in comparison to web 2.0 sites.

Flickr is another example of web 2.0 used exceedingly by museums and their audiences; museums set up flickr groups posting images and encouraging tagging (e.g. V&A

groups). The V&A is also encouraging audiences who take photos during museum visits to upload them on flickr and join one of the Museum groups or start their own.

Another tagging example is Steve, a museum social tagging project http://www.steve.museum/ that also has a Facebook application (http://apps.facebook.com/steve-museum/) allowing Facebook users to tag art, share images with friends, see the descriptions contributed by their friends, and display works of art from the steve tagger application on their Facebook pages. Similar is the Hack-able curator project (http://www.hackablecurator.org.uk/) The Hack-Able Curator searches Flickr for images to use for an imaginary exhibition. Using a predefined set of tags, the system creates a pool of images to choose from. The images are chosen by means of a robot arm controlled by a simple algorithm, based on the full set of tags associated with the images.

Tagging is a very popular way of reaching audiences and by showing the tags other users have added suggests 'other objects to view' which becomes similar to Amazon's 'Customers who liked this item also liked'.

Projects such as the 'Every Object Tells A Story' at the V&A (www.everyobject.net) in collaboration with partner museums, have also allowed users to upload stories and pictures of their favorite objects next to collection objects and stories by curators.

As mentioned in section one, memory institutions can be experienced often by audiences before the visit to the physical space by accessing relevant web-sites, blogs, etc; audiences can interact, participate and even generate content by adding photos, participate in discussions, tagging; and they may also continue their interaction after their physical visit.

Institutions are looking to establish stronger relationships with communities and audience; they often invite audiences to act as advisory groups attending regular sessions,

generating content (tagging, blogs) and providing feedback for the institution e.g. Tate Raw Canvas, V&A Create! and many US museums such as the ICA Boston, MoMA, Guggenheim and more.

Following the 'My' phenomenon – e.g. MyYahoo, Myebay, MyAmazon, Mywidgets etc – personalised access and learning could be something else that institutions might develop further offering audiences 'Mycollection' or 'Mymuseum'.

This form of digitization and curation happens in parallel with more traditional forms or what we call first order digitization. As shown in the subsequent sections, appreciating the way in which both first and second order digitization operate allow us to form a better model for managing IPRs in hybrid virtual and physical environments.

BRINGING TOGETHER FIRST AND SECOND ORDER DIGITIZATION

The two layers or orders of digitization and curation have substantial differences with each other but also share some common ground. They are complementary rather antithetical to each other and them both call for an integrated digital strategy in the area of MIs. It is hence important to understand that as necessary the first layer of digitization may be, it cannot reach its full potential without the second digitization layer. Moreover, the second digitization layer is to a great extent based upon the first digitization layer. In the paragraphs to follow we will try to present a series of steps an MI should follow in order to be able to manage the flows of rights and works for both layers of digitization.

Step One: Mapping

Irrespective of whether the MI will opt for a first or a second layer digitization strategy, it is important that it has a clear understanding of the copyrights it may hold on the works it

has in its collection or under its custody. The MI should also make a mapping of the rights it may have on the documentation of works or exhibitions that took place in it premises. This would be particularly the case when the works are of transient nature, such as performances, or when the documentation involves additional to the work material (pictures, films, other texts etc). For both the works and their documentation, the institution should compile comprehensive lists of the types of protected subject matter they may include and the kinds of rights they have for each one of them. The rights that the Copyright act recognize on what is perceived as a work do not necessarily coincide with the work as perceived in our daily experience (this is particularly true for installations or performance art). For that reason, it is necessary to make a list of the types of protected subject matter vis-à-vis the works owned by the MI.

After the organization has identified the works and documentation it physically owns and the protected subject matter in principle eligible for copyright protection, the next stage in the mapping process is to assess which of this subject matter is eligible for protection. This is a key moment in the digitization process as it will define the range of assets the MI has in its possession. It is particularly important to operate in the level of protected subject matter (e.g. sound recording, film, artistic work, photograph) rather than work because such level of analysis provides us with the correct time framework for the protection of the work (for instance life of the author plus seventy years vs. fifty years after production). Once the MI has in place this catalogue of works and their protection range, we have a first estimate of the range of its intellectual property.

The fact that there are physical objects for which the MI does not hold any copyrights, it does not mean that they are of no economic value; neither does it mean that copyrights cannot be generated for them. As a matter of fact, these works are potentially the most interesting ones as they allow a much wider range of uses both for the MI and its audience. In order to complete this first mapping, the organization will need to have accurate documentation regarding the author(s) of the work and its documentation as well as about the time of the work/ documentation production. The works for which such

information cannot be obtained have also to be flagged out so that further research will be required. This classification of the works may provide a first assessment of the costs that will be required for the completion of the second stage which is the rights clearance stage.

Besides the mapping of the existing works and its documentation, the MI should put in place work-flows that will ensure that the copyrights for all relevant works and documentation that come in its physical possession also flow in the MI. This may be done by ensuring that once a new acquisition is made, there is a classification of its subject matter, the relevant permissions (if possible) are obtained by the artist and if the documentation of the work is undertaken with the assistance of a third creative party (e.g. director or photographer), these rights also flow in the MI. This is a form of *pre-clearance* that relates to the second step of the process which is dealt with in the subsequent section.

It is understandable that since most MIs will hold vast collections of artefacts and even greater ones of documentation, the process of cataloguing all the artefacts and subject matter they hold in their possession is going to be a continuous one. The choice of the artefacts that are to be catalogued in terms of their copyrights to a great extend is one that needs to be made by the administration of the institution on the basis of its needs and objectives. Prioritization in terms of economic and cultural value perceptions is instrumental here. Also, the identification and classification of relevant legal risks may also be instrumental for the design of the MI's IPR strategy at the mapping stage.

For the second layer of digitization, the MI should also try to follow a similar proposal identifying the types of works and protected subject matter that the audience will have access to. The mapping should also address the question of the type of subject matter that the audience is most likely to produce and upload on the MI's platform. This exercise will greatly assist in identifying the type of agreements that should be included in the pre-clearance step as described in more detail bellow.

Step Two: Clearance

This is potentially the most painful step in the digitization process as it involves the obtaining of permissions for the subject matter that the MI may have in its possession but is not a copyright owner of. This will be the case for most of contemporary works, where the sale of the physical copy does not entail transfer of the copyrights as well. In cases where the economic rights have been obtained, it is important to note that the MI also obtains waivers of moral rights, though such a practice may meet with resistance by the artistic community and hence not to be implemented. In the case of installations, performance, film based or software based works the obtaining of the intellectual property rights becomes a fundamental issue for any MI.

Another area where the clearance of rights for existing works is absolutely essential is that of the documentation that supports the relevant works. This may include fixations of ephemeral works (such as is the case with performances) and documentation of exhibitions that have taken place in the MI but comprise of works that do not belong to the MI.

It is essential that the MI clears the rights for as much of its collection as it is financially possible. When clearing the collection, the MI could decide on the range of rights it wishes to obtain on the works or documentation it holds. The ideal is to hold complete Intellectual Property Rights on the material that it physically owns. After the mapping in stage one, the MI will be able to assess the types of works that it holds and the copyrights that it needs to clear. Once the artefacts that are to be cleared have been identified, the MI is able to identify the ones that are most important to it. In the case that the MI does not have the financial resources to clear or the desired material, it could decide to make clearance ad hoc depending on the particular uses of the material that it wishes to do. This is what we call *priority clearing*.

An interesting model of priority clearing is the one use by the British Museum and Victoria and Albert Museum, where the audience is able to identify works for digitization and request for copies for private or commercial use also undertaking part of the digitization and clearing expenses. This is a very important development as it essentially introduces a market- (if it is for commercial use) or community- (if it is for private or educational use) driven approach to digitization. This model departs from the pure institutional model of first order digitization and as we will see in the exploitation sections neighbours with Print on Demand practices that are extensively used in the Publishing Industry.

Besides the breaking down of the material into categories of importance for clearing, another strategy is to perform *partial clearing*, i.e. to obtain rights for only specific uses of the material. This is a strategy that could work e.g. for a particular publication in a specific medium but in the long run it may lead to further problems if the MI decides to reuse the material, e.g. for a retrospective exhibition or for other than archiving purposes.

A third avenue is to digitize material of content that an MI holds in its collection without going for explicit permissions under the statutory exceptions allowing archiving and digitization for conservation purposes. While this may cover part of the collection's protected subject matter, it will confine the outcomes of the digitization within the collection and will not make it accessible to the broader audience. It is also doubtful the degree to which exceptions in the analogue environment will work in the digital environment (Hugenholtz, 1997) though this has been the object of extensive relevant debates (Tsiavos and Latonero, 2006).

These problems appear in the case of first layer digitization and while the strategy of partial clearing may be particularly risky and potentially inefficient, in practice there may be no other option. In the case of second layer digitization, partial clearing is probably not possible at all, since the MI cannot anticipate the uses of the works that the crowd digitization will involve. The reuse of the material that is at the core of second layer

digitization will most probably not be possible without complete clearance or would require some form of non-exclusive open licensing scheme. The most likely such scheme would be the Creative Commons Attribution, Non Commercial licences that allow a range of uses to the audience while allowing the author to retain all commercial rights.

Clearance is the stage where we most clearly see the relationship between first and second layer digitization. Second layer digitization is only possible for works for which either there are no IPRs or the IPRs have been cleared by the MI and they are now available for further use and re-use by the audience. This is a rather revealing moment for the MI: it really owns a work and is able to make the most of it only when it has obtained all relevant IPRs or such IPRs have elapsed. Precisely because the costs of search, identification and clearance may be quite high, the most cost-effective category of works to be subjected to second layer digitization are the ones which they are not any more copyrighted.

Another aspect of clearance that brings together first and second layer digitization is that of pre-clearance or the process by which rights for new works and their documentation reach the institution. Irrespective of whether the works and the documentation are for first or second layer digitization, it is necessary that the MI attempts to have as many of the property rights as possible under its control. This may be done primarily through contributors agreements which could assign or license the rights on the work and documentation to the MI. The rule of securing as many rights as possible for the MI needs to be conditioned upon a series of criteria.

In the case of first layer digitization, precisely because the MI undertakes most if not all of the financial cost of the digitization, it is necessary that it ensures through contributors agreements that it has all the necessary rights and that any moral rights may have been waived. The way in which the MI will decide to exploit such rights is a strategic decision and as we will argue in the third stage, open licensing is a very attractive option. However, at the stage of clearance, open licensing would be from the perspective of the

MI the second best option: the first priority should be obtaining all rights and only if the author does not agree, the MI could suggest the most liberal from the open licensing schemes, which would effectively place the work or the documentation effectively on the same level as the works on which no copyright subsists. If the MI owns the physical expression of the work (e.g. physical constituent parts of an installation) it could use this physicality to further exploit the work.

In the case of second layer digitization, the MI should again try to obtain the rights from both works and their documentation, though the process of achieving such permissions has to be implemented in a more automatic and unobtrusive way compared to the one that we would have in the first layer digitization. This would be done primarily by making the contributor's agreement part of a registration procedure for enjoying some of the services provided by the MI. The relevant agreements should also include all types of disclaimers and personal data provisions to ensure that the MI has no liability whatsoever from the use of its platform.

In a scenario where the MI does not own the platform or does not store itself the works that the audience produces, it is very unlikely that the user will be willing to assign her IPRs. It is also likely that a contributor's agreement of that kind would substantially decrease the incentives for participating in such an initiative or even be in discord with the EULA's terms of the service provider (e.g YouTube or FaceBook). Again, the solution here is to suggest, where possible, a licensing scheme that would be as open as possible so that the MI is not restricted (e.g. by NonCommercial terms) for any future use of the digital-brn works of the audience.

A third solution which is in accordance with the practice of the software industry in cases of commercial FLOSS applications would be that all participants of an MI platform dual license their contributions. Such an approach would include assigning the copyright to the MI which would then also licence the work under an open licence. Such licence could be of the kind most suitable to the needs of the institution (most probably a Creative

Commons Attribution, ShareAlike, NonCommercial licence). This model essentially brings the pre-clearance and packaging/ exploitation stages together and it may be a desirable one in the case an MI wishes to more actively engage community groups. The following section further elaborates on this point.

Step Three: Packaging, Exploitation and materialization of non-economic goals

This is perhaps the most interesting aspect of the IPR management facet of the digitization process. It gives us the opportunity to explore various possibilities for recuperating at least part of the digitization investment and suggests a series of ways in which non-economic goals may be achieved. It also directly links both Benkler's and Bourriaud's theory. First, the mapping and clearance stages essentially frame the exploitation and dissemination options that an MI may have. If the MI does not own all the rights on a particular work, it is not possible to divulge it in all possible ways it may wish to. Second, the packaging and exploitation stage is the one where we most clearly see the interaction between virtual and physical aspects of the exhibition space: what the audience and the MI may do both in the physical and digital space is to a great extent defined by the rights framing these places. Third, the fact that an MI may have the copyrights over a specific work it does not mean that it should use them to regulate or limit access, but instead it could use them to increase access, to create new forms of access and possibly even to allow the creation of new works. Finally, giving more rights to the audience and viewing it as a source for new works by giving up some of the rights the MI may have on some works does not necessarily entail withdrawing from the exploitation of the works. On the contrary providing more rights may often mean creating new exploitation forms while serving non-economic goals such educational or cultural policies.

1. Framing

The rights that the MI has over the works in its collection define the framework in which the exploitation may move. We may identify five broad categories of works an MI may have to deal with: (a) works with all rights cleared for the MI (b) works on which no IPRs subsist any more (c) works for which permissions have been obtained but only for a specific use (d) works for which rights have not been cleared or works for which the rights holder refuses to provide a licence (e) works for which the licence fees are very expensive. The limitation that each type of work offer varies according to whether we are interested in a first or second digitization. More specifically:

The works for which all rights are cleared are apparently the ones that offer the best possibilities for future exploitation, in both cases of digitization. We will refer to the possibilities of exploitation in the following section.

The works on which no IPRs subsist offer an interesting range of exploitation possibilities. As we have already indicated, in first layer digitization, the digital images of such works entail the birth of IPRs for the institution that can then exploit them in a variety of ways. The MI could use the physical property it has on the artefacts for prohibiting any first generation digitization from an uncontrolled source. In relation to the second layer digitization cases, the MI may prohibit the taking of digital images of its collection by the audience or regulate the types of rights the users could have of the digital images or recordings they make.

The works for which the MI has only limited rights can be used only for the specific purposes that have been negotiated with the rights-holder. We have indicated above why such solution is problematic. In most of the cases of limited rights works, the MI would not be able to benefit from second generation digitization, unless it finds a way to separate the artefact from the contribution of the audience (e.g. meta-data, tags, classifications, descriptions). In most of the cases of limited rights acquisition, the digitized works will be primarily used for conservation purposes or for publicity purposes in the context of an exhibition.

The non-cleared works or works for which no permission has been obtained may be used only within the limitations to the copyrights that the law confirms. That will most probably mean that only conservation digitization is possible and will exclude any second generation digitization since its dissemination will violate the three step test governing all copyright exceptions [for the problems with the exceptions provisions and three step in particular see (Fishman, 2006) (Hugenholtz, 2000a, Hugenholtz, 2000b, Hugenholtz, 2006)].

Finally, for works for which there is a licence fee but its cost may be prohibitive for the MI, the latter may consider ideas of licensing pools or cross licensing: this is an interesting idea coming from the area of patent law, that has not been actively investigated in the area of cultural institutions but it may be worth considering. In the same way that institutions share physical property through loans for exhibitions a similar structure may be envisaged for their IPRs. The problems here may relate to the ways in which the flows of value may be managed but this type of problem tends to be solved through clearance and rights management services.

2. Packaging and exploitation

In order to understand the way in which packaging and exploitation operates in the context of the MIs we need to return to the concept of the four flows identified in section two. There are flows of physical artefacts, flows of digital content, flows of rights and flows of value.

The MIs, unlikely commercial galleries or art spaces, are not interested in selling the original physical artefact. They are instead interested in exhibiting the artefact and any relevant information about it as well as creating an audience that will visit the physical premises of the MI in order to physically see the artefact or to sell physical copies of the artefact. As a result the flow of the physical artefact (or the original) should be substituted

by a flow of the visitors to the artefact or a physical act of transferring the artefact in other exhibition spaces. The MI should thus attempt to use the flow of the digital content in order to increase the flow of the audience to the work and the flow of rights in order to increase the flows of value into the MI.

In terms of flows of content there seem to be three types of digital content that the MIs package and offer to potentially three types of audience. The first is low or mid quality digital images: these do not necessarily include all the digitized collection but in most cases only parts of it. These images or recordings are addressed to a non-professional audience and tend to be given free of charge under licensing agreements that limit the use in terms of type of user (educational institutions etc) and kind of use (non-commercial and/ or private use). In some cases standard open content licences, such as the CC licences are used, but in most cases only in-house custom built licences are employed.

The reason is mainly that these institutions are very likely to have specific needs or perceptions about the way in which the works are to be used. It also indicates that most of these organizations do not have a conscious web 2.0 policy in relation to the use of their digitized content. Any web 2.0 policy would acknowledge that the audience should be able to engage more actively in the process of re-creating the content, to remix and reuse it. Most of the existing end-user in-house licensing schemes (e.g. the British Library or SCAN licences) do not acknowledge such option. They further impose restrictions both regarding the transmission of the image and the creation of derivative works. By not agreeing on a common licensing standard or by not adopting a more standardized licensing scheme (e.g. Creative Commons), these institutions essentially do not allow the full potential of second order digitization to occur.

The idea of the restrictive gratis-use licensing schemes is that the audience may use the material but the control of it will in practice remain with the institution. It also entails that the institution will be able to sell better quality images and more permissive licences or services at a different price range. Thus through quality and licensing schemes the MIs

are able to separate the audience in two groups: (a) a general audience, which is allowed a wider (CC-type licences) or narrower (in house private use only) range of non-commercial uses and (b) a professional audience that has to pay for better quality, more rights or value added services.

The value added services may vary from delivery of physical copies of the pictures or other recording material that the user has requested to the digitization of a specific image requested. These are particularly interesting developments as they indicate a digitization and delivery process that is very close to Print on Demand (POD) models used in publishing and indicates a move toward this direction. It also indicates a demand driven direction in first order digitization which we have not seen before.

Another form of value added services includes the provision of educational material or even educational services free of charge or with some premium fee. Here we see a very interesting use of material resources and content where the value source may greatly vary: It could be that the MI offers a series of free of charge talks and another series of paid seminars in the premises of the museum. It could be that it offers even the premises of the MI for the conducting of the seminars. Finally it could be that it offers free of charge tours or seminars but suggests educational material that is either sold or created by the MI.

Besides the digitized content that is produced as a result of the first order digitization, the MI may package and offer the result of second order digitization. We have already mentioned in the pre-clearance stage that the MI may either acquire the rights over such works and documentation or ensure that they are licensed under some form of open licensing scheme. In both cases the MI may retain a virtual presence in one of the social networking sites (mainly Flickr, YouTube and Facebook) where the works of the audience are dynamically curated and a digital collection is gradually cultivated. We have noted before that the technical accuracy of the digitisations at this stage may be of inferior quality, however their importance for the construction of an audience is far

superior from any of the images made by the MI itself. By being allowed to appropriate the artefact through a crowd digitization process, the audience develops a link with the material space of the MI, the artwork itself and possibly with the brand of the institution. This is consistent again both with the economic prerogative of CBPP and the aesthetic assumptions of the relational aesthetics model we have explored in section three.. In that sense, it is important both to allow as open access to the original work and to allow the maximum freedom in the appropriation and manipulation of the digital images. The objective of the MI in such scenarios is not to produce and control artefacts but rather to *create and cultivate audiences.*

Such practices are of particular value for the achievement of the non-economic goals of the institution but they may be proven valuable also for its economic objectives. The creation of an audience is more likely to lead to the construction of an identity in relation to the MI and a sense of belonging to a particular group. Such sense of group-belonging may lead to more frequent visits to the physical space of the MI and attendance to activities for which a premium is to be paid. Such activities may include becoming a member of the relevant MI or attending exhibitions or other related events. The exhibitions being events containing the element of the ephemeron in a familiar physical surrounding further reinforce the sense of identity, expand the social software networking experience and provide an element of novelty. Interestingly, social networking software depends to a great extend on some degree of materiality both as the source of material and as the occasion for further expansion and consolidation of the group. Accordingly, the purchasing of artefacts from exhibitions or other MI artefacts also enhances the links of the audience with the MI.

In all the aforementioned cases, open access schemes are the ones that enable the maximization of the interaction and consolidation of a community of users that perceive themselves also as creators. These communities tend to be actively cultivated by the MIs and are beneficial for the MI in economic terms: first, the existence of a two tier structure of the provided content (following the first and second order digitization types) ensures

that the free content does not cannibalize the premium content; and second the community aspects of the audience creation are very likely to be further expressed in terms of financial returns for the MI in the form of memberships, participation in premium events and attendance of exhibitions. The meaning associations that are produced in the virtual world as a result of the capturing of aspects of the physical world are capitalised again in the physical world through the purchase of goods and services. Thus a full circle of interaction between the virtual and real is closed.

CONCLUSION: IPRS AND THE REALITY OF THE VIRTUAL

The realities of the virtual presence of MIs that we have explored in this paper indicate that it is increasingly difficult to speak of pure physical or digital facets of an MI as we experience a convergence of the two aspects. This research allowed us to explore the conditions and implications of such convergence and made contributions on a variety of levels, theoretical methodological and practical.

In the section three, we have seen how the economics of Open Content/ Source and web 2.0 production as described in the CBPP model are comparable with the aesthetic theories of Bourriaud. We have also presented a series of web 2.0 applications in the area of MIs that are indicative of a broader trend to see the audience as an extension of the creative, digitizing and curation process.

To appreciate the ways in which an MI manages its ecology of acquisitions we have devised an innovative methodology that deconstructs an MI in terms of four types of flows: flows of physical works, digital content, rights and value. Such analytic scheme enabled us to deconstruct the process of first and second order digitization and curation and confirm the applicability of Benkler and Bourriaud's models in terms of flows of economic and other types of value.

Tracing different types of flows allowed us to realise a series of aspects of first and second order digitization and to appreciate the hybrid nature of the space that web 2.0 applications create.

More specifically, the mapping of flows of rights sets the foundations for the design of concrete IPR policies and strategies for MIs that seek on the one hand to maximize cultural impact and on the other hand to increase revenue streams. This is primarily done through the provision of different types of outputs (physical products, digital content and services) and licensing schemes to the MI audience. Such audience is almost invariably divided into professional and educational/ end-user audience. The MI engages with professional users in direct exchange type transactions (premium content or physical products – services for a fee).

The non-professional end users are on the contrary targeted mainly through CBPP/ web 2.0 applications and value is extracted from such audience either by encouraging their participation to value added services that require a premium fee or through their participation in various tagging schemes. Web 2.0 applications are primarily used for the production of audiences rather than the production of content, artefacts or meta-data that are produced by the audience. This is the clearest application of Bourriaud's *post-production* principle. It also entails a close relationship with the physical space of the MI that operates as a point of reference: most web 2.0 and second order digitization activity starts from the physical space of the MI and concludes there.

The possibilities that second order digitization and web 2.0 provide and the flow of rights analysis indicate that the less IPRs subsist on the physical object and on the condition that property rights over the physical property exist, the more are the possibilities of exploitation. Most web 2.0 applications relate to collection items on which the IPRs have elapsed or that are licensed under open content licences.

Open content licensing seems an interesting exploitation model for the cultivation of audiences that could consume premium services or physical content. Unfortunately at this stage we do not have any data about how audience construction and indirect revenue streams operate in conjunction.

Open licensing schemes also seem to be the safest instrument for the production of user-generated content since such content could then be used by the MI without any legal restrictions. Such content may be seen as analogous to the content on which IPRs have elapsed. In both cases (no IPRs/ Open licensing schemes) the MI may financially benefit out of such content if it has control or influence (e.g. through web 2.0 curation) over the platform on which the material is exchanged or somehow manages to relate the content to its physical premises. This is done mainly through events to which the general audience may participate and then transfer the experience to the virtual space through the use of second order digitization techniques.

Overall, the social networks and second order digitization process entails a profound return to the materiality of the MI: as the digital presence of an MI is intensified by ubiquitous digital technologies and more participative applications such as those of web 2.0 the audience needs to form communities based on the individuals' real identities and if possible to a tangible space. As the virtual elements of the MI are intensified, the need for materiality increases: the reality of the virtual space remain inexorably linked to the materiality of the Memory Institution.

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