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**The Dynamics of Expectations &
Linked Ecologies: A case study of
the Copyright Hub**

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Doctor of Philosophy

The University of Edinburgh

2019



THE UNIVERSITY *of* EDINBURGH

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Declaration

I hereby declare that the following thesis is my own work. Some data which I collected and used in this thesis were also used by a CREATE-funded research group, of which I was a member. Although several drafts of papers had been produced from these data and were sent to a number of scientific journals for revision, none had been officially published nor being accepted for publication by the time this declaration was written. I had made significant contribution to the outputs of this research group by designing and conducting data collection, analysing data and drafting a substantial part of the paper, as well as providing feedback and making necessary changes to these drafts once they got back from the reviewers.

To the best of my knowledge, I hereby also declare that this thesis contains no material previously published or written by another person, nor material which to a substantial extent has been accepted for the award of any other degrees or diplomas of the university or other institutes of higher learning, except where due acknowledgement is explicitly given in the text.

January 2019

Hung The Nguyen

Acknowledgement

Doing a PhD is hard. But it is immeasurably harder to be parents, especially first-timers. Combining these two tasks together makes them an almost impossible mission to complete. It was indeed an impossible mission for me to accomplish alone. Therefore, this PhD is the result of five years of relentless work coloured by blood, sweat and tears (literally and figuratively) of not only myself, but also of my families and numerous people who generously offered their time and kind help in supporting me until the end of this long journey.

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Abstract

This thesis examines the development of the Copyright Hub, an emerging infrastructural initiative, designed to streamline the processes of expressing, identifying and communicating Intellectual Property (IP) rights information, especially copyright licensing, across sectors of the creative industries.

The study highlights the origins of the Copyright Hub and the provision of public support for its R&D as a product of divergent pressures: the creative industries sought government action to redress their concerns about difficulties in enforcing copyright in a digital world; government sought to stimulate the economy through fostering sustainable digital industries. The project however did not fulfil its promise of enabling the innovation of new market infrastructures for trading copyright-protected content.

To go beyond prevalent snapshot studies of innovation, this research draws upon the Biographies of Artifacts and Practices (BOAP) approach, which informs the methodological choice of multi-site, longitudinal fieldwork. A rich account of the unfolding of a field of innovation is provided, combining archival and contemporary ethnographic sources.

The analysis applies concepts from the sociology of expectations (and in particular 'arenas of expectations') to understand the process by which visions and expectations are mobilised to accumulate public and private funding and support, as well as understanding the dynamics of development of the Copyright Hub project. These notions are complemented by Abbott's concept of "linked ecologies", which helps in scrutinising the interrelation of actors within the policy-making ecology and its neighbouring ecologies of business and IP standard

development. In addition, Abbott's discussion on "things of boundaries" provides a helpful template for conceptualising the processes through which protected spaces are constructed.

The thesis makes three main contributions to knowledge.

1. It provides a rich, empirical description of the Copyright Hub initiative from its embryonic stages when novel ideas are being formed, new alliances are being made, and resources are mobilised to build a protected space for innovation development. In addition to high expectations, this research managed to capture and portray how 'low' and 'slow' expectations can help in propelling the Copyright Hub project by (a) ensuring existing market actors that the new initiative would not cannibalise their commercial interests, and (b) providing for stability in policy making which counter-balanced the rapid re-bundling of policy issues around IP. The substantive area of developing digital infrastructures for IP licensing and management is per se of wider interest to policy makers, creative industries and scholars of innovation studies.
2. It contributes to the sociology of expectations by furthering our understanding of "arenas of expectations" as the battleground where adjacent ecologies meet in search of alliances, resources and support. Policy makers, businesses and infrastructure entrepreneurs do not compete alone, but rather in alliance, and thus any successful strategy must provide "dual rewards" for members of the alliance in both ecologies at once. For example, the Copyright Hub successfully acted as a "hinge", which helped the UK creative industries prevent further copyright exceptions being imposed upon them, while allowing the government to fight off criticism of the dearth of visions and policies for long-term economic growth. Similarly, arenas of expectations are not isolated phenomena, but they are linked together through members of an alliance in its overall struggle for power.

3. It helps in reconceptualising “protected spaces”. The protected space for the development of the Copyright Hub’s technology was established through explicit act of various actors yoking together three “sites of differences”: the Copyright Hub Ltd., the Digital Catapult, and the Linked Content Coalition. These sites of differences brought with them constraints, preferences, and vested interests into the development process and played a crucial role in shaping the innovation’s trajectory. When the interest needed to hold these social boundaries in place was no longer adequate, the protected space would be dissolved. Yet, elements of such spaces do not completely disappear but morph, transform and eventually constitute new protected spaces or other types of social entities. In the case of the Copyright Hub, for example, the protected space was eventually dissolved when the Digital Catapult withdrew from the project, yet elements developed within this space morphed and constituted a new project named ARDITO, whose objectives were to develop actual services in the marketplace from the Copyright Hub’s pilot use cases.

Keywords: dual dynamics of promises; promise-requirement cycles; sociology of expectations; linked ecologies; Social Shaping of Technology; BOAP approach

Lay Summary

This thesis studies the development of the Copyright Hub – an emerging infrastructural initiative which aimed at facilitating the management and communication of intellectual property (IP) information, as well as streamlining copyright licensing processes, across sectors of the creative industries.

The study highlights the origins of the Copyright Hub and the provision of public support for its R&D as a product of divergent pressures: the creative industries sought government action to redress their concerns about difficulties in enforcing copyright in a digital world; government sought to stimulate the economy through fostering sustainable digital industries. The project however did not fulfil its promise of enabling the innovation of new market infrastructures for trading copyright-protected content.

The findings of this study are built on three empirical data sources: (1) long-term fieldwork including participant observation and fieldnotes, (2) in-depth, semi-structured, qualitative interviews with key stakeholders, (3) publicly accessible documents published by the UK government and other organisations that are relevant to the case.

The analysis focuses on the concept of expectations and how they are mobilised to help accumulate funding and support for the project from both public and private sectors. Furthermore, it draws attention to the ways policy makers, businesses, and innovation entrepreneurs form alliances across the boundaries of their socio-political groups to compete for the domination of their endorsed visions and expectations of the project.

This study makes three contributions to knowledge:

1. It provides a rich, empirical case study of the Copyright Hub, which exemplifies the dynamics of expectations and the ways they are mobilised to support an innovation in-the-making. The substantive area of developing digital infrastructures for IP licensing and management is of wider interest to policy makers, creative industries and scholars of innovation studies.
2. It contributes to theories on the dynamics of expectations in innovation process by highlighting the act of alliance making across socio-political groups and the ways actors compete in alliance in an array of separate, yet linked, arenas. Any successful strategies therefore must provide rewards for all members of the alliance at once.
3. It helps reconceptualise the notion of protected space for innovation. The study reveals that such a space is formed through explicit act of various actors bringing together different groups of people, who share overlapping visions and expectations of the innovation. These groups bring with them constraints, preferences, and vested interests into the development process and thus, these elements play a critical part in shaping the innovation's trajectory. When the interest needed to hold these groups of actors together is no longer adequate, the protected space is dissolved, yet elements of such a space do not disappear completely but they morph and transform into a new protected space for innovation.

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List of Acronyms

Acronyms	Backronyms
4S	Society for Social Studies of Science
ACAP	Automated Content Access Protocol
ANT	Actor-Network Theory
ARDITO	Access to Rights Data via Identification Technology Optimisation
BoA	Biography of Artefacts
BOAP	Biographies of Artefacts and Practices
CDEC	Connected Digital Economy Catapult
CHLG	Copyright Hub Launch Group
CLSG	Copyright Licensing Steering Group
CMS	The Culture, Media and Sport committee
CREATe	RCUK Centre for Copyright and New Business Models in the Creative Economy
DCE	Digital Copyright Exchange
DCMS	Department for Digital, Culture, Media and Sport
DDEX	Digital Data Exchange

DEA	Digital Economy Act
DOI	Digital Object Identifier
EPC	European Publishers Council
ERP	Enterprise Resource Planning
ERRA	Enterprise and Regulatory Reform Act
HMRC	Her Majesty's Revenue & Customs
IDF	International DOI Foundation
IP	Intellectual Property
IPO	Intellectual Property Office
ISHTIP	International Society for the History and Theory of Intellectual Property
ISPs	Internet Service Providers
LCC	Linked Content Coalition
MLP	Multi-Level Perspective
ODRL	Open Digital Rights Language
ONIX	Online Information Exchange
PAC	Public Accounts Committee
RDI	Rights Data Integration
SCOT	Social Construction of Technology
SNM	Strategic Niche Management

SST	Social Shaping of Technology
STS	Science and Technology Studies
TIC	Technology and Innovation Centre
TSB	Technology Strategy Board

Chapter 1- Introduction

I. Overview of the case study of the Copyright Hub

In this thesis, I studied the development of an emerging infrastructural initiative, known as the Copyright Hub. The main objectives of the Copyright Hub were to streamline the processes of expressing, identifying and communicating rights information, especially copyright licensing, across various sectors of the creative industries. The Copyright Hub project emerged from the UK's turbulent backdrop of economic downturn in the early 2010s as an unintended consequence of the government's schemes to stimulate "strong and sustainable economic growth" via open-ended commitment to invest in infrastructure and innovation. Promising to make Britain "the most attractive place in the world to start and invest in innovative technology companies", the government further strengthened their resolution by proposing a thorough review of the UK Intellectual Property (IP) framework to make it "fit for the internet age" (Cameron, 2010). Nevertheless, this "frame" of thinking was fiercely challenged and eventually replaced by a vision, endorsed by the creative industries, of using digital technology to solve the problems of copyright in the interconnected world. Owing to the complete lack of similar projects to compare and evaluate the feasibility and performance of the Copyright Hub, resources and support for the project were mobilised from both the public and private sector by means of expectations and promises.

Therefore, this research was initially motivated by curiosity about the roles which the dynamics of expectations played in shaping the Copyright Hub as an innovation project. Since the Copyright Hub was a product of divergent socio-political, economic and technical

pressure, the case study also inspired me to study the dynamics of expectations within the context of multiple ecologies, instead of mono-ecology as in the majority of the sociological studies on expectations.

On the one hand, the sociology of expectations is employed as the theoretical point of departure to help further analyse the dynamics that shape the Copyright Hub project. Being central to this literature is the concept of “dual dynamics of expectations”, which depicts the interrelation between two different types of promises (Parandian, Rip and Te Kulve, 2012). “Umbrella promises” are diffuse, open-ended promises, which function as protection for more specific promises once the general promises become accepted. Under these umbrella promises, there are specific promises, which can be translated into requirements on further development. These “promise-requirement cycles” occur in a protected space supported by expectations until a working artefact is realised or the cycles end immaturely due to unsatisfactory progress (van Lente, 1993; van Lente and Rip, 1998b). This framework thus provides a number of useful concepts to help examine the case study of the Copyright Hub, whose initiation, trajectory and progress are very much coloured by the dynamics of expectations and promises.

On the other hand, this research draws upon literature from the Social Shaping of Technology (SST) perspective, which highlights the “inconvenient methodological truth” for the social study of technology: i.e. processes of socio-technical change, which occur across wide-ranging spatial and temporal contexts, are at odds with the dominant research design in STS, which leans towards intensive ethnographic engagement usually conducted at a single site over a short period of time (Russell and Williams, 2002). Extending the SST perspective, the Biographies of Artifacts and Practices (BOAP) approach provides a comprehensible framework for conducting multi-site, longitudinal research on innovation by combining the

reconstruction of the historical development of the field through previous studies with “strategic ethnography” of key sites where innovation is taking place (Pollock and Williams, 2009a, 2010a). Here, parallel concepts, such as Abbott’s (2005) “linked ecologies”, are particularly helpful in further scrutinising the interrelation of actors within an ecology and its neighbouring ecologies, as well as the rationales by which these actors operate and the ways they affect the shaping of technology and practices over an extended time frame.

II. Research Questions

In this thesis, it is my intention to find answers for the following research questions:

1. How do the dynamics of expectations help advance and shape an innovation project?
Apart from high expectations, were there any other types of expectations used by innovation actors to mobilise resources and support for the Copyright Hub project?
2. Why do certain expectations gather greater credibility and legitimacy than others?
How should the notion of credibility of expectations be conceptualised from the perspective of linked ecologies?
3. What is the role of the protected space in an innovation project?
What is the mechanism behind the emergence and dissolution of the protected space?

III. Organising the Thesis

This thesis is comprised of seven chapters, including this chapter which serves as an introduction to the thesis. In the following section, the structure of the thesis will be introduced, with a brief summary of each chapter.

Following the Introduction chapter, chapter 2 presents a comprehensive review of the existing literature on the sociology of expectations. A brief history of the development of the

field is presented, followed by a detailed discussion of the term “expectations” and two of its most common “siblings”, i.e. promises and visions. After that, I will discuss the main findings of the literature on sociology of expectations, which is grouped under four tenets: (1) the constitutive force and performativity of expectations; (2) expectations and temporal variabilities; (3) expectations and socio-spatial variabilities; and (4) expectations and embodiment. Finally, the chapter concludes with the identification of three gaps in the literature: (a) the dominance of studies on “high expectations”, while other types of expectations are neglected; (b) the dearth of understanding of the credibility of expectations; and (c) the need to reconceptualise the notion of “protected spaces”.

In chapter 3, I discuss in detail the reasons behind my choices of research design and methodology for the thesis. Particular emphases are given to explain the advantages of adopting (1) the Biography of Artefacts and Practices (BOAP) approach, (2) Abbott’s perspectives on the relation between social boundaries and social entities, and (3) his “linked ecologies” framework to study the dynamics of expectations in the case of the Copyright Hub. The second section in this chapter is dedicated to documenting my journey as a researcher through various stages of this project: from planning my fieldwork, to data collection, and data analysis.

Chapter 4 is the first empirical chapter in this thesis, which serves as a detailed introduction to the backdrop of the Copyright Hub’s case study. This chapter thus helps familiarise the audience with the context of this research, as well as introducing the reader to three of the most important key stakeholders in the case study of the Copyright Hub: (a) the Digital Catapult, (b) the Copyright Hub, and (c) the Linked Content Coalition.

Chapter 5 is the main empirical chapter in this thesis. In this chapter, I provide comprehensive accounts of the social interactions, expectation work, and strategies for alliance making

between a wide array of actors involved in shaping and reshaping the Copyright Hub, from ideas to an innovation project. The chapter is composed of three main sections. The first section is dedicated to examining the pre-Copyright Hub period, which is characterised by the Hargreaves Review and the Digital Copyright Exchange (DCE) proposal. In the second section, I describe a series of events which lead to the establishment of the Copyright Hub, from Hooper's DCE feasibility study to conclusion of the first year of the Copyright Hub. In the final section, I provide an explanation for the Copyright Hub's successful establishment using data from various levels of granularity.

Chapter 6 is a brief empirical chapter, which discusses the more technical aspect of data modelling and the problems of the data model adopted by the Copyright Hub.

In chapter 7, I discuss the three unique contributions which this thesis makes to knowledge. First, it provides an account of the ways "low" and "slow" expectations help advance the Copyright Hub project by contributing to securing allies and resource mobilisation. Second, this thesis offers new insights into the notion of expectations' credibility by applying the linked ecologies perspective to transcend the conventional Ecology/ Audience model. Third, it offers a reconceptualisation of the notion of "protected spaces", which emerge as a result of social actors yoking various proto-boundaries together, instead of the prevalent notion of protected spaces as black-boxes which help shield technical development from scrutiny. The chapter ends with a summary of these contributions to knowledge and a few remarks on ideas for future research.

Chapter 2- Literature Review

The development of newly emerging technologies and pre-market applications is inherently surrounded by an extremely high level of socio-technical uncertainty, ranging from long development timeframes and complex innovation cycles, to unforeseeable performance, practical utility and eventual market value (Veryzer Jr., 1998). Such observations apply well to the case study of the Copyright Hub, whose main aims and objectives were to devise novel digital services to streamline copyright licensing processes, as well as opening up a whole new market for licensing creative content at the “long tail”¹ of the demand curve. In this and other similar cases, governments, firms and researchers generally engage in “an intensely future-oriented business” when they have to make decisions about future products and services in envisioned markets, all of which, by definition, do not yet exist (Borup *et al.*, 2006). Future-oriented abstractions, such as expectations, visions and promises, thus become some of the most critical objects of enquiry for scholars of innovation in recent years (Brown and Michael, 2003). The growing number of social studies of expectations in the context of scientific and technological innovation has given rise to a fruitful, emerging area of research known as sociology of expectations (Brown, Rip and Van Lente, 2003). Since sociology of expectations has proven to be a fruitful area of research for studying newly emerging technologies, whose examples include pharmacogenetics (Hedgecoe and Martin, 2003), hydrogen and fuel cell (Ruef and Markard, 2010; Bakker, van Lente and Meeus, 2011),

¹ Anderson (2006) predicted that our culture and economy are increasingly shifting away from a small number of big hits, i.e. mainstream products and mass markets, and moving towards a large number of niches at “the tail” of the demand curve. Such a dramatic change in the nature of the market was made possible by eliminating the bottlenecks of conventional means of products/ services distribution, as well as the constraints of physical shelf space, through harnessing the power of Internet and digital technologies. Anderson proclaimed: “We are turning from a mass market into a niche nation, defined now not by our geography but by our interests”.

nanotechnology (Selin, 2007; Parandian, Rip and Te Kulve, 2012) to mention but a few, this field of studies is thus chosen as a “promising” point of departure for penning the literature review in this chapter.

The remainder of this chapter is structured as follows. First, I begin by sketching a brief history of the emergence of sociology of expectations (section I), followed by a detailed discussion of what expectations are and what expectations can do in the context of technological innovation (section II). In section III, I examine a number of “sibling terminologies” of expectations via state-of-the-art case studies in order to provide a more comprehensive understanding of the term in question. I then proceed to explore the four central tenets of sociology of expectations (section IV), before concluding the chapter by pointing out existing gaps in the literature (section V).

I. Sociology of Expectations – a Brief History

Although the roles which expectations and promises play in shaping innovation had been the critical objects of enquiry for scholarly research prior to the turn of the millennium (Antonelli, 1989; Mulkay, 1993; van Lente, 1993), the social studies of future and anticipation only began to attract considerable interest and came together under the banner of sociology of expectations in early 2000s (Brown and Michael, 2003). More specifically, *Contested Futures* – a seminal volume of works edited by Brown, Rappert and Webster (2000) – is one of the earliest attempts to bring together a collection of Science, Technology and Society (STS) studies on the dynamics and significance of future-oriented coordination and contestation. In 2001, the annual meeting of the Society for Social Study of Science was named *Fashioning the Future* to bear witness to the thriving intellectual interest in this area. These and other movements urged researchers to shift the analytical angle “from *looking into* the future to

*looking at the future*², to borrow the words of Brown, Rappert and Webster (2000b), and to treat future as an analytical object, instead of “a neutral temporal space into which objective expectations can be projected” (Brown and Michael, 2003, p.4). To STS scholars, expectations help shape and constitute the very future they try to predict, or to phrase it differently, “expectations mobilize the future into the present” (Brown, Rip & van Lente, 2003, p.3).

STS is only one amongst a wide variety of disciplinary fields in which future and anticipatory expectations emerged as analytical objects³. Classical economic theory, for instance, has a well-established literature on expectations (Sargent and Wallace, 1976; Harrison and Kreps, 1978; Davidson, 1982; Burczak, 2001). Muth (1961, p.316), in his pioneering work on the subject, defined expectations as “informed predictions of future events” and argued that “[expectations] are essentially the same as the predictions of the relevant economic theory”. Muth called these expectations “rational”. He hypothesised that the economy would not let scarce information go to waste, and the ways expectations were formed would depend specifically on the structure of the entire system describing the economy. Muth’s hypothesis consequently laid the foundation for the “rational expectations” tradition in economics (Lucas Jr. and Sargent, 1984). This school of thought assumes a realist distinction between people’s expectations and the underlying fundamentals or ‘real’ worth of the object of interest. Consequently, the “real value” of future can be determined objectively through the production of “rational” calculations and expectations can thus be adjusted “rationally” depending on the variation in calculated value (Kantor, 1979).

Such contrast in the two aforementioned disciplinary approaches to expectations immediately calls attention to the difference in epistemological status of claims about the

² Emphasised as in the original document.

³ For more detailed treatments of the subject, see (Brown, Rip and Van Lente, 2003, pp.6-8) and (Borup *et al.*, 2006, pp.287-289)

future. On the one hand, economic theory, especially the 'rational expectations' tradition, adopts a positivistic or realist approach to expectations, which asserts a clear distinction between expectations and the 'real' state of affairs. Based on this assumption, economic theorists argue that it is possible to calculate the real underlying fundamentals of, for instance, a technological innovation and thus determining in priori whether expectations of such technology are true or false, even before it has been fully developed and trialled by the market. On the other hand, STS scholars generally take a constructivist approach to expectations, which regards expectations as constitutive force of the future: i.e. they help in providing structure and legitimation, mobilising resources, attracting alliances, shaping technical artefacts, and so on. STS researchers therefore recognise the theoretical difficulties in distinguishing between expectations and the very future they want to project. To borrow the words of Borup and his colleagues:

If we accept that anticipation is actually constitutive of value, then we logically cannot differentiate between our expectations of things (biotechnologies, stem cells, nanotechnologies, etc.) and what those things in fact are. (Borup *et al.*, 2006, p.289)

Since the 'underlying fundamentals' are themselves future abstractions, it is only possible to determine the truthfulness or falsity of expectations retrospectively, at the time when such knowledge might not be needed anymore (van Lente, 2012). Consequently, instead of trying to establish whether or not hype, or inflated promises, is taking place by calculating 'the real worth' of technical innovation independently from its expectations, the constructivist approach places greater importance upon identifying and defining various hype patterns that explain a wide variety of shapes of hype cycles in different innovation contexts (van Lente, Spitters and Peine, 2013).

In this thesis, I choose to adopt the constructivist approach to expectations due to its compatibility with my own epistemological stance on the subject, and more importantly, its consonance with the STS-inspired sociology of expectations, which I draw heavily upon in order to develop the theoretical basis for this research.

II. Defining Expectations

What are expectations? In its general form, the term ‘expectations’ can be defined as the state of looking forward (from Latin *expectatio*, which means looking or waiting for). In the particular context of technological innovation, however, ‘expectations’ is described by sociology of expectations as “real-time representations of future technological situations and capabilities” (Borup *et al.*, 2006, p.286). Interestingly, this is as much a comprehensive definition as one can find on the topic owing to the fact that sociology of expectations places great emphasis upon specifying what expectations can *do*, not what they *are*. To borrow the words of van Lente (2012, p.772) – one of the most significant contributors to the development of sociology of expectations:

A central theme is that expectations are statements that *do*⁴ something, rather than being descriptive statements that may be true or false. An expectation is not just a description of a (future) reality, but rather a change or creation of a new reality.

Making a similar argument, Brown, Rip and van Lente (2003, p.3) proclaim:

⁴ Emphasised as in the original document

Expectations are part of the world of action: they incite, block, justify. This can be further understood in narrative terms: expectations help shape the plot (and its further development) that guides actions and interactions.

Then, what are expectations capable of doing in the context of technological innovation? Van Lente (2012) argues that, over the years, the sociology of expectations have identified three forces of expectations in the dynamics of technical change. Those forces include legitimization, heuristic guidance and coordination. First, the most conspicuous aspect of what expectations do is to draw attention and legitimise investments in the development of nascent technologies. Attention, in the early stages of innovation, is generally attracted by means of inflated promises. Consequently, disappointments seem to be built into the way expectations operate in technological innovation. Confirming this observation, Brown, Rip and van Lente (2003, p.3) wrote:

[P]romises will be inflated, and have to be inflated in order to get a hearing. So it is almost inevitable that early hype will eventually give way to disillusionment, except when the emergence of new promises helps people forget their former disappointments.

After the relevant stakeholders' interest in the technological innovation has been firmly secured, expectations continue to play a central role in mobilising resources both at the macro level (i.e. international and national policies), at the meso level (i.e. within and across sectors and networks of organisations) and at the micro level (i.e. within engineering and research groups, and individual innovators) (Borup *et al.*, 2006). In addition, expectations can provide a protected space for the development of nascent technology, whose existing level of performance might not be able to justify the support needed. Furthermore, outcomes of failed projects might be interpreted favourably in the light of possible future

success, which helps maintain the necessary level of support for further technological development (Konrad, 2006).

Second, heuristic guidance refers to the ability of expectations to provide direction to the search processes of technological development (van Lente and Bakker, 2010). Due to the inherently high level of uncertainty and countless possible paths to take during the development process of nascent technologies, technology developers often have to rely on informal expectations circulating amongst their communities in order to determine whether or not a direction is “promising” (Geels and Raven, 2006). In a similar vein of argument, Schot (1998, p.197) argues:

Technological development means to project something that does not yet exist. Expectations and promises are therefore of crucial importance to technological development and once they are accepted they are converted into heuristics that guide the technical search process. Technological development implies that you have to make your way as you go along. Who will produce which technology, for which market and in which society are questions that are answered little by little.

Therefore, expectations help reduce uncertainty in technological development in the same way as heuristics do in scientific and technical research (Dosi, 1982; Dosi and Nelson, 1994).

Third, expectations play a critical role in coordinating the efforts needed for technical change. They serve to specify roles, clarify duties, and offer a shared understanding of opportunities and risks for all stakeholders involved in the innovative endeavour. Borup et al. (2006) argues that expectations are capable of bridging and mediating across different stakeholders’ communities and research groups (i.e. horizontal coordination) and between different scales and levels of organisations (i.e. vertical coordination), as well as changing over time in response to new conditions and unforeseeable problems (i.e. temporal coordination).

Furthermore, owing to its ability to connect technical and social issues, expectations can be regarded as “the missing link between the inner and outer worlds of techno-scientific knowledge communities and fields” (ibid. p.286).

Apart from sharing the properties of the three aforementioned forces which make expectations ‘constitutive’ or ‘performative’⁵, expectations however can vary greatly in terms of level and hence, the degree of constitutive force each type of expectations has over the dynamics of technological change. Konrad (2006), for instance, differentiates between two main types of expectations: specific vs. collective expectations. On the one hand, specific expectations include expectations that are held by and attributable to individuals, as well as those shared by specific groups of actors. On the other hands, collective expectations are generalised, taken-for-granted social repertoire, which are shared by a wide range of stakeholders. More importantly, collective expectations are distinct from their specific counterparts in terms of constitutive force: they become “a quasi-certain prerequisite of action” and exert “image pressure”, both of which allow collective expectations to motivate and coordinate a wide range of heterogeneous innovation actors to engage in the innovation process (ibid. pp.433-442). In addition, collective expectations can influence the interpretation of project outcomes (i.e. the results can be interpreted favourably, or the evaluation criteria can even be suspended) and thus provide a protected space for innovation activities.

Konrad’s identified types of expectations are comparable to typologies proposed by other scholars working on similar topics. Ruef and Markard (2010), for instance, propose to divide expectations into: (1) specific expectations expressed in statements of individual actors, (2) generalised expectations expressed in impersonal statements, and (3) frames or overarching

⁵ I will present a more detailed discussion on this subject in section IV – Four Central Tenets of the Sociology of Expectations

expectations which put technological innovation in the context of generic societal problems and visions. Bearing in mind the differences between these types of expectations is crucial for understanding the (dual) dynamics of expectations in technological innovation, which will be examined carefully in the following section.

III. Understanding Promises and Visions

Before moving on to explore the four central tenets of the sociology of expectations, I find it noteworthy to clarify the meanings of two related and overlapping terminologies with 'expectations'. The most notable instance of such terms is 'promises', which have been used interchangeably with 'expectations' in a great number of studies in an implicit and undefined manner. For examples, the act of promising is loosely defined as "pronouncing/formulating an expectation" in Brown, Rip and van Lente (2003)'s paper⁶ and promises are regarded as "positive expectations" in van Lente (2012)'s later work. Another common term of this kind is 'visions', which is deemed to be associated with overarching expectations, as mentioned in Ruef and Markard (2010). The nuances in meaning of 'expectations', 'promises' and 'visions' are discussed a little further in Borup et al. (2006, p.286) when the authors differentiate 'expectations' from the remainder by highlighting the "enacting and subjectively normative character" of the sibling terms:

⁶ This point is illustrated by the following quote from (Brown, Rip and Van Lente, 2003, p.3):

Expectations can be performative also in the sense that promises are performative. [...] Pronouncing an expectation does not create accountability, but does lead to reactions and the idea that the enunciator should justify the expectation. This is how early promises and early warnings lead to reactions and sometimes to escalating arguments for and against (specious inflation).

Similar terms, which are commonly used, like technological 'promises' and 'visions' are largely overlapping with 'expectations' but emphasise to a higher degree their enacting and subjectively normative character. They stress that expectations are wishful enactments of a desired future.

In this section, I seek to go beyond the short abstract discussions as mentioned above and present more fruitful, state-of-the-art accounts of how 'promises' and 'visions' are conceptualised and employed in two distinct case studies of socio-technical innovation. These explorations are intended to give new insights into different facets of expectations' work through the conceptual lens of 'promises' and 'visions'.

A. The dual dynamics of promises

According to Tutton (2011), 'promises' is used in 'expectations' stead by North American scholars as a key concept for studying the dynamics of future-making. Tutton argues that a promise is "a binding 'contract' about a future made by one person to another" uttered in the form of 'I promise' (ibid. p.413). Similarly, Brown, Rip and van Lente (2003) assert that 'I promise X' is not only a descriptive account of the possibility of X occurring in the future, but also a statement in which the enunciator is held accountable for doing X or a version of X. In addition to making promises about something and/or doing something in the future, a person can also make statements about how promising something is, which can be read as "an implied warrant to others" and hence the idea that the enunciator should justify the expectation (ibid. p.3). Commenting on the "volatile, ... [yet] absolutely necessary" roles of promises "to every economy and to every science, but especially to an emergent technoscience", Fortun (2005, p.158) states:

Promising cannot be reduced to either empty hype, or to formal contract, but occupies the uncertain, difficult space in between.

Nevertheless, not all promises are the same. Parandian, Rip and Te Kulve (2012), in their case study of emerging nanotechnologies, observe the differences between two types of promises: (1) the “big but open-ended promises” which they call ‘umbrella promises’⁷ and (2) the more specific promises which constitute the concrete promise-requirement cycles.

On the one hand, umbrella promises are characterised as being “open-ended”, “discursive” and “very general in nature”. These big promises offer narratives which help link emerging technologies with broader socio-political issues, such as sustainable development and climate change. According to Parandian, Rip and Te Kulve (ibid.), the most important aspect of umbrella promises is that, once they are accepted, they can provide a protected space for the development of more specific promises subsumed under these “umbrellas”. Specific promises, on the other hand, can be formulated in concrete terms, such as certain technical features or levels of performance, and thus can be translated into requirements on further development. These requirements will be addressed in a protected space, which helps shield early innovation activities from outside scrutiny, until a working artefact or system is developed; or the whole process can be disrupted immaturely due to disappointing progress. The promise-requirement cycles thus represent the trajectory of technical development.

These two types of promises are dependent upon one another. While promise-requirement cycles rely upon the umbrella promises for legitimation, the umbrella promise also depends on the success of some concrete realisations in order to reinforce its narrative. Hence, Parandian, Rip and Te Kulve (ibid.) call the interactions between these two ‘the dual dynamics of promises’ (see Figure 1).

⁷ Parandian, Rip and Te Kulve’s notion of ‘umbrella promises’ is built upon Konrad’s (2006) idea of ‘collective expectations’. In this case, expectations and promises have been used interchangeably without any differences in meaning.

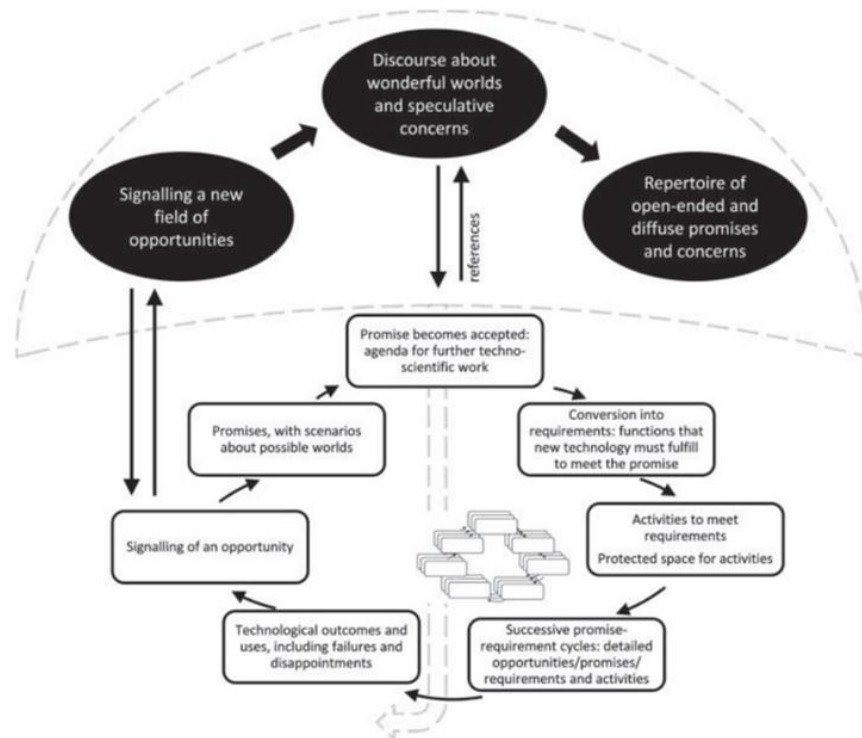


Figure 1 The Dual Dynamics of Promises

(Reproduced from Parandian, Rip and Te Kolve, 2012, p.568)

Based upon the ways in which specific promise-requirement cycles and umbrella promises interact, four patterns of the dual dynamics of promises are identified. First, in the “hype-disappointment cycles” pattern, the umbrella promise is hype-friendly, and early interests are attracted by exaggerated promises. When the umbrella promise eventually collapses due to its own unreasonably high expectations, only a few technologies that deem promising are continued to be further developed. Second, the “promise icon” pattern refers to circumstances in which failures of concrete projects are attributed to other factors while referring back to the umbrella promise. In this way, the umbrella promise remains legitimate even in the face of specific promise-requirement’s failures. Third, the “priority setting” pattern is illustrated by cases where the umbrella promise is resolutely upheld to provide a stable backdrop for building agenda and securing funding. Long-term goals are thus

considered more critical than short-term concrete achievements. Finally, the ‘waiting games’ pattern depicts cases of deadlock in technical development, where stakeholders are kept ‘in the game’ by appealing umbrella promises but are unwilling to take the risk of investing heavily in concrete developments.

This model of the dual dynamics of promises is built on early works of van Lente (1993) and van Lente and Rip (1998a) on the general idea of expectation dynamics. In the earlier version of this model, the sequence of activities and nested nature of the promise-requirement cycles remain the same⁸. The most critical differences between the two versions are the separation between umbrella and specific promises and the interactions between them. As a result, the model of the dual dynamics of promises offers a useful analytical framework for studying multiple levels of expectations at work. In addition, it helps highlight and open up a new line of research into expectation dynamics, which focuses on examining different patterns of technological development based on the outcomes and interactions between different levels of promises.

B. The articulation and diffusion of successful visions

In his study of the generation, articulation and deployment of technological expectations in systems innovation, Berkhout (2006) points up the close association between expectations and visions. In particular, he proposes that expectations should be viewed as ‘bids’ offered by agents, who constantly compete with others’ bids in the context of large-scale socio-technical change. In this sense, expectations are “relational objects” which represents how the “present order of things” is perceived:

⁸ See (Brown, Rip and Van Lente, 2003) for details of the previous model of expectation dynamics.

In so far as images of the future take the same form as images of the present and are to some extent modifications of images of the present, we need to see expectations as relational objects. They are representations either of things remaining the same, or of things changing. In this sense they are always referenced to attitudes and perceptions about the present order of things. (ibid. p.301)

To be adopted and diffused successfully, expectations are hypothesised to be inherently flexible and bidders generally anticipate the modification of their bids in the adoption process. It is due to the fact that expectations, or bids, can be adopted by new adherents only when they can be matched to new sets of interests and new “image of the present” (ibid. p.302). Expectations thus remain malleable throughout the innovation process until a point when they are materialised in one form or another. Even after this point, expectations might continue undergo change or being re-interpreted as the bidding process is never completed.

In addition, a clear distinction is drawn between private expectations, which are privately held and not necessarily communicated, and public or collective expectations, which are widely communicated and shared. There is interaction between these two types of expectations. On the one hand, collective expectations influence the frames and interests of social actors in so far as these expectations are aligned with their interests and are compatible with their privately interpreted experience. On the other hand, private expectations are used by agents to interpret the meaning and evaluate the value of collective expectations. Any inconsistencies between the public conception and private experience might result in the re-evaluation and modification of collective expectations.

Building on such understanding of the notion of expectations, Berkhout (ibid. p.302) tentatively proposes a definition of visions as “collectively held and communicable schemata that represents future objectives and express the means by which these objectives will be realised”. Beyond this definition, Berkhout also specifies three characteristic features which every vision possesses: (1) *objectives*, i.e. expression of novel future outcomes in qualitative and/or quantitative terms; (2) *orders*, i.e. social and institutional relationships that allows these objectives to be met; and (3) *technologies*, i.e. the technological means for achieving these objectives. Furthermore, it is argued that visions are typically organised around a positive/negative or utopian/dystopian dualism, whose function is to position agents with regard to the vision. Commenting on this *moralised* feature of vision, Berkhout states:

[T]he moralised vision becomes the object around which social interests can be arranged – with ‘pro’ and ‘anti’ groups being crystallised out. [...] Ironically, one of the primary functions of visions therefore can be to frame dissensus, rather than to generate consensus” (ibid. pp.303-304).

Visions can be further divided into two categories based on the plurality of their sources. While single-source visions are defined as “those that are generated by *visionaries* with the intention to instruct or entertain”, multiple-source visions are regarded as originating from “structural social processes of the *making explicit*⁹ of possible future” (ibid. p.307). Berkhout argues that multiple-source visions exist for the purpose of either validating or counteracting single-source visions originated from scientific, industrial or governmental interests. To give explanations for the successful articulation and diffusion of a vision, Berkhout argues that it is due mainly to the vision’s ability to attract a wide range of interests and/ or its power to dominate a discourse about possible futures. In the former cases, the process of enrolling

⁹ Emphasised as in original document

social actors for the vision is thought to be voluntary and empowered. In the later cases, however, the enrolment is to a certain degree involuntary, or even coercive.

In short, Berkhout's conception of visions (and its close association with private and public expectations) offers an original and beneficial approach to studying the ways expectations operate in large-scale socio-technical change. This approach highlights the fact that visions and public expectations can attract a great number of adherents only when they are flexible enough to accommodate a wide array of privately-held expectations and interests, yet stable enough to coordinate and discipline the actions of these social actors.

IV. Four Central Tenets of the Sociology of Expectations

This section is dedicated to exploring key findings of the sociology of expectations, which revolves around four main themes¹⁰: (1) the constitutive or performative force of expectations, (2) expectations and temporal variabilities, (3) expectations and spatial variabilities, and (4) the embodiment of expectations in different forms and shapes. Although these themes are conceptually separated for the purpose of highlighting different aspects of the discussion, the boundaries between them are indeed blurred and elements discussed in one category can seamlessly flow into or connect with another category. Detailed discussion of the four central tenets of the sociology of expectations are presented below.

¹⁰ The categorisation of central findings of the sociology of expectations into four main themes as presented in this chapter follows closely the suggestion, which has been put forward by Borup et al. (2006). However, this section does not simply summarise what has been discussed in Borup et al. (ibid.), but also includes many more state-of-the-art developments in the field since the aforementioned publication.

A. Expectations, Constitutive force and Performativity

The notion of 'performative' or 'constitutive' refers to the phenomenon in which hype and hopes mobilised in technological innovation do not simply describe future technologies but also help bring them into reality. Expectations, by definition, are constitutive or performative because they help in building shared agenda, defining roles, and attracting alliances throughout the development and diffusion of new technologies (see section II). Such dynamics of expectations are deemed to be "crucially constitutive" in the early stages of innovation when various technological options are competing for attention and thus, resources will normally be allocated to the seemingly most promising development paths (Brown, Rip and Van Lente, 2003, p.3).

At the most general level, overarching expectations or visions are thought to play a central role in "brokering relationships between different actors and groups" (Borup *et al.*, 2006, p.289). As discussed earlier in (Berkhout, 2006), the capacity of visions for aligning social actors, motivating action, and mobilising resources depends on the mutuality between the collective and private expectations. In Berkhout's words:

In these processes of regime transformation, future visions about the functions, order and means represented by the regime are extremely important. Regime members will align themselves to visions of the future that are aligned with their interests and which they believe they have the resources to achieve (or which they believe they can convince other powerful actors to achieve with them). (ibid. p.304)

As a result, the robustness of a coalition organised around a vision is closely associated with the degree of interpretative flexibility of that vision and its associated expectations. A vision, which can be flexibly interpreted and matched to different circumstances, can widen its

relevance to a vast array of social actors. Nevertheless, if the degree of interpretative flexibility were too great, the vision's capacity to coordinate and discipline agents' actions would be diminished. Therefore, Berkhout argues that effective visions are those that "achieve the right balance between the utopian and the aspirational, and the grounded and realistic, and in doing so do not appear too aligned to current interests and capabilities" (ibid. p.306). Making somewhat a similar conclusion about the constitutive force of visions, Borup et al. (2006, p.289) stated:

Indeed, it would be hard to picture the formation of technology developments and innovation without some kind of shared, though flexibly interpreted, cluster of guiding visions.

Expectations are also performative in the sense that promises are performative (Brown, Rip and Van Lente, 2003). As discussed in section III, the act of promising (i.e. I promise X) does prompt reactions and the expectation that the enunciator should justify their future-oriented claims. When a promise and its associated expectations are widely diffused and accepted, they can be used to justify other promises and actions. Any deviancy from the taken-for-granted social repertoire is effectively marginalised and therefore required much greater effort to be justified and accepted. This results in the phenomena known as 'path dependency' and 'irreversibility', which would have significant impact on the establishment of networks and structures of emerging socio-technical fields. Brown, Rip and van Lente (ibid. p.5) argue:

Already at the very earliest stages of a field's formation, actors use 'hype' and 'hopes' as a means to initiate movement, position themselves and others, build alliances and marginalise competing fields – this is how networks and industry structures emerge. The dynamics of expectations thus articulate with the

emergence of irrevocablisation, the production of a particular narrative order that polices the future behaviour of a whole range of actors.

Nevertheless, the constitutive force of expectations appears to have different impact in different sectors. Brown, Rip and van Lente (ibid.) assert that in highly volatile sectors such as ICTs, where uncertainties are high and the sector's relationships consist largely of impermanent forms of alliance, expectations are employed as means to define stakeholders' roles and stabilise relations. On the other hand, in a well-established sector where roles and relationships are clearly defined, expectations are used to safeguard the existing networks and marginalising any potential threats and displacement.

B. Expectations and Temporal Variabilities

The temporal variability of expectations is generally illustrated through the 'hype-disappointment' cycles, which Brown, Rip and van Lente (2003, p.3) summarise as follow:

Promises will be inflated, and have to be inflated in order to get a hearing. So it is almost inevitable that early hype will eventually give way to disillusionment, except when the emergence of new promises helps people forget their former disappointments.

As a result, the necessity of an early surge in hype to attract attention and resources, and the subsequent disappointment that follows when high promises cannot be fulfilled, are thought to be "almost built into the way expectations operate in science and technology" (Borup *et al.*, 2006, p.290). Hype-disappointment cycles thus depict the trajectory of technological innovation over time and are critical to understanding temporal variabilities in expectations.

Indeed, hype and disappointment have become "part of a widely shared cultural and social stock repertoire for interpreting socio-technical change" (ibid. p.291). The most well-known

example of this kind is Gartner's Hype Cycle, which is a simplistic graphical representation of the way an emerging technology progresses through the peaks and troughs of technological expectations (see Figure 2). In this model, a novel technology is alleged to move along a linear path from technology trigger, rising to the peak of media attention and inflated expectations, then sliding into the trough of disillusionment before eventually materialising in some forms of adoption or applications (Linden and Fenn, 2003). Despite its popularity and impacts, especially within the ICT sector, the Gartner's Hype Cycle is criticised for its oversimplification and incapability to accommodate numerous types of variation and unpredictability that are commonly found in technological, let alone social, change (Steinert and Leifer, 2010). Consequently, the Gartner's hype cycle is castigated for reintroducing a "highly linear understanding of a technology's path dependency" with little regard to the ways technologies, artefacts and practices would be changing, reconfiguring and reconfigured over time in a continual and practical process of diffusion and adoption (Borup *et al.*, 2006, p.292).



Figure 2 The Gartner's hype cycles (Reproduced from (Linden and Fenn, 2003))

From the sociology of expectations' perspective, the notions of 'hype' and 'disappointment' are initially examined as a part of the broader research agenda on expectation dynamics and their performative effect on innovation processes (see above). In recent years, however, an

increasing number of scholars have taken hype and disappointment as the main focus of their studies, and consequently turn this line of enquiry into a promising research avenue.

Pioneering this line of research is Ruef and Markard's (2010) study of disappointment and its effects on innovation processes in the case of stationary fuel cells technology. In this paper, Ruef and Markard make two distinguished contributions to further our understanding of the hype-disappointment cycles. First, they are the first to conceptually separate attention and expectations in their comprehensive definitions of 'hype' and 'disappointment'. Hype is defined as "extravagant claims" which have the potential of being deliberately misleading or deceiving. At the same time, hype can be regarded as "excessive publicity" owing to the unusual attention a subject receives in a short period of time. Ruef and Markard (2010, p.319) state:

[W]e will use the term hype for a combination of a phase of high media attention *and* of high rising expectations, which can turn out to be exaggerated *ex post*. Hype culminates in a peak of attention and of expectations, and is followed by a decline or downturn of both. It can only be detected *ex post*¹¹.

Disappointment, on the other hand, can be defined as a feeling of being let down when something hoped for did not happen or the outcomes were not satisfactory as expected. In other words, "disappointment, or disillusionment, is clearly related to failed expectations" (ibid. p.320). Based on these definitions, Ruef and Markard argue that hype cannot be deduced from a peak of media attention alone, nor does the decline of media attention automatically indicate disappointment, because attention and expectations are not necessarily in sync with one another.

¹¹ Emphasised as in the original.

Second, Ruef and Markard's paper is also the first to adopt the distinction between different levels of expectations to the analysis of hype and disappointment. They identify three types of expectations at work: (1) specific expectations referring to characteristics which are specific to a particular product or project expressed in personal statements; (2) generalised expectations referring to general features of a technology expressed in impersonal statements; and (3) overarching expectations or frames placing a technology in the context of generic socio-political problems and visions. Focusing on the latter two types of expectations, Ruef and Markard assume that frames (which provide legitimacy for innovation activities in a more general way) and generalised expectations (which guide the direction of innovation activities) can develop and change independently. Based on this assumption, they argue that the consequences of disappointment for underlying innovation activities significantly depend on the interplay between different levels of expectations. Four stylised patterns of hyped expectations are postulated to illustrate this point of argument (Table 1).

		Frames	
		Positive	Negative
Generalised expectations	Positive	Disillusionment <ul style="list-style-type: none"> • Legitimacy intact • Guidance intact Innovation sustained <ul style="list-style-type: none"> • Innovation activities continue • Former direction of development maintained 	Disenchantment <ul style="list-style-type: none"> • Legitimacy lost or contested • Guidance intact Innovation delayed/ modified <ul style="list-style-type: none"> • Decrease societal/ public support • Potential shift to alternative technologies
	Negative		

	Negative	<p>Disappointment</p> <ul style="list-style-type: none"> • Legitimacy intact • Guidance lost or weakened <p>Innovation delayed/ modified</p> <ul style="list-style-type: none"> • Innovation activities reduced • Potential shift to other applications of the technology 	<p>Total disappointment</p> <ul style="list-style-type: none"> • Legitimacy lost • Guidance lost <p>Innovation delayed/ modified</p> <ul style="list-style-type: none"> • Innovation activities cut down significantly or abandoned • Shift to other technologies
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Table 1: Different types of disappointments and potential effect on innovation

(Reproduced from Ruef and Markard 2010)

Furthering Ruef and Markard’s exploratory work, van Lente, Spitters and Peine (2013) seek to develop a theory of hype patterns, which is capable of providing explanations for different shapes of hype cycles in different innovation contexts. Rather than adopting Ruef and Markard’s definition of hype as exaggerated, misleading and deceiving predictions of the future, the authors regard hype as “collectively pursued explorations of the future that affect activities in the present” (ibid. p.1616). Their analysis of the shape of hype patterns is focused upon three main variables: (1) the shape of the peak, i.e. the degree of enthusiasm during the peak, and the swelling and slope of the peak; (2) the depth of the trough, i.e. the degree in which enthusiasm breaks down in the trough and how the recovery takes place after the trough; and (3) the overall length of the hype.

Building on Ruef and Markard’s conclusion (i.e. the effects of disappointment on underlying innovation activities strongly depend on the interplay of expectations on different levels), van Lente, Spitters and Peine proceed to examine how hype patterns are influenced by two

additional variables: the specificity of the envisioned application, and the nature of the environment in which expectations surrounding such application are created, diffused and refined. They choose to study and compare case studies of hype patterns in three different empirical contexts: (1) Voice over Internet Protocol (VoIP) – a very specific application with a mature industry setting; (2) Gene therapy – a generic application in an emerging industry setting; and (3) High temperature superconductivity (HTS) – a generic application in basic science setting with not-yet materialised promises for mature industries.

In the case of VoIP, the analysis has confirmed that hypes of a very specific application in a mature industrial environment largely resemble the pattern suggested by Gartner's hype cycle (see Figure 2). It is argued that expectations on all levels are able to flourish owing to the sufficient space and variety provided by the mature industry setting. On the other hand, hypes of generic technologies are found to be more precarious due to their fundamental struggles to define viable applications. The environments in which expectations of such applications are embedded also play a critical role in influencing the shape of hype patterns. In the case of gene therapy, such a "rich environment, combining perceived business opportunities and industrial patterns with the search for applications" serves as a fertile ground for productive recovery after the trough of disappointment (ibid. p.1626). In the case of HTS, however, the highly in-synch state of expectations at all three levels proves to be counter-productive as the environment provides little room to redefine or reorient expectations after disappointment. Based on these observations, a mixture of various expectations at different levels appears to be a good indicator of a potential productive recovery after disappointment. van Lente, Spitters and Peine conclude (ibid. p.1626):

When expectations at project, field and societal levels are neatly aligned, the risk of a profound disappointment after hype is greater. Some degree of misalignment

between these levels may thus help a field to flourish, when visions about the future are sufficiently open-ended to turn disappointment into a productive reconfiguration of expectations.

C. Expectations and Socio-spatial Variabilities

The third central tenet of the sociology of expectations is concerned with the ways expectations vary in accordance with a few key social and spatial parameters. In this regard, sociologists of expectations build their understanding of the relationships between expectations and socio-spatial variabilities on previous studies in STS literature.

Certainty trough and actors' proximity to the site of technical development

One way of approaching this issue is to consider the correlation between the different actors' proximity to the actual site of technological development and their trust in the future. MacKenzie (1990)'s notion of certainty trough is highly valuable in this respect. In his study of the high-precision guidance systems of modern American inter-continental ballistic missiles (ICBMs), MacKenzie discovers that the closer the actor is to the point of knowledge production (i.e. development, experimentation, testing activities, etc.), the more uncertain he feels toward the knowledge and promises that are produced by such activities. Consequently, the certainty trough (Figure 3) highlights the raise of uncertainty amongst 'insiders' of the technology in question. By comparison, uncertainty is usually low amongst those who have commitment to the technology but are distant from the actual site of knowledge production. Again, 'outsiders' and 'competitors' of the interested technology tend to express high level of uncertainty and mistrust toward the produced knowledge.

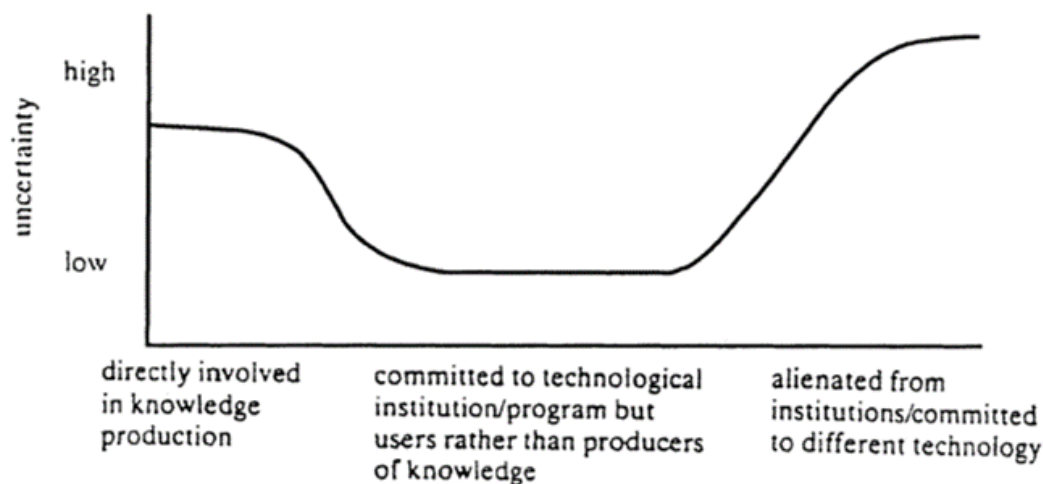


Figure 3 MacKenzie's Certainty Trough (Reproduced from (MacKenzie, 1998))

In a similar vein of argument, Borup et al. (2006) contend that people will attach different levels of trust to expectations based on their social distance from innovation activities. Expectations thus appear to have greater authority for those who consider themselves to be on the receiving end of those activities which generate, evaluate and redefine promises and claims of the future. A heightened sense of confidence is often a sign of a distance or detachment from the messy reality of conducting research at the “coal face” (ibid. p.292). Nevertheless, ‘insiders’ of innovation activities are capable of offering contradictory expectations based on the role which they assume at a given moment. For instance, researchers usually discuss the potential of their research with caution among their peers, but tend to make strong claims about the innovation while wearing the entrepreneurial hat in public (Brown and Michael, 2003). Based on this observation, Brown and Michael (ibid. pp.15-17) offer a new means of modelling the “situatedness of expectations” by examining the trough of certainty within a quadrant composed of three variables: (1) the complexity of innovators’ roles (i.e. knowledge producers, end users, competitors); (2) networks (i.e.

whether the networks are emerging or established); and (3) activities (i.e. whether the activities are routine or novel).

Arenas of Expectations

Apart from social variables, sociology of expectations is also interested in studying spatial variables of expectations. One of the most helpful concepts which have been developed in the literature so far is Bakker, van Lente and Meeus (2011)'s notion of "arenas of expectations". This notion is built on the quasi-evolutionary approach to studying innovation, which asserts that the processes of variation and selection of technological change are interrelated and embedded in a "cultural matrix of expectations" (Van den Belt and Rip, 1987). In other words, instead of relying on blind variation for technological development, expectations are used to help guide the search for promising solutions through different heuristics, as well as being employed to shape the selection environment.

The dynamics between variation and selection processes are further examined in (Garud and Ahlstrom, 1997). In this paper, the authors highlight the differences in the assessment approaches employed by insiders and outsiders in the constitution of a technological field. On the one hand, insiders' perspectives result in the creation of enactment cycles, which help proliferate various technological trajectories. On the other hand, outsiders' perspectives lead to the creation of selection cycles, which reduce the number of those trajectories by selecting only a few promising solutions according to the outsiders' own criteria. Insiders and outsiders are assumed to meet and interact at "bridging events", when actors on one side actively engage in influencing the emerging assessment approaches adopted by actors on the other side for their respective cycles. Based on this difference in socio-cognitive position and style of activities, Rip (2006) suggests improving upon Garud and Ahlstrom's terminologies by replacing 'insiders' and 'outsiders' with 'enactors' and 'selectors' respectively. In addition,

Rip points up the structural difference between these actors' perspectives as follows: while enactors claim to develop technological variations that might successfully address certain perceived problems, selectors often make their assessment based on different perception of what the problem is and how various technical options may contribute to a solution. As a result, it is suggested that communication occurred during the bridging event is not a one-way process, but rather a bilateral one whereby enactors anticipate the possibility of being interrogated, as well as the comparative-selection perspective held by their audience.

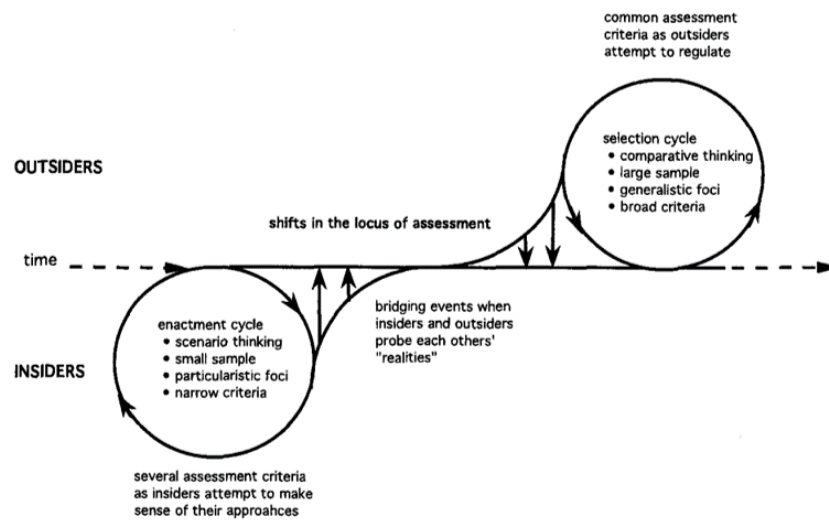


Figure 4 Dynamics in the Constitution of the Technological Field (Reproduced from (Garud and Ahlstrom, 1997))

These findings provide a solid foundation for the development of Bakker, van Lente and Meeus' concept of "arenas of expectations". These arenas are defined as "the loci where expectations are voiced by the enactors and tested by the selectors, where they are confronted with experience, knowledge and interests" (Bakker, van Lente and Meeus, 2011, p.159). In other words, expectations of different technological variations are trialled within these arenas based on earlier experiences of failed promises or fulfilled expectations, as well as social and economic forces of the environment in which they are supposed to be materialised. As a result, arenas of expectations become the linchpin which gives further

shape and content to the “cultural matrix of expectations”, as proposed in the quasi-evolutionary model of technical change, and the notion of “bridging events” as discussed earlier in (Garud and Ahlstrom, 1997) and (Rip, 2006). The ways enactors and selectors engage in expectation work within the arenas of expectations are summarised in Figure 5.

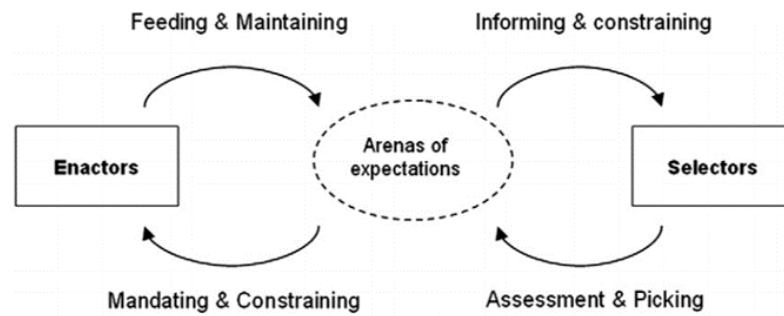


Figure 5 Arenas of Expectations (Reproduced from (Bakker, van Lente and Meeus, 2011))

As illustrated above, enactors constantly feed and maintain expectations in the arena to secure mandate for furthering their technical work. The mandate is given if enactors were able to convince selectors of the future potential of their technological trajectories, as well as emphasising the limits of competing options. Selectors, on the other hand, are informed of, as well as being constrained by, the circulating expectations in the arena. Based on such constraints, knowledge and their private interests, selectors develop their own criteria for assessing and picking the winning variations. Outcomes of the selectors’ decision-making process eventually feed back into the arena and influence the enactors’ ongoing battle for mandate.

It is further argued that various arenas of expectations may co-exist at different levels of aggregation. Highly detailed expectations of technical trajectories, for example, are circulated and assessed at different arenas than those expectations dealing with the impacts of such technology on societal level. Consequently, Bakker, van Lente and Meeus conclude that, apart from the bilateral and synchronous fashion of exchanging expectations at

“bridging events” as suggested by Garud and Ahlstrom (1997), the communication of expectations also take place in asynchronous and multilateral fashion at a wide range of arenas, including scientific publication, foresight activities, roadmaps and so on. The complex interactions between enactors and selectors in these arenas bring about the coordination of research activities and further development for the prospective technology.

Protected Space for Research and Development (R&D) activities

The last spatial variable that is worth mentioning is the notion of “protected space”. This notion is crucial to understanding how an innovation is capable of overcoming contingencies in its early stages of development and subsequently engaging in the promise-requirement cycles (van Lente and Rip, 1998a). Being elaborated in (van Lente, 1993), this concept refers to either laboratories, where attempts by scientists to try out new expectations are protected, or niches within firms, where a provisional space for trial and error is created to foster a novel innovation project, or at the level of society, where strategic research areas are stimulated by science and technology policy measures. Van Lente (ibid.) argues that these spaces are created and maintained through expectations and thus, they share the same traits of being temporary, as well as being dependent upon precarious agreements and alliances between a wide range of different actors.

Concurring with van Lente in the role of protected space in technological development, Rip and Schot (2002) propose a mapping tool for visualising the innovation journey through three clusters of activities: (1) building a protected space for “hopeful monstrosities”, (2) stepping out into the wider world, and (3) making changes at the sectoral level. All technological opportunities are argued to start out as “hopeful monstrosities”: they are full of promises, but perform rather crudely (Mokyr, 1990). As a result, enactors will have to make more specific promises to selectors so that resources can be mobilised for the new innovation

project. Through such promises, functions and potential public demand are articulated, as well as specifications for the material, types of artefact and expected performance of the new technology. As these expectations are stabilised into R&D agenda, a new cycle of promise-requirement is initiated and the innovation trajectory begins to take shape (van Lente, 1993). Rip and Schot (2002, p.162) argue that a protected space for a promising technological trajectory will emerge as “the net effect of the networking and resource mobilisation”. Furthermore, the authors contend that R&D activities within the protected space may carry on “according to [their] own dynamics” with little or no checking with the outside world:

Part of the protection stems from a (precarious) agreement over a diffuse scenario about functions to be fulfilled and their societal usage. The nature of the protected space, its boundary agreements, the rules and heuristics derived from the promises that were made, together determine choices and directions. Work within the protected space thus proceeds according to its own dynamics, with only occasional checks with the scenario of usage (if at all). (Rip and Schot, 2002, p.163)

Nevertheless, such R&D activities cannot proceed indefinitely. At some point in time, enactors must attempt at demonstrating a working technology, or in Rip and Schot’s (2002) terminology, they must “step out into a wider world”. This second cluster of activities is comprised of prototyping, troubleshooting, optimising production, preliminary market testing and so on, all of which are less self-contained than the previous R&D activities. Indeed, the second cluster of activities are alleged to “fall prey to intra- and inter-organisational tensions” (ibid. p.163). They require different types of interactions, such as the enactment and selection cycles as suggested by Garud and Ahlstrom (1997) (see above). Such activities are crucial for real-world learning and subsequent product’s adaptation so

that enactors can make their work overcome the limitation of the particular protected space, where the innovation originates, and explore further applications in other market niches. Consequently, Rip and Schot (2002, p.165) conclude that, without a protected space, an innovation cannot survive the “harsh selection environment” and unprepared market, whose demand is only slowly articulated in response to supply. On the other hand, particularities of a certain protected space might confine the innovation to one market niche, which results in a product that survives only within that space.

The final cluster of activities witnesses the changes which the new technology makes at the sectoral level. According to Schot (1998), the successful creation of a niche may lead directly to the emergence of a new techno-economic paradigm consisted of cognitive and institutional structures, existing networks of suppliers and consumers, and competences, all of which have adapted to the new technology. In other cases, successful niche creation might require further “niche branching”, before the accumulative effect of such a process can bring changes in the outside world. These changes become irreversible (or path dependency) once they have been made because the innovation is closely coupled with institutional structures and vested interests, specific narratives and practices, competencies and so on. These elements continue to exert significant influence on the market, even after the technology has been widely taken up and become “pervasive” (Rip and Schot, 2002, p.165).

Interestingly, Rip and Schot’s description of the innovation journey leads us to speculate about a relationship between protected space and arenas of expectations. As mentioned above, enactors and their expectations compete in the arena for mandate and support. When mandate and resources for further work are given, enactors will use them to guide R&D activities in the protected space. By the end of the project, outcomes of the R&D activities will be interpreted, refined, and employed as rhetoric and materials for

constructing new expectations, which enactors will use to feed into the arena. Figure 6 summarises the interrelation between the two spaces.

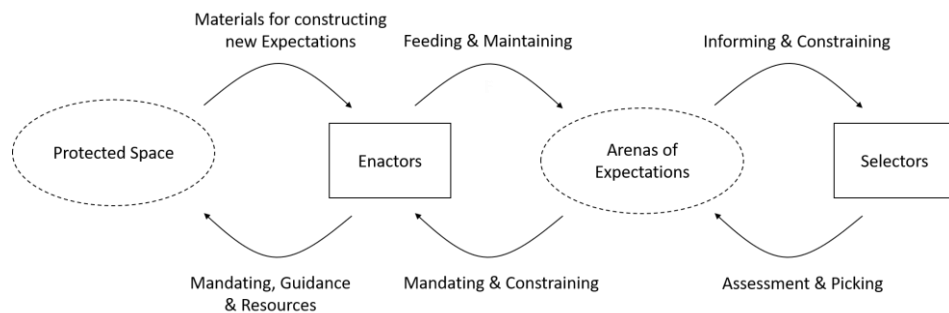


Figure 6 The interrelation between Protected Space and Arenas of Expectations

D. Expectations and Embodiment

The fourth central tenet of the sociology of expectations is concerned with various shapes and forms of expectations (Borup *et al.*, 2006). The literature examines to what extent expectations are expressed in rhetorical forms, i.e. enunciated views and ideas of people (utterances), and/or embedded in texts, materials, organisations, research activities, technological artefacts and so on. More importantly, scholars of expectation studies are interested in understanding the routes of transmission between imagination and materiality, especially how promissory abstractions take on substance and become materially embedded in technological systems and practices. In other words, it is an effort to comprehend the constitutive force and performative nature of expectations.

Conventionally, scholarship on expectations focuses on examining the relationship between rhetorical representations of the future and the actual materialisation of these imaginations. Wyatt (2000), for instance, analyses the use of metaphors in future discourse about the Internet to demonstrate how linguistic representations of the future can play a critical part in shaping and reshaping the socio-political landscape of the ICT sector. More recent studies

of expectations, nonetheless, turn to examining future representations over time, instead of their roles at any single moments. A typical example of this kind of research is Brown and Michael (2003)'s seminal study of changing expectations in the case of xenotransplantation¹² (XT). By comparing people's recollections of past futures (i.e. "retrospecting prospects") and the ways these memories are redeployed to engage with the current future (i.e. "prospecting retrospects"), the authors have discovered how statements of expectations change over time and help in prospectively shaping current initiatives, as well as responding to retrospective patterns of past innovations. As a result, Brown and Michael emphasise the importance of mapping the "situatedness of expectations" and argue that "whilst expectations are largely discursive in character, they largely depend on material practice" (ibid. p.7).

In recent years, however, the accelerating pace of innovation has significantly altered many techno-scientific fields, especially ICTs, which resulted in the proliferation of active strategies to grapple with expectations (i.e. envisioning, road mapping, standardisation, etc.), and the emergence of new intermediaries specialising in the production of promissory knowledge about nascent technologies and future markets (Pollock and Williams, 2009b). Such change provides new, and fruitful, empirical ground for further research on the performativity of expectations and shifts the focus of studies on a new group of actors, namely industry analysts. Pollock and Williams (2010, p.532) call them "promissory organisations" to emphasise the fact that these intermediaries "routinely and prodigiously produces future-oriented claims", which are not simply reflections or representations of the state of affair in a particular market, but also critical factors contributing to the shaping of such a market. They argue that the current frameworks developed within the sociology of expectations are incapable of providing explanations in a "sufficiently comprehensive and nuanced way" for a

¹² The use of non-human tissues and organs on human transplant surgery.

wide range of promissory behaviour, which they witness in the field of IT procurement (ibid. p.542).

Inspired by theoretical approaches emerging from the Sociology of Finance and Economic Sociology, Pollock and Williams propose the development of a “typology of promissory behaviour”, which considers different kinds of effect and accountability possessed by various kinds of promissory work. Instead of dividing expectations into two categories: specific vs. collective as in (Konrad, 2006), or into three levels of aggregation: micro, meso and macro, as in (Borup *et al.*, 2006)¹³, the typology suggests the existence of a spectrum of promissory activities in the field. At one end is promissory work that “matters”, in the sense that they are researched and defended vigorously by promissory organisations. The promissory work of this kind tends to have strong and enduring effect on the market; and actors would be held accountable if it failed to materialise. At the other end of the spectrum is, intriguingly, the kind of promissory work that “does not matter”. These types of work act as if they are “provocations”: i.e. being simply “launched into the ether” for the main purpose of capturing interest, resulting in short-lived levels of influence (Pollock and Williams, 2010, p.543). If provocations failed, they do not seem to matter because reputations of promissory organisations are not explicitly damaged by such failures.

Pollock and Williams also predict the presence of other types of promissory work that inhabit the full spectrum of the promissory activities, and thus, constitute the proposed “typology of promissory behaviour”. Such an assertion is in line with the aforementioned concept of “arenas of expectations”, which is built on the postulate that multiple types of expectation work “meet in different arenas of expectations for different aspects of the technology and for different levels within the prospective technological system” (Bakker, van Lente and

¹³ Cross-referencing section II, page 29.

Meeus, 2011, p.160). These concepts indeed provide a good foundation on which I build the theoretical discussion in this thesis.

V. Existing gaps in the literature

Having carefully examined the existing theoretical frameworks emerging from the sociology of expectations, I have identified the following three gaps in the literature, which I intend to address in my thesis.

A. Gap 1: The lack of study of other types of expectations

As evident from the previous discussions, the majority of literature from the sociology of expectations are built on the postulate of “high expectations”. High expectations are thought to be built into the way science and technology develop (Borup *et al.*, 2006). Using high expectations as an analytical point of departure, scholars of expectation studies have developed numerous frameworks, most notably the hype-disappointment cycles, for understanding the ways actors constitute and engage with the future. The problem of this kind of model, according to Brown and Michael (2003), is that it creates a circular way of thinking in which the assessment of an innovation cannot be analytically distinguished from representations of expectations. They assert:

The problem with this model is that it uses high expectations as an index of a technology’s early stage of development and vice versa. That is to say, high or optimistic expectation is discursively correlated with a technology in its infancy: this is something of a circularity. Analytically, it is problematic because our assessment of an innovation’s progression along this path are virtually indistinguishable from representations of promise and expectation. (Brown and Michael, 2003, p.12)

Apart from the analytical perspective, assuming expectations always “have to be inflated in order to get a hearing” (Brown, Rip and Van Lente, 2003, p.3) is also questionable from the theoretical point of view. As Pollock and Williams (2010) have successfully demonstrated, the typology of promissory behaviour constitutes a full spectrum of expectations, ranging from robustly-defended promissory work (which has strong and enduring influence) to provocations (which are low in accountability and exert short-lived influence on the field). This wide array of expectations would have their strengths trialled in different arenas for different levels of the technological system and for different aspects (i.e. social, political, economic, technical, etc.) of the technology in question (Bakker, van Lente and Meeus, 2011). As a result, selectors in each arena would employ radically different criteria for assessing expectations and it is reasonable to speculate that high or positive expectations might not be favoured in a few certain arenas. In such cases, enactors may have to resort to other types of expectations to propel their choices of technological trajectories.

This argument has been reinforced by empirical evidence found in Tutton (2011, p.425), who argues that “every promising future is predicated on another more pessimistic future to be avoided”. His study of the US Securities and Exchange Commission (SEC) filings from three companies operating in the biotech sector reveals that these organisations are compelled to co-articulate both pessimistic and promising futures in their statements to reflect the volatility and promises of their own sector. Consequently, Tutton concludes that “pessimistic representations of the future cannot be treated separately from promissory representations” and urges STS scholars to pay equal attention to the construction of pessimistic futures as opposed to optimistic expectations (ibid. p.425). I suspect that promissory representations and pessimistic projections (or “high” and “low” expectations) are only two amongst a great number of different kinds of expectations that could be found in the field, especially in a case as complex as the Copyright Hub.

B. Gap 2: The dearth of understanding of the expectations' credibility

Why are some expectations more credible than others? Why do certain expectations triumph and help propel their associated technological trajectories when others do not? These questions represent a thorny issue of understanding expectations' credibility, which has troubled STS scholars for decades. Commenting on this problem, Berkhout (2006, p.305) concedes:

Clearly, some visions and expectations will garner greater credibility and legitimacy than others. We do not properly understand the basis of this credibility – why some ideas seem to be more resonant at a given moment than others.

Several attempts have been made to address this issue with various degree of success. Callon (1987), for instance, in his seminal case study of the electric vehicle in France, tries to give an explanation as to why the French electricity company EDF was able to convince Renault – the car manufacturer – and other actors to accept the roles that were assigned to them in EDF's proposed "future world", despite the fact that this vision conflicted with Renault's interest. Callon demonstrates various means by which the "engineer-sociologists" had used to construct the "heterogeneous associations" needed to advance their vision, ranging from pure coercion, to negotiation, to bargaining. Despite being appealing, Callon's framework depends on analysing direct interactions between actors and lacks the capacity to accommodate more subtle, indirect social mechanisms. Furthermore, Callon has not been able to explain what caused the reversal of the accepted socio-technical scenario by Renault at the end of the case study.

To address these shortcomings, Konrad (2006) proposes looking at the "social dynamics of expectations" as potentially useful concepts for explaining these incidents. The article suggests three mechanisms by which innovation processes can be affected by expectation

dynamics. First, Konrad argues that once a collective expectation¹⁴ is taken for granted, alternative visions will be eclipsed and the necessity to convince other actors to take part in realising the vision is, to a certain extent, relieved. Second, collective expectations, as social repertoire, can also exert “image pressure”, which compels actors to meet those expectations. These dynamics, according to Konrad (ibid. p.442), help explain how a large set of heterogenous actors can be rallied behind a vision, although some actors may “a priori” hold only marginal or little interest in the innovation field. Finally, Konrad contends that the interpretation of the project’s outcomes will be strongly influenced by collective expectations. He maintains:

The results of technological projects are interpreted in the light of the same expectations they are supposed to ‘validate’. This is because ‘hard facts’, or evaluation criteria, are themselves subject to interpretative flexibility. (Konrad, 2006, p.436)

As a result, collective expectations can act as a protected space for the project, whose outcomes will be interpreted in a favourable light. Even if outcomes of the project were negative, evaluation criteria may be suspended, or the result can still be read as peripheral to decision making. Konrad’s conclusions, despite being valuable and helpful in offering new insights into the ways expectation dynamics shape innovation processes, still suffer from the incapacity to accommodate a “typology of promissory behaviour” as suggested by Pollock and Williams (2010). Furthermore, Konrad has not been able to provide us with a robust framework and useful vocabularies for further analysing the complex dynamics between

¹⁴ For Konrad’s classification of expectations, cross-referencing page 29

different types of innovation actors and their different (in both kinds and levels of) expectation work.

This gap in literature, I argue, has been filled rather successfully with Bakker, van Lente and Meeus' (2011) concept of "arenas of expectations"¹⁵. To recapitulate, it is argued that technological communities of enactors and their expectations compete in various arenas of expectations for different aspects of the technical innovation and for different levels within the technological system. Apart from bilateral and synchronous fashion of exchanging expectations occurred during bridging events, expectations are also circulated in a more multilateral and asynchronous fashion through scientific publication, foresight activities and similar activities. Selectors, on the other hand, inform and constrain themselves with expectations circulated in the arenas. They develop their own criteria for assessment and use them to evaluate and pick the winner(s) in the arena. Although the concept of "arenas of expectations" has helped us make a big step toward furthering our understanding of the roles of expectations on innovation process, Bakker, van Lente and Meeus (ibid. p.159) concur that the issue of expectation's credibility still has not been "fully understood":

How and why exactly the selectors come to their assessments of the different expectations in the arenas is a question that we think deserves further study. [...] it is not fully understood why some options are thought to be credible and others are not.

Taking the matter into their own hands, Bakker, van Lente and Meeus (2012) tackle this question through a case study of the US Department of Energy's (DOE) Hydrogen Program. It has been found that expectations are assessed as credible when they build on (1) the

¹⁵ Cross-referencing Section IV. C

technology's current level of performance and its historical progress, (2) a path forward which assures that higher level of performance can be achieved, and (3) an end target performance level that relates to societal needs. Amongst them, the construction of a path forward is deemed most critical to the credibility of expectations. In addition, the paper also foregrounds the distinct role of agency in "the enaction and selection process of forceful expectations" (ibid. p.1070). On the one hand, it confirms the basic tenet of the sociology of expectations which asserts that collective expectations, once accepted, will create the boundaries within which enactors and selectors perform their expectation work. On the other hand, it highlights the mutual relationship between the credibility of actors (or communities of actors) and the credibility of their expectations. This notion of "dual credibility" is suggested to be key to understanding the lobbying capacity of actors – a potentially fruitful area for further research.

Despite its validity and usefulness, Bakker, van Lente and Meeus' approach to understanding expectations' credibility still suffers from one critical weakness: it does not explain how outcomes of the trials of strength of expectations in multiple arenas interact and influence each other. In other words, if Bakker, van Lente and Meeus (2011, p.160) accepted that "multiple arenas may co-exist at various levels of aggregation", they must also concur that the boundaries, within which enactors and selectors perform their expectation work, are not limited to any one single arena. Being able to examine the results and complex interactions of the enaction and selection processes of strategically important arenas of expectations, I argue, is the key to understand why, not just one, but a constellation of expectations is more credible than the other. This approach can also help shed light on explaining why and how a collective expectation become taken-for-granted – a question which still has not been satisfactorily addressed. In short, it was my intention to fill the second gap in the literature

by tackling the theoretical and analytical void currently existing between the multiplicity of interrelated arenas of expectations.

C. Gap 3: The need to reconceptualise the notion of “Protected Space”

As mentioned above, the concept of “protected space” is of crucial importance to understanding the (successful) journey of technological innovation. Nonetheless, not much attention has been paid to further problematising this notion in recent scholarship of the sociology of expectations since Rip and Schot’s (2002) proposal¹⁶. To recapitulate, Rip and Schot propose a two-dimensional model for visualising the innovation journey and application/adoption activities of a novel technology. This model is composed of two axes: (1) the vertical axis indicating the progress of the innovation journey through time, and (2) the horizontal axis housing different poles of techno-economic networks, i.e. Science, Technology and Market/Society. The dynamics of innovation are represented by activities (and their interactions) occurring sequentially and/or concurrently at different poles, from top (representing the present) to bottom (representing the future). Rip and Schot hypothesise that an innovation journey may go through three clusters/ phases of activities: (1) building a protected space, (2) stepping out into the wider world, and (3) sector-level changes. With regard to protected spaces, they argue that these spaces emerge as the net effect of networking and resource mobilisation, which are driven by expectations and promises.

Despite its appeal of simplicity, Rip and Schot’s model still suffers from three critical shortcomings. First, the authors are neither able to conceptualise the underlying mechanisms upon which a protected space is formed, nor capable of explaining why and how a protected

¹⁶ Cross-referencing page 51.

space is dissolved. Consequently, the notion of “boundaries” of a protected space has not been properly developed, apart from the following scanty, equivocal argument:

Part of a protection stems from a (precarious) agreement over a diffuse scenario about functions to be fulfilled and their societal usage. The nature of the protected space, its *boundary agreements*¹⁷, the rules and heuristics derived from the promises that were made, together determine choices and directions (Rip and Schot, 2002, p.163).

Second, Rip and Schot assume sequential order and clear-cut separation between the first cluster of activities, i.e. building protected spaces whose work is thought to proceed “according to its own dynamics”, and the second cluster, i.e. stepping out into a wider world, whose activities are described to be “much less self-contained [...] and fall prey to intra- and inter-organisational tensions” (ibid. p.163). Such rigidity of the model does not allow researchers to apprehend more complex cases, where boundaries between the two clusters of activities are blurred, or even significantly overlapped; or where activities to build a protected space and stepping out into a wider world do not take place in sequence, but rather occur concurrently.

Third, Rip and Schot argue that an innovation journey may conclude with one of three scenarios: (1) promises turn out to be empty, innovation fails and the protected space collapses; (2) innovation fails to make changes at sector-level but manages to survive in one market niche; and (3) innovation succeeds in branching to other niches, which leads to niche “piling”. The accumulative effect of such a process is that innovation makes structural changes to the sector (i.e. standard setting, production networks, consumption habits, social

¹⁷ My own emphasis.

values and culture, etc.) and becomes “a pervasive technology” (ibid. p.165). In the latter two cases, protected spaces are assumed to dissolve “naturally” because innovation no longer requires protection. The fallacy of this argument lies in its strong focus on a single niche (or project) and its success or failure, which misleads Rip and Schot into conceptualising that sector-level changes would materialise through bottom-up processes of niche expansion, with little regard to other ongoing processes at higher levels.

Since Rip and Schot’s work, however, no further studies have been conducted to directly tackle these issues. Recent studies in sociology of expectations either omit the notion of “protected spaces” completely (Hedgecoe and Martin, 2003; Nerlich and Halliday, 2007; Selin, 2007), or use it as a black-boxed concept with scant introductory descriptions (Brown, Rip and Van Lente, 2003; Borup *et al.*, 2006; Konrad, 2006), or focus their attention on developing a different-yet-related concept, i.e. “arenas of expectations” (Bakker, van Lente and Meeus, 2011, 2012). This argument is illustrated through the following summary of the general perception of “protected space” as presented in the contemporary sociological studies of expectations. Geels (2007) argues that when certain encompassing promises are accepted and stabilise into an agenda, expectations are translated into more specific requirements, which will then be addressed in a protected space. A protected space is thus defined as “an environment which is relatively shielded from outside scrutiny” (Parandian, Rip and Te Kulve, 2012, p.567), where enactors are given the mandate to explore and develop their visions on the promise of delivering (some forms of) the expectations in the end. By the time projects conclude, their outcomes are assessed, and new promises will be made to the selectors. “Repair work” might be performed when prior expectations have not been met and reasons are voiced by enactors to justify the delay (Geels and Raven, 2006). New expectations are made to be more refined and specific, and subsequently translated into new requirements. The succession of promises, requirements, ongoing work and more specific

promises and related requirements results in the promise-requirement cycles, which create a trajectory of development (Parandian, Rip and Te Kulve, 2012). These cycles continue if progress is still able to justify new promises, and selectors are still convinced of the benefits which further technological development will bring.

In short, compared to the foundational work laid by van Lente (1993), van Lente and Rip (1998b, 1998a), and Rip and Schot (2002), recent studies of sociology of expectations contribute little new insights to furthering our understanding of the concept of “protected spaces”. However, one can argue that the development of Bakker, van Lente, and Meeus’ (2011, 2012) concept of “arenas of expectations” has offered a valuable suggestion on how the second shortcoming of Rip and Schot’s proposal could be addressed. As mentioned above¹⁸, there exists a mutual shaping relationship between arenas of expectations and protected spaces. Arenas of expectations can be regarded as spaces where enactors venture into the outside world to compete for mandate and support. These mandate and support will then be used to create and maintain a protected space for R&D activities, whose outcomes will in turn be used to develop further expectations for “trials of strengths” in different arenas. The act of enactors stepping into the outside world thus does not automatically lead to the dismantling of the protected space and the cycle of “mandate-expectations” can occur multiple times throughout the development trajectory of an innovation. By using these two concepts in conjunction with one another, we can reconceptualise the innovation journey, which does not necessarily follow a sequential, clear-cut order from “building a protected space” to “stepping out into a wider world” as originally proposed by Rip and Schot.

While the notion of “protected spaces” has been neglected in recent studies of the sociology of expectations, its equivalent concept - “technological niches” - has become a central focus

¹⁸ Cross-referencing page 53.

of research in an emerging field of studies, known as Strategic Niche Management (SNM). The equivalence between these two notions is expressed in Kemp, Schot and Hoogma's (1998, p.186) foundational paper in the field, as they provide a definition of strategic niche management as follows:

Strategic niche management is the creation, development and controlled phase-out of protected spaces for the development and use of promising technologies by means of experimentation, with the aim of (1) learning about the desirability of the new technology and (2) enhancing the further development and the rate of application of the new technology.

Using the quasi-evolutionary model for innovation¹⁹ as a point of departure, Kemp, Schot and Hoogma (ibid.) criticise the limitation of Dosi's (1982) concept of technological paradigm and Nelson and Winter's (1977) notion of technological regime for being biased towards cognitive aspects of problem-solving activities, while neglecting other socio-economic factors. The interactions between these socio-economic factors and the cognitive aspects of technical development are argued to help shape the direction of R&D activities. Consequently, the authors propose a broader definition of technological regime, which is defined as "the whole complex of scientific knowledge, engineering practices, production process technologies, product characteristics, skills and procedures, and institutions and infrastructures that make

¹⁹ Schot, Hoogma and Elzen (1994) proposes the quasi-evolutionary model for innovation, which emphasises the coupling of the variation and selection processes in technological change. This approach contradicts the conventional evolutionary models of innovation, which lay heavy emphasis on the randomness of the variation and selection processes (i.e. variation and selection are considered separate processes which have their own causes and dynamics). Schot (1998) argues that developers of innovation create and employ expectations to anticipate and further adjust the selection environment. These expectations thus form various links between the variation and selection processes, which make them "deliberately combined" (ibid. p.197). Nonetheless, outcomes of the process of technological change are not completely dictated by the strategies and links designed by actors. Therefore, the main reason for holding on to the evolutionary theory to explain technological change, according to Schot (ibid. p.198), is because of "this fascinating process of [actors'] efforts to create order in an otherwise random process of many interrelated developments".

up a totality of a technology” (Kemp, Schot and Hoogma, 1998, p.182). Comparing a technological regime to a political regime, or a regulatory regime, Kemp, Schot and Hoogma (ibid. p.182) argue that “the existing complex of technology extended in social life imposes a grammar or logic for socio-technical change”. Consequently, this extension and embedding of existing technologies in broader technological systems, production and consumption practices, research and management belief systems, cultural values and so on, create not only technological, but also economic, cognitive and social barriers for new technologies. These barriers help explain why most technological changes are non-radical, and why these changes are often geared toward regime optimisation rather than regime transformation.

Then, how does novel technologies overcome these interrelated (and seemingly impassable) barriers? Kemp, Schot and Hoogma (ibid. p.184) resort to the notion of “niche formation” and argue that niches are “instrumental” in helping a novel technology to take off: i.e. from demonstrating its capability and securing financial support to building a constituency behind the innovation. They contend:

These niches are important for the development of a new technology. *Without the presence of a niche, system builders would get nowhere. The niches were instrumental²⁰* in the take-off of a new regime and the further development of a new technology. Apart from demonstrating the viability of a new technology and providing financial means for further development, niches helped to build a constituency behind a new technology, and to set in motion interactive learning processes and institutional adaptations [...] that are all-important for the wider diffusion and development of the new technology.

²⁰ These are emphasised as in the original document.

Consequently, the authors urge governments to contribute to the processes of niche formation by adopting their proposed strategy of “strategic niche management”. Such a policy consists of five steps. First, an “appropriate” technology, i.e. outside the existing technological regime, but has great potential in alleviating social problems, must be chosen. Second, an “appropriate” setting in which the new technology is to be used must be selected, where the advantages of the technology are valued highly, and its disadvantages are regarded as trivial. The third step is concerned with the establishment of the protected space itself. It is emphasised that a balance must be struck between the protection and selection pressure in this step. Too much protection may lead to costly failures, while too little protection might force developers to abandon certain paths of development in favour of short-term gains and benefits. The fourth step is about scaling up the experiment by means of policy. In the final step, niches might break down when support for the new technology is no longer necessary due to its success, or undesirable due to its disappointing outcomes.

Therefore, strategic niche management, in its original form, was proposed as a strategy for governments to manage the transition process to a different technological regime. Since Kemp, Schot and Hoogma’s (1998) foundational work, however, SNM scholars did not focus on developing SNM as a policy tool, but instead directed their attention towards examining the conditions and processes which determine successful²¹ niche development (Schot and Geels, 2008). Schot and Geels (ibid.) argue that, after ten years of fruitful development of the field, SNM scholars have identified three internal processes which determine the success of niche development: (1) the articulation of expectations and visions, (2) the building of social

²¹ In this context, success is defined as the extent to which a technological niche can be transformed into a market niche, and eventually a regime shift. This criteria follows early SNM work, which conceptualised the process of regime shift as a bottom-up process: (1) novel technologies emerge in technological niches, (2) the conquer market niches, (3) and eventually replace and transform the existing regime (Schot and Geels, 2008).

networks, i.e. creating a constituency behind the new technology, and (3) learning processes at multiple dimensions: e.g. technical aspects, user preferences, production and maintenance networks, government policies, cultural meaning and societal effects. The majority of researches cited by Schot and Geels (ibid. pp.541-543) are empirical case studies of finished and/or ongoing experiments in a range of fields, which place special focus on “explaining the limited success of the experiments studied”. As a result, the authors contend that these studies have proved SNM to be “a useful *ex-post* analytical framework” (ibid. p.541), while conceding the fact that “[s]o far, SNM has been used primarily for *ex-post* evaluations of case studies. It has not been applied prescriptively in ongoing processes” (ibid. p.548). Thus, from a methodological perspective, SNM also shares a similar weakness to the sociology of expectations in the lack of a robust methodological approach to studying innovation-in-the-making.

Nonetheless, one crucial contribution which these *ex-post* studies have made to the literature of SNM, according to Schot and Geels, is the differentiation between local socio-technical projects and global niche-level, which consists of an emerging community that shares cognitive, normative and formal rules and believes (Geels and Raven, 2006). Consequently, niche development can be conceptualised as a dual process²², which is simultaneously occurring at two levels: the level of projects in local practices and the global niche level. The “branching” and “piling” of local niches may eventually add up to an emerging niche at the global level. Most intriguingly, this conceptualisation helps refocus attention on sequences of projects, instead of single projects and their success or failure. Since sequences of projects can accumulate into learning trajectories, the very notion of

²² One might notice the converging of ideas between sociology of expectations and strategic niche management in this aspect. See discussion about the dual dynamics of promises on page 31.

projects' failure should be reconsidered, as even failed projects can contribute to the success of the overall sequence (see Figure 7). Therefore, it is reasonable to argue that recent scholarship in SNM has successfully addressed the third shortcoming²³ in Rip and Schot's model, which places excessive focus on single projects and their outcomes in its account of technological change.

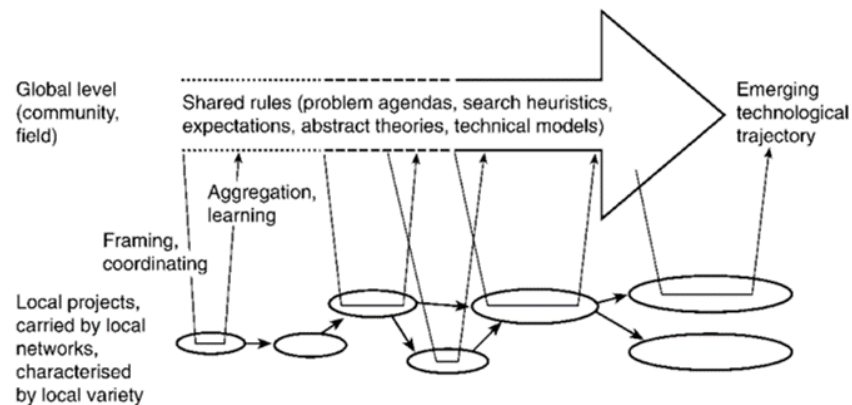


Figure 7 Technical trajectory carried by local projects (Reproduced from (Geels and Raven, 2006, p.379))

To conclude, in this section, I have discussed three critical shortcomings of the model for mapping innovation journey proposed by Rip and Schot (2002): (1) the lack of conceptualisation of the boundaries of protected spaces and the ways they are formed and dissolved; (2) the rigidity of the model in assuming a sequential order and clear-cut separation between activities to build protected spaces and stepping out into a wider world; and (3) the strong focus on single projects and their outcomes. It has also been shown that the latter two shortcomings have been addressed to a certain extent by recent literature developed in the sociology of expectations and strategic niche management, while the first pitfall is still being neglected. In other words, the existing literature still falls short of fulfilling the gap in our knowledge about “protected spaces”: i.e. how should protected spaces be

²³ Cross-referencing page 64.

conceptualised and defined other than the prevalent black-boxed notion which currently dominates the literature? How and by what mechanism does the creation/ formation of a protected space take place? Why and how does a protected space dissolve? Does the dissolution process leave behind an “empty space”? It is my intention to fulfil this gap in the literature by providing some answers to these questions.

Chapter 3- Research Design & Methodology

I. Research Strategies and Methodology

A. *Theoretical & Methodological Presuppositions*

Deductive vs. Inductive Strategies

According to Bryman (2012), there exists a close relationship between theory and research design/ methodological choices. Theory can either form the ground upon which hypotheses are deduced and then subjected to empirical scrutiny (deductive theory) or be the outcome of the inductive process which draws generalizable inferences out of empirical data (inductive theory). Hence, there exists deductive and inductive strategies in research although the differences between them are not always clear-cut. With regard to this study, an inductive strategy was chosen as the main approach as it is not the intention of the researcher to put some presupposed hypotheses to empirical tests, but to disclose hidden socio-economic factors which influence the decision-making process behind the Copyright Hub and attempt to construct some generalisations from them.

Grand Theories

Apart from deductive-inductive categorisation, theories can also be classified based on their levels of abstraction, ranging from empirical theorisation, to middle-range theories, to grand theories. At the highest level of abstraction, grand theories deal primarily with issues at the general and most abstract level. To be precise, grand theory deals with two important

considerations: epistemology, i.e. the question of justification of knowledge, and ontology, i.e. the question of fundamental nature of being (Blaikie, 2009, pp.92-96). In this research, which deals with the emergence of a new socio-technical phenomenon, my epistemological perspective is of an interpretivist who asserts that the research subject of social sciences is significantly different from that of natural sciences and hence the importance of grasping “the subjective meaning of social action” (Bryman, 2012, p.30). What is more, it is conceded that scientific knowledge and technological trajectories are neither neutral nor value free, but they are indeed contingent upon the socio-technical context which gives birth to them. As a result, objectivity and “the view from nowhere” are mere a “god trick” in science and technology studies (Harding, 1995; Shapin, 1998). Additionally, constructivism is employed as the ontological perspective used in this research. In this point of view, social phenomena and their meanings are constantly under construction and revision by social actors, instead of being an external structure that acts on and constraints people (Saunders, 1992; Young and Collin, 2004).

Qualitative vs. Quantitative vs. Mixed Methods

Bryman (2012) argues that, if one take the aforementioned epistemological and ontological concerns into consideration, two types of distinctive research strategy could be identified, namely quantitative and qualitative research strategies. In short, quantitative research focuses on the quantification of data collection and analysis, and leans towards deductive theory, positivism and objectivism. On the contrary, qualitative research emphasises on word-based data and leans more towards inductive theory, interpretivism and constructivism. Consequently, it would be logical to choose qualitative research as the primary research strategy in this study.

However, making such a decision is neither straightforward nor uncomplicated since each research strategy comes with its own strengths and weaknesses. Carr (1994) argued that quantitative and qualitative approaches have the following advantages and shortcomings. First, in data sampling, quantitative research normally required data to be sampled randomly and hence the more likelihood of the findings to be generalizable. However, random sampling is expensive and time-consuming to conduct. On the other hand, qualitative research normally has recourse to a small, selective sample due to its in-depth nature of studies. Consequently, it makes findings from qualitative studies more difficult to generalise but this can be offset by the cost and time needed to conduct the study. Second, in the relationship between researchers and subject, quantitative researchers maintain a distant, detached view with regard to the subject and treat them merely as a source of data. The strength of this position is that it helps researchers avoid bias and maintain their objectivity. However, because of that they do not have first-hand experience as qualitative researchers. The close relationship between researchers and subject also allows them to gain more in-depth insights into the subject's perspective. However, such close relationship also increases the possibility of bias and complicates the research process. Third, quantitative methods allow researchers to make predictions and control future outcomes due to the fact that variables can be manipulated in experiments. On the other hand, qualitative methods allow both researchers to gain deeper understanding of the subject and the subject to raise novel issues which are unknown to the researchers. Fourth, it is argued that quantitative data is easy to process, especially with the help of computer software. However, this analysis tends to ignore deviant cases while qualitative data identifies and takes into account all of these differences. However, this makes qualitative data more difficult and time-consuming to analyse.

Apart from these two strategies, mixed-methods has recently become the third of the three major 'research paradigms' (Johnson, Onwuegbuzie and Turner, 2007, p.123). Mixed methods research is defined as "the type of research in which a researcher or a team of researchers combines elements of qualitative and quantitative research approaches [...] for the broad purposes of breadth and depth of understanding and corroboration". By combining the two approaches, it seems promising that mixed method approach would be able to overcome the weaknesses encountered in each individual strategy to "provide the most comprehensive approach [...] to solve a research problem" (Morse, 1991). However, Bryman (2012) argued that mixed method approach is not intrinsically superior to mono-method and is also subject to the same constraints and considerations as other approaches. Furthermore, when considering using mixed methods, it is important to be aware that: first, using methods with different or even conflicting epistemological and/or ontological presuppositions would undermine the integrity and coherence of the research; second, mixed methods can consume significantly more time and resources than research conducted with mono-method; and third, mixed methods approach requires a researcher to possess substantive understanding and skills in both qualitative and quantitative methods in order to conduct the research effectively. As a result, it might not be desirable or feasible to use mixed methods in certain types of research. The drawbacks of mixed methods become even more acute in the case of doctoral research, which is typically restricted by a limited timeframe, inadequate resources and the lack of the researcher's expertise and experience in conducting a wide range of research methods.

Taking these arguments into considerations, I decided to choose qualitative approach as the research strategy for this study. The main argument here is that it is of utmost importance for the adopted approach to be able to help the researcher gain in-depth insights into the subjects' perspective and (hopefully) uncover unexpected themes and issues that could shed

new light on the complex dynamics between actors, expectations and innovation's trajectory. This work is carried out via careful examination of the mechanisms by which key players interact within (and beyond) their own ecologies, how alliances are formed across ecological boundaries, and the ways the Copyright Hub project is shaped and moulded by socio-technical expectations and ecological forces. All of these issues require data that can only be produced through qualitative approach, and thus, it is the most suitable research strategy for the purposes of this study.

Middle-range theories

The final theoretical presupposition that needs considering is the choice of middle-range theories. This concept is proposed and discussed by Merton in three versions of *Social Theory and Social Structure*, amongst which the 1968 version is the most cited. Merton (1968, p.39) defines middle-range theory as:

Theories that lie between the minor but necessary working hypotheses that evolve in abundance during day-to-day research and the all-inclusive systematic efforts to develop a unified theory that will explain all the observed uniformities of social behaviour, social organization and social change.

Such a definition therefore implies the differences in the theoretical scope between middle-range theories and empirical theorisations, which are located at the small-scope end of the spectrum, and grand theories, which are located at the large-scope end of the spectrum. Middle-range theories are situated between the two extremes. In addition to the definition, Merton also points up three defining characteristics, which set middle-range theories apart from the remainder. First, they consist of a limited set of interconnected concepts aimed at understanding limited topics, instead of broad and abstract entities as in the case of grand theories. In other words, middle-range theories focus on comprehending certain aspects of

social phenomena, rather than the social phenomena themselves. Second, middle-range theories also differ from grand theories in their emphasis upon empirical research, i.e. propositions and concepts of middle-range theories should be specific and empirically researchable. Third, middle-range theories should specify and theorise the relationships between concepts into analytical models, which indicate how one concept relates to and influences other concepts. Merton argues that only when concepts are integrated into analytical models that they constitute “the definitions or prescriptions of what is to be observed” (Merton, 1968, p.143).

The Promise of Middle-Range Theories and the Discontent in STS

Building on Merton’s work, Geels (2007, p.627) argues that “talk of ‘middle-range theory’ (MRT) is often an indication of discontent in a discipline, suggesting a middle way between undesirable extremes”. Elaborating upon his argument regarding STS, Geels asserts that the feeling of discontent occurs in four aspects of the field: (1) policy relevance; (2) conceptual language; (3) excessive focus on complexity; and (4) theoretical styles.

First, despite being a fruitful and vibrant field of research, STS is still regarded as having limited impact on other fields, most notably policy making (Edge, 2003). Geels (2007, p.630) argues that this is due mainly to “the normative aversion against instrumental contributions, for fear of technocracy”. Consequently, this leads to the fact that, instead of being constructive and proactive, most policy contributions are either reflexive or critical of policy discourses for the lack of understanding of the relationships between science, technology and society. Second, STS also suffers from the drawback of having, in abundance, loose concepts which are neither clearly defined nor carefully demarcated in regard to other similar concepts. The lack of efforts to systematically integrate and interrelate concepts is evident in calls, such as (Molina, 1995, p.387):

A need continues to exist for further refining and developing systematic approaches to understand complex technological processes by integrating concepts in an analytically operational way.

Third, STS studies are criticised for placing too much theoretical emphasis on complexity, local practices and contingencies. Geels argues that, in the early days of STS, such a focus on contingencies and non-linearity was crucial for tackling taken-for-granted ideas about the linear model of technical development and technological determinism. Approaches such as Social Construction of Technology (SCOT) and Actor Network Theory (ANT) had served these purposes well in the 1980s and 1990s. Nonetheless, these approaches (and numerous case studies which they inspire) are now suffering from diminishing returns of repetitious and unintriguing message about messiness, local practices, and contingencies (Guggenheim and Nowotny, 2003).

Fourth, theories are not only different from one another in their concepts and propositions, but they are also regarded to come in different styles. DiMaggio (1995) proposes three styles of theories: (1) as covering law, i.e. theories consisted of generalisations, when taken together, describe the world as we see it; (2) as enlightenment, i.e. theories viewed as a device of sudden enlightenment²⁴, which are rich in paradox, complex and defamiliarizing²⁵; and (3) as narrative, i.e. theories regarded as an account of a social process with particular focus on empirically testing the possibilities of the narrative and careful attention to the scope conditions of the account. In addition, Weick (1999) suggests that all styles of theories

²⁴ ANT and SCOT arguably belong to the enlightenment style of theories due to their “shock value” and “the potential for scandal” in the case of ANT (Law, 1999, p.3) and “the agenda of demonstrating the social construction” of mundane technologies and artefacts as in the case of SCOT (Bijker, 2009, p.90).

²⁵ DiMaggio (1995, p.392) defines defamiliarization as “the process of enabling a native – of a society, an organization, or an academic discipline – to see his or her world with new eyes”.

need to make trade-offs with regard to three criteria for a “good theory”: (a) generality/scope, (b) simplicity, and (c) accuracy/specificity. Weick contends that a theory that satisfies any of the two criteria, is least able to satisfy the third. Based on this argument, Geels (2007, p.633) evaluates the characteristics of SCOT and ANT – the two dominant theories in STS – and concludes that these approaches are characterised by “a gap between relatively simple, sensitizing conceptual schemes and detailed, complex case descriptions with some empirical generalizations”.

Having discussed four aspects of discontent in the existing STS literature, Geels recommends middle-range theories as the promising solution to these problems. He argues that middle-range theories in STS would: (a) focus on limited themes and topics rather than addressing science and technology as a whole; (b) make explicit efforts to integrate a set of interrelated concepts into an analytical model; and (c) search for patterns and explanatory mechanism. STS middle-range theories can satisfy all three characteristics of a “good theory” by making minor compromises in each of the criteria. On generality, they are situated between empirical theorisations and grand theories. On simplicity, they consist of a limited number of related concepts, which are integrated into more complex analytical models. These models, nonetheless, are different from the type of complicated and elaborate conceptual frameworks, which are normally found in grand theories. On accuracy, the propositions of middle-range theories have a clear link to empirical cases. Yet, the patterns and explanatory mechanisms, which middle-range theories provide, are abstract and thus accepting some loss of empirical complexity.

To give examples for the significant achievements of recent STS scholarship regarding middle-range theories in technology dynamics, Geels cites the sociology of expectations and

strategic niche management as successful exemplars²⁶. These theories address the first problem (i.e. policy relevance) by informing new large-scale research programmes in nanotechnology and genetics through analytical models, such as the promise-requirement cycles. An additional example is the Dutch government's adoption of strategic niche management as a frame to better manage pilot projects on renewable energy technologies. Regarding the second problem (i.e. unrelated concepts), both theories express explicit efforts to combine and integrate concepts into analytical models. In regard to the third problem (i.e. too much focus on complexities, contingencies and local practices), both middle-range theories show the potential for abstracting from complexities and deriving generic patterns. This also addresses the last problem regarding theoretical styles. Middle-range theories create a new style of theories, which allow researcher to derive overall mechanisms from local practices and contingency; and working on both description and explanation at the same time. Geels also notes that the aforementioned theories address long timeframe (i.e. decades) and broad scale (i.e. sociotechnical systems and communities) and thus, they differ from conventional STS studies, which focus on short-term technical projects and local practices.

Despite concurring with Geels in his promotion of middle-range theories, particularly the sociology of expectations and strategic niche management, my careful review of the existing literature of the two theories reveals a number of shortcomings which make them unfit to be adopted as the middle-range theories for this research. From a methodological perspective, both sociology of expectations and strategic niche management are proved to be useful for ex-post studies. Yet, these theories provide little support for studying

²⁶ Multi-Level Perspective (MLP) on Sociotechnical Transitions is also cited as the third example in Geels' (2007) paper. Nonetheless, Geels concedes that MLP is not yet a true middle-range theory due to the lack of descriptions of mechanisms at local level.

innovation-in-the-making, which is the case of the Copyright Hub. From theoretical perspective, as discussed at length in the previous chapter, there are gaps in the current literature which do not allow these theories to (a) identify and examine a wide range of expectations in the early stages of technological development, (b) describe and explain the outcomes of interactions between various arenas of expectations, and (c) adequately conceptualise the notion of “protected space” and theorise about the formation and dissolution of these spaces. As a result, there is a need for inspiration from other lines of academic work that help address these shortcomings. In the following section, I will discuss three bodies of work from which I draw my inspiration: (1) the Biography of Artefacts and Practices (BOAP), (2) Abbott’s (1995) discussion on Things of Boundaries, and (3) Abbott’s (2005) Linked Ecologies perspective.

Biographies of Artefacts and Practices (BOAP)

Historically, the BOAP approach was developed in two key sites (Edinburgh and Helsinki) in the mid- to late-1990s, before merging into a shared research programme by the mid-2000s (Hyyalo, Pollock and Williams, 2018). Due to its origin, the BOAP approach borrows heavily from achievements of the Social Shaping of Technology (SST) tradition and its original focus on studying technology-in-the-making (Williams and Edge, 1996; MacKenzie and Wajcman, 1999).

From a methodological perspective, the BOAP approach emerged out of the dissatisfaction with some of the dominant analytical traditions on technology and work organisations (Pollock and Williams, 2010a). Pollock and Williams (ibid. p.521) criticise “the dominance of relatively short-term, often single site studies of technology”, which they characterise as “impact studies” and “implementation studies”. Often found in practitioner and trade journals oriented towards potential adopters, “impact studies” are presented as a ‘before

and after' study, whose narrative often conveys messages of improvement, i.e. beginning with the potential adopters' problems, followed by the identification of a new technology as a solution for such problems, and concluded with discussion on adoption of the new technology and its benefits. Pollock and Williams (ibid. p.524) argue that this kind of writing often suffers from the lack of analytical distance and critical concerns, which renders it biased towards "an engineering or managerialist view of technology as instrumentally transforming work". On the other hand, "implementation studies" are often conducted in the immediate aftermath of technology adoption. Such studies point up the gap between expectations of a new technology and its immediate outcomes. Despite engaging critically with claims from suppliers, these studies are prone to produce "an incomplete and misleading understanding of the consequences of technological change" since these consequences might only emerge after years or decades (ibid. p.525). For instance, early studies of the implementation of Enterprise Resource Planning (ERP) systems concluded that there are misalignments between standardised pre-configurations embedded in the packaged solutions and the particularities of local organisational practices, which results in the complete failure of the implementation process or the need for expensive customisation and/or undesirable organisational adaptation (Soh, Kien and Tay-Yap, 2000; Davison, 2002; Hong and Kim, 2002). Nevertheless, such accounts cannot adequately explain how eventually *SAP conquered the world* (Pollock and Williams, 2009a), or more generally, the phenomenon of ERP's success and high adoption rate across multiple domains and organisations around the world.

Based on this evidence, Pollock and Williams (2010a, p.529) express their frustration of the embedded epistemologies and characteristic research design of these "localist" or "interactionist" accounts, which place particular emphasis upon the "privileging of the local". They argue that, in the context of increasingly pervasive information systems such as ERP, local interactions become significantly intertwined with global practices and technological

development processes elsewhere. In a similar vein of argument, Monteiro and colleagues describe the “localist studies”, which are restricted to specific settings and timeframes, as “problematic” when they are applied to case studies of large-scale, integrated and interconnected information systems (Monteiro *et al.*, 2013) Consequently, this gives rise to a call for moving beyond snap-shot (i.e. short-term, single-sited) studies and embrace a multi-sited, longitudinal approach to study sociotechnical systems, known as Biography of Artefacts (BoA)²⁷. Pollock and Williams (2010a, pp.530-531) proclaim:

Our early research had demonstrated the need to move beyond episodic (short-term single site) studies of settings of technology design or its organisational implementation/use and instead to address the evolution of workplace technologies over multiple cycles of design and implementation. [...] Our articulation of the BoA perspective reflects our concern to engage more coherently with the ways in which longer term history and the broader context shape innovation processes and outcomes.

To successfully design a research according to BOAP perspective, Pollock and Williams (2009a) propose an approach, which they call “strategic ethnography”. It suggests that the researcher’s choices of research settings and scopes of studies are informed by provisional theoretical and empirical understandings of the spaces where the new technology is being shaped. Strategic ethnography also requires the research to engage with multiple locales and moments of innovation (e.g. technology design, prototyping, implementation, maintenance, etc.), as well as tackling extended timeframes through more complex temporal designs encompassing longitudinal studies, follow-up studies, and long-term historical investigation.

²⁷ Practices was later added to the name of the BOAP approach to highlight the importance of, unsurprisingly, practices.

Pollock and Williams (2010a, p.532) concede that such requirements are “no small feat” and a comprehensive account of the biography of an artefact and its practices needs to be seen as “the outcome of a research programme amongst a community of enquiry”.

In addition to the “strategic ethnography” approach, the most recent development of BOAP also provides some useful principles and concepts that are worth mentioning. First, Hyysalo, Pollock and Williams (2018) argue that the shaping of innovation and practices takes place within *ecologies of interconnected actors* and thus, only studying actors with regard to how they affect the technology in question will overlook the rationales by which these actors operate, as well as the subtle mechanisms by which actors within and beyond an ecology interrelate. Second, the concept of *interstices* is proposed to help clarify how strategic ethnography should be conducted. Interstices are defined as:

[M]oments and sites in which the various focal actors in the ecology interlink and affect each other and the evolving technology. An overall understanding of the ecology of actors is typically used to pinpoint key locales where these interstices may be researched in detail, perhaps by ethnographic means. (Hyysalo, Pollock and Williams, 2018, p.6)

Third, Hyysalo, Pollock and Williams (2018, p.9) insist that BOAP is a methodological approach that typically utilises “combined ethnographic and historiographic methods including the collection of documents, in-depth interviews and records of field observations”. The availability of multiple data sources and types allow both data and method triangulation. For instance, field observation and interview could help highlight specific conflicts and concerns that appear to be particularly interesting for research, which will assist in analysing other types of data, such as documents. In turn, documents can put into perspective any exaggerated expectations and biased views of stakeholders collected through interviews.

Fourth, the BOAP approach also furthers our understanding of technology development processes and user-developer relations by advancing the notion of “series of configurational movements” (Hyysalo, Pollock and Williams, 2018, p.12). Unlike early writing on technology studies, which adopted the idea of “closure” from the sociology of science and treated the closure and opening up of technologies as discrete episodes²⁸, the BOAP approach regards technology development as “the gradual and continuous shaping of technology that takes place in multiple arenas and modes in the life of technology, con-figuring things together into assemblies and capabilities for action and actors becoming included in its story, in the biography of technology” (Hyysalo, Pollock and Williams, 2018, p.12). The distinguishing ability of the BOAP approach to examine technology over long-term, as well as focusing on key sites and moments, reveals the generative nature of partial closures and stabilisations in technological development. Many aspects of configurations can reach temporary closure and become more difficult, but not impossible, to reverse. Similarly, actors are conceptualised as having limited capacity to engage across the (potentially unlimited) wide-reaching technology development process. Therefore, in contrast to the immutability implied in Actor-Network Theory (ANT)’s notion of “obligatory passage points”, the BOAP approach argues that actors must resort to series of partial interventions within the realm of their control and interest to retain their positions vis-à-vis other actors within the continually transforming field.

Having carefully examined the BOAP approach, my decision to adopt it as the methodological approach for this research is justified on the following grounds. On the one hand, the BOAP

²⁸ For instance, Woolgar (1990) employed the notion of “configuring the user” to depict the ways designers embedded in technology their favoured enactment of certain types of users and uses. The user was thus regarded as being built into the technology by the designer in the designing phase. Conversely, Sorensen (1996) described the “domestication” process through which the form and meaning of new technology could be altered by users when it was placed in contexts of use.

approach is highly compatible with the literature of sociology of expectations and strategic niche management. These theories are all concerned with addressing research in extended timeframe (i.e. years and decades) and in multiple locales and communities. They all aim at helping researchers to study innovation at multiple levels, i.e. local projects, global technical development processes, etc., and allow us to work with description and explanation at the same time. On the other hand, the BOAP approach can supplement the shortcoming of sociology of expectations and strategic niche management by providing strategies and conceptual guidance on how to conduct research on innovation-in-the-making. The notions of “strategic ethnography”, “ecologies of interconnected actors” and “interstices” have proved to be valuable in assisting the design of this research, while the notion of “series of configurational movements” is particularly helpful in analysing the case study of the Copyright Hub.

Things of Boundaries

I draw my second inspiration from Abbott’s (1995) discussion on “Things of Boundaries”. In this seminal paper, Abbott questions the relation between boundaries and entities, as well as the conditions under which social entities come into or leave existence. Abbott argues that the latter question can be answered via a comprehensive understanding of the former.

Abbott builds his argument on a basic assertion about the relation between boundaries and entities, which contradicts the conventional position on the matter²⁹. Abbott (ibid. p.860) proposed:

²⁹ The conventional perspective takes the biological human being as the prototypical entity in modern social thought. In the conventional view, social entities are regarded as “overgrown version” of biological individuals and hence, they are assumed to possess

Social entities come into existence when social actors tie social boundaries together in certain ways. Boundaries come first, then entities.

Such a proposition requires Abbott to develop a new definition of boundary which makes sense when there is no social entities to bound. To solve this problem, Abbott (*ibid.* p.862) proposes a general notion of “difference of character” and defines a boundary point as follows:

I shall define a point x as a boundary point in space S if every neighbourhood of x contains at least two points that differ in some respect [...] In a simple case, this difference will be a single known property – color, gender, creed, education. In the more complicated (and more likely) case, it will be a combination of properties or dimensions of difference.

Abbott calls these boundary points “sites of difference”. He emphasises that differences are things that stem from “local cultural negotiations” and thus two sides are defined gradually by stable properties tossed up by local interaction. In Abbott’s (*ibid.* p.863) words: “For me, the central requirement is rather that these differences be local and interactional”. Abbott proceeds to argue that to explain change, one must begin with change and hope to explain stasis as a by-product. Although all social interaction occurs within a mixture of pre-existing

essences like biological individuals. Furthermore, due to “a self-other boundary guaranteed by centuries of Cartesian philosophy” that is normally assigned to human individuals, one cannot imagine boundaries without human entities and thus this perception is generalised to the level of social entities (*ibid.* p.860). By reversing the flow of metaphor, i.e. taking the social actor as metaphor for the individual human being, Abbotts comes up with an astounding proposition: i.e. there might be social boundaries without recourse to social entities.

actors and actions, these previously-constituted actors do not traverse the interaction unscathed. Instead, they enter an interactive environment, which is fraught with difficulty and contingency, and in such an environment many disappear. What comes out of this process are new entities, new actors and new relations amongst old parts. Following Mead's (1932, p.1) assertion that "the world is a world of events", Abbott argues that these old parts are instantaneous and unique "events", some of which have stable lineages and thus becoming what we call "actors".

Using the emergence of social work as a social entity to exemplify his argument, Abbott proclaims that the field emerged as a result of the separation of tasks that fell under social work and those that fell elsewhere. What is more important is that the separations had occurred as independent, unconnected boundaries long before the emergence of social work as a social entity. Abbott concludes that social work came into existence when various sites of difference were hooked up by social agents into larger proto-boundaries, and subsequently into larger units. Such processes placed numerous people within social work, while ruling others outside the field. An image was then constructed so that this emerging reality could be rationalised as a single thing and placed under the umbrella term of "social work".

Based on this example, Abbott presents a conception of the origin of social entities, which revolves around the process of "yoking" various proto-boundaries together. Yoking is defined as "connection of two or more proto-boundaries such that one side of each becomes defined as 'inside' the same entity" (Abbott, 1995, p.871). Abbott argues that there are two kinds of yoking. When a social space is already institutionalised or divided into established entities, radical changes can be made via means of delegitimising old differences or emphasising new ones. The first strategy yokes entities together and the second divides them. On the other

hand, when the social space is relatively unstructured, yoking means literal connection of boundaries.

The connecting of these local oppositions and differences results in a single whole, or a social entity, which has a quality which Abbott calls “thingness”. Abbott (1995, p.873) argues that “the central quality of an entity is endurance”. Entities differentiate themselves in “a world of events” via their property of repetition, which could arise either internally (i.e. via internal structures that regulate “enduring events”, resulting in internal reproduction) or externally (i.e. via external structures – an ecology which does not allow the entity to change – and thus leading to ecological reproduction). Nonetheless, Abbott emphasises the property of coherence or internal autonomy of an entity and argues that if the recurrence of a given event were due solely to the force of ecological reproduction, then it is less helpful to consider such an event as an entity. The second crucial property of entities is their ability to do social action, which is defined broadly as “any ability to create an effect on the rest of the social process that goes beyond effects that are merely transmitted through the causing entity from elsewhere” (Abbott, 1995, p.873).

If we were to match the previously-discussed notion of “protected spaces” with Abbott’s concept of “social entities”, it becomes apparent that the former is not corresponding to the latter in the strict sense. Since protected spaces are temporary and dependent upon precarious agreements between a wide range of social actors, these spaces do not possess internal structures that allow them to reproduce internally, but instead rely on external structures to maintain their existence, albeit for a limited period of time. Nevertheless, the mismatch between the two concepts does not undermine the value of Abbott’s approach to comprehending the relation between social boundaries and social entities. Adopting such conceptualisation allows us to overcome the prevalent notion of “protected spaces” as black-

boxes, whose boundaries serve to demarcate and shield inside activities from outside scrutiny, or empty spaces awaited to be filled up by resources and expectations from external social actors.

Linked Ecologies

Another conceptualisation that I borrow from Abbott (2005) is the notion of “linked ecologies”. Abbott develops this notion from the conventional ecological argument, which is prevalent in the literature of sociology³⁰. In the usual ecological accounts, scholars examine a system of actors in a set of locations. At the boundaries of such systems, however, strong assumptions are made regarding the external world: i.e. they are fixed surroundings, instead of being conceived as subject to the same “ecological” examination. Abbott proposes to address this shortcoming by reconceptualising the social world in terms of linked ecologies, each of which acts as a flexible surround for others.

Using professions as an example, Abbott argues that the professions constitute an ecology. Competing with one another, professions occupy certain areas of work, which they use to establish their own “jurisdictions” through professional knowledge systems. Jurisdictions can be won or lost due to a variety of internal and external forces, which requires professions to proact and react by either reinforcing or abandoning their old jurisdictions and seizing new openings. Being central to this conceptualisation is the argument that any events occurred to one profession will result in new openings or defeats for adjacent professions. Nevertheless, the concepts of “openings” and “defeats” imply a criterion of success that is external to the ecology of professions. In this view, professions’ claims are judged by various audiences, such as the state and the public, who eventually pick the winner amongst rival

³⁰ For examples, Hughes’ (1971) study of occupations, Goffman’s (1963) study of interaction, and the seminal work on urban phenomena by Park, Burgess and Mackenzie (1925). A more detailed discussion can be found in (Abbott, 2005).

claims. Such a proposition invites the same drawback found in the conventional ecological discourse, which uncritically recognises these audiences as “fixed and unproblematic” entities (Abbott, 2005, p.246). In fact, these audiences are neither simple nor unified social entities. The state, for instance, is an ecology in its own right, which possesses a complex internal structure filled with rival parties and subgroups and is dominated by similar ecological forces that are found in the ecology of professions. As a result, Abbott suggests that the simultaneous existence of numerous adjacent ecologies requires actors to actively seek alliances, resources and support across ecological boundaries to ensure the success of their development projects. Not only do individual actors compete within single ecologies, but they also vie in the form of alliances across multiple linked ecologies. The outcomes of local contests by individual actors thus contribute to the overall result of the alliances’ struggle for power. In Abbott’s (2005, p.247) own words:

Any successful development project must bring together some *combination*³¹ of actors across all these ecologies at once. As a result, the actor who competes in the spatial ecology of regions is not really a single actor, but rather a coalition that links one group of firms, government agencies, and voluntary associations into an alliance against *other* alliances linking *other* companies, agencies, and nonprofits. Individual alliance members compete in individual ecologies, but the alliance wins because the results of those local contests can be assembled into an overall achievement.

To elaborate upon the formal structure of ecologies, Abbott argues that the concept of ecology involves three analytical components: (1) actors, (2) locations, and (3) the links between them. Abbott (2005, p.248) names the process of constructing the relationship

³¹ Emphasised as in the original document.

between actors and locations “ligation” to highlight the fact that such a process “constitutes and delimits³² both actors and locations”. To give an example, Abbott argues that the development of a psychiatric approach to shell shock in World War I (i.e. the process of ligation) redefined both psychiatry as a profession (i.e. the actor), and shell shock as a controlled task for expert work (i.e. the location).

Despite sharing these three components, different types of ecologies appear to possess different characteristics when it comes to these elements. Abbott illustrates this argument through examples of three different ecologies: (a) profession, (b) university, and (c) politics. In the profession ecology, actors are professions characterised by being fixed and exclusively demarcated. The locations in this ecology are well-defined and relatively stable, and hence, they are named “jurisdictions”. In the university ecology, actors are composed of various disciplines, professions and inter-disciplines, which are less exclusively demarcated than professions. Changes amongst these actors occur at a more rapid rate, and individuals move between these disciplines more fluidly when compared to professions. The locations in the university ecology are called “settlements” due to their lack of the strong exclusivity found in professional jurisdictions. Academic disciplines are often overlapped in methods, theories and subject matters and thus, the separation between them are not always clear-cut. Politics is the third type of ecology, which appears to be deliberately designed to have formally constituted political actors contend for power in numerous formal settings (i.e. the legislatures, administrative councils, electoral committees, and so on). Nevertheless, these settings are not “locations” in Abbott’s (2005, p.252) ecological sense of “being endogenously created positions in a competitive space”. He argues:

³² Emphasised as in the original document.

[N]o political group is interested in dominating a legislature simply for the sake of dominating a legislature; what it really wants to dominate is some set of political issues, decisions, and outcomes. (Abbott, 2005, p.252)

Abbott (ibid. p.252) calls these sets of political decisions, actions and outcomes “the real locations of the political ecology” and names them political “bundles” – the analogues of professional “jurisdictions” and academic “settlements”. These terminologies are employed to depict the differences in characteristics of the locations in the three different ecologies. First, in terms of stability, professional jurisdictions appear to be most stable, while academic settlements change somewhat more quickly, whereas rebundling of political issues takes place at a very rapid rate. Second, in terms of separation, jurisdictions are generally well-demarcated, while settlements and bundles are much more overlapped. As a result, although every ecology is composed of three basic elements: actors, locations, and ligation, they are still different in terms of particularities of each element. Abbott argues that the differences in the internal structure of the ecologies, i.e. the dimensions, numbers, covering patterns and ligations of actors and locations, will shape and influence the emergence of alliances between these ecologies when they are linked. In addition, ecologies also have different temporal structures, i.e. different rhythms and cycles of actors, locations, and ligations, whose parallels and disparities would affect how alliances are formed between the linked ecologies.

With regard to the notion of linkage between ecologies, Abbott theorises that events within any particular ecology are “hostage” in some sense to events in adjacent ecologies. Unlike the conventional ecological model which considers this hostage relationship as a kind of external judgement, being “hostage” in the linked ecologies argument is more mutual. Both sides are ecologies and both sides enter the relationship with the expectation of getting something in return. Therefore, a competitive strategy employed in an ecology is also

expected to provide some types of rewards to allies in the adjacent ecology. Abbott (2005, p.255) calls those issues that provide these kinds of dual rewards “hinges” or “the strategies that work as well in one ecology as in the other”. He further emphasises that not only do hinges provide different kinds of rewards to allies in the multiple ecologies, they can also be of a fundamentally different type, i.e. a hinge can be a ligation in one ecology, while being a contested location in the other.

Having carefully discussed Abbott’s propositions, it becomes discernible that the notion of “linked ecologies” is beneficial to my research for three reasons.

First, the linked ecologies argument could be used to overcome a lacuna in Bakker, van Lente and Meeus’ (2011) conceptualisation of “arenas of expectations”, which considers selectors to be mere audiences instead of ecologies in their own right. In the arenas of expectations, selectors are treated uncritically as fixed and unproblematic entities, who are in the position to judge expectations voiced by enactors, without any regard to the ecological forces and complex interactions between competing subgroups amongst selectors. This drawback results in the inability to provide a comprehensible account of how and why the selectors come to their assessments of different expectations voiced in the arenas, as concurred by Bakker, van Lente and Meeus (2011)³³. In the follow-up paper, Bakker, van Lente and Meeus (2012) attempt to tackle this issue by proposing a list of external criteria used by selectors for assessing the credibility of expectations. Such a suggestion, however, still falls into the trap of uncritically attributing the external power of selectors as unproblematic “audiences”, as discussed at length above. Therefore, Abbott’s notion of “linked ecologies” offers the most appropriate solution to tackle this shortcoming.

³³ Cross-referencing page 61.

Second, the linked ecologies argument emphasises the critical role of alliances in determining the overall achievement of any successful development project. Instead of focusing on the success or failure of individual actors competing within certain ecologies, Abbott urges us to pay close attention to the formation of alliances across ecologies and the strategies which actors employ to seek for resources and support beyond their own ecological boundaries. The concept of “hinges” – or strategies that succeed in two ecologies at once - is particularly useful for explaining why certain strategies and alliances are successful when others do not. It also suggests a way to conceptually link multiple arenas of expectations together by considering them as a separate (but connected) series of configurational movements which members of an alliance must fight in order to win the general war. This argument is also in line with recent development in the literature of strategic niche management, which refocuses the attention on sequences of projects, instead of individual projects and their associated successes or failures³⁴.

Third, Abbott’s discussion of “linked ecologies” also helps foreground the need for analysis of the interior forms of neighbouring ecologies, as well as analysis of their differing temporal structures. These aspects of the complex interactions between different ecologies are often neglected or overlooked in previous social studies of technological expectations and thus, a further layer of contingency (and a source of explanation) is identified. In the case of the Copyright Hub, for example, the differences in: (a) the interior forms of the state (i.e. having two major actors surrounded by lesser groups) and of the creative industries (i.e. having actors in various sizes and shapes, mostly of small and medium sizes, with no major actor dominating the market), as well as (b) the temporal structures: the rhythms and cycles of actors and contested locations in politics change at a rapid rate, whilst their counterparts in

³⁴ Cross-referencing page 70.

the creative industries remain stable over a long period of time. Understanding these differences not only provides insights into the ways alliances are made between the two ecologies, but also helps explain how and why the Copyright Hub, as a development project, is shaped and moulded under these ecological forces.

To conclude, in this research, I choose to adopt (a) the Biography of Artefacts and Practices (BOAP) approach, (b) Abbott's discussion on "things of boundaries" and (c) his concept of "linked ecologies", for reasons which have been carefully justified above. While the latter two notions provide useful guidance for analysing the case study in question, the BOAP approach serves primarily to guide the design of this research, which is the focus of discussion in the remainder of this chapter.

B. Methodology

Research Data

According to Blaikie (2009), data used in social research can be categorised into three main types: primary, secondary and tertiary data. These types represent the distance between researchers and the source of data. In other words, the further a researcher is away from the data source, the less control he has over the production and quality of the data. What is more, each type of data has its own strengths and weaknesses and therefore, the decision to use one type over another in a research is dependent upon these characteristics, the type of research questions that have been asked and the state of the field.

First, regarding data characteristics, primary data are generated in a direct contact between researchers and the subject. As a result, researchers can control and make judgment about the quality of data that are produced. With secondary data, researchers are one step away from the source and only have access to data once they are collected. Consequently, secondary data analysis comes with a certain number of disadvantages: previous researches

were done with different aims and objectives; collected data might lack of some area of interests; the data might be coded badly; and the quality of data is more difficult to judge. With tertiary data, the researcher only has access to data after they have been analysed and therefore the data must be treated with utmost caution.

Second, regarding the research questions in this study, it is apparent that primary data must be collected in order to find answers for those questions. Moreover, taking the state of the field into consideration, there are only a limited number of empirical research studies which have been conducted in this topic. Insofar as I know, there is no secondary or tertiary data which this research can directly make use of. In sum, primary data provide the most control over data quality and are most appropriate for the purposes of this study. Hence, primary data is selected as the main type of data used in the research.

Research Methods

As suggested by Carter and Little (2007), the choice of methodology and methods in a research is closely related to the choice of epistemology, ontology, middle-range theoretical framework, research questions, research strategy and the type of data which must be collected. Consequently, in this research, I adopted a longitudinal, multi-sited historiographic and ethnographic approach to tackle the challenges posed by the chosen research questions³⁵. Empirical data were collected primarily from three sources: (1) fieldnotes and participation in day-to-day operations of the Copyright Hub, (2) qualitative semi-structured interviews with key stakeholders recruited through snowball sampling, and (3) collection of official documents that are made publicly available by the IPO, the Copyright Hub and other organisations relevant to the case. These three sources of data follow Hyysalo, Pollock and

³⁵ For the detailed criticism of “snap-shot” studies and justification for using longitudinal, multi-sited research, cross-referencing pages 82 - 87.

Williams' (2018) suggestion on the kinds of data sources which the BOAP approach typically utilises.

With regard to interviews, two types of interviewing were employed in this research: (1) qualitative interview and (2) elite interview. First, Bryman (2012, pp.470-499) argued that qualitative interview, in a direct contradiction to its quantitative counterpart, tends to be more flexible in structure, more general in specifying initial research questions, more interested in the interviewee's point of view, more capable of producing rich and detailed answers, and hence its suitability for the purposes of this research. Semi-structured interview was chosen to avoid the complete lack of any form of structure, which helped in guiding the researcher during the interview. Second, elite interview was used to uncover the socio-economic patterns and other hidden values embedded in choices and decisions, which had been made by elites involving in the construction of the Hub. It was suggested that semi-structured interviews with open-ended questions³⁶ are most suitable for this type of data collection (Aberbach and Rockman, 2002). Finally, discourse analysis and grounded theory were chosen to analyse the textual intermediaries exchanged between key players in the UK's digital licensing market, with the purpose of gaining more insights into the operation of the value chain and its associated situational definition.

With regard to conducting fieldwork, the BOAP approach reminds us that the researcher's choices of research settings and scopes of studies should be informed by theoretical and empirical understandings of the space where the new technology is being shaped. Following this suggestion, I first conducted a small pilot study between January and April 2014 for the purpose of gaining initial insights into the field. The pilot study resulted in five in-depth interviews with a leading IP scholar, two representatives of the creative industries specialised

³⁶ For an example of such an interview schedule, referencing Appendix C.

in copyright licensing, a member of an early workstream of the Copyright Hub project, and the then newly-appointed CEO of the Copyright Hub. These interviews yielded a great number of insights, which were then used to tailor the research questions and research design, as well as determining the scope and sites where the study would finally take place. The initial contact with the gatekeeper of the Copyright Hub project also proved to be helpful in propelling the researcher into the (relatively) close³⁷ community behind the project. The CEO of the Copyright Hub participated himself numerous times in the research as an interviewee. He also helped introduce the researcher to a great number of other important participants, whom I would have had difficulties in getting hold of without such introductions. Afterwards, the process of sampling participants for the full-fledged research began with key members of the Copyright Hub Ltd. and members of the development team from the Digital Catapult. From there, the population of research participants continued to grow via snowball sampling³⁸ method. In addition to snowball sampling, a few key participants, such as Professor Hargreaves – the author of the 2010 UK government’s review of the IP framework – and Richard Hooper – chairman of the Copyright Hub - were strategically targeted due to their critical roles in the biography of the Copyright Hub.

In addition to these methods of data collection, there are also other alternative approaches to conducting the proposed research. For instance, focus groups could be used, instead of qualitative interviews, to gather data about individual perspectives. However, focus groups would be much more difficult to organise, more time-consuming to manage, transcribe and

³⁷ Here, the meaning of the word “close” is twofold: (1) this community was (and still is) carefully guarded and not widely opened to public scrutiny. It was not at all common to see an outsider, as a social scientist, mingling amongst high-ranking civil servants, chairmen and CEOs of various types of organisations working in the creative sector; (2) this is a close-knit community, whose most members know one another for extended periods of time and might have worked with one another in a wide variety of project.

³⁸ Snowball or chain referral sampling is a method which yields a study sample through referrals. These referrals are made by people who have knowledge of others who possess characteristics that are of research interest. For a detailed discussion, see (Biernacki and Waldorf, 1981).

analyse data, and participants are expected to be more prone to concealing their individual perspectives due to group effects and/or the syndrome of 'expressing culturally expected views' (Bryman, 2012, p.518). Similarly, unstructured interviews could be used for interviewing the elites. However, this approach risks overlooking important questions of the research and complicates the process of data analysis.

C. Risks and Mitigation Plans

This research was conducted within the framework of a PhD programme and therefore it had several inherent limitations regarding time, budget, research skills and accessibility. I was successful in mitigating these constraints, to a certain degree, by making the best use of the resources available at the RCUK Centre for Copyright and New Business Models in the Creative Economy (or CREATE) – a consortium of seven UK universities of which the University of Edinburgh is a member. For example, the very first interview I conducted to gain insights into the field was with the director of CREATE – a world-leading lawyer in the field of intellectual property. Furthermore, I was awarded some funding from CREATE to do fieldwork as a part of a bigger research project, which studied the development of new IP infrastructures in the creative economy. Finally, participating in various CREATE's events, seminars and workshops had proved to be useful for my research, in terms of exchanging insights, sharing knowledge and disseminating my research findings to a wider academic, industrial and public audiences.

With regard to risks associated with the chosen research methods, one of the most important, as well as, time-consuming tasks in conducting qualitative interviews was recording and transcribing interviews. As suggested by Bryman (2012, p.484), the ratio between transcription hours and interview hours was normally five or six to one. In my own experience, this ratio was even higher: i.e. seven or eight hours were needed to fully

transcribe a one-hour interview. This was due to the fact that it was not always possible for the researcher to conduct an interview in a quiet setting. In fact, interviews were often conducted in noisy environments, such as a crowded private club for artists in the centre of SOHO, a busy Starbucks coffee shop near King's Cross railway station, or someone's backyard garden whose neighbourhood happened to be under construction. In such cases, the peripheral noises from background became the biggest obstacles for the researcher to make progress with his transcription. To alleviate this challenge, I used digital recording devices and computer-assisted software, such as Transcriber, to facilitate the transcription process. The validity and potential of such an approach had been confirmed by previous studies (Bringer, et al., 2006) (Alcock & Iphofen, 2007). In addition, a small part of the funding from CREATE was used to hire a third party to transcribe some of the interviews, and hence, reducing the workload on the researcher. For elite interviews, the main problem was securing and scheduling interviews with a few policy makers and high-ranking managers of big organisations in the creative industries. There were cases where the researcher had to wait more than three months before the interview could be set up. I had mitigated the risk of not being able to secure those elite interviews by actively seeking introductions made by the community's gatekeepers, by making arrangements for the interviews well in advance, and making my schedule flexible in order to accommodate the participants' availability. In cases where it was not possible to meet in person, the mitigated option of conducting online interviews via platforms, such as Skype, was utilised, although the quality of the recordings (and the interviews themselves) were inferior compared to face-to-face meetings.

With regard to research ethics, obtaining consents from participants was mandatory before any interviews were to be recorded or demographic information of the interviewees was to be documented. The participants were also appraised of the purpose and further use of the research, as well as being informed their right to withdraw from the research at any moment,

before any data were collected. Measurements for safeguarding data were carefully considered to ensure the anonymity and confidentiality of individuals and organisations involved in the research. Ensuring anonymity and confidentiality was ever more important in this case study due to two main reasons. First, at the time when the researcher embarked upon his fieldwork, the Copyright Hub was a high-profile technological initiative which was in its early stages of development. Consequently, a large portion of the data, which the researcher collected during fieldwork, were confidential and sensitive. These data had the potential of producing adverse effects on the development of the project if they were disseminated prematurely or carelessly. If such an incident had happened, the researcher's access to the field might have been cut off completely. As a result, the researcher was extremely careful while discussing the topic with people he met in the field so that neither unnecessary information nor the identity of the sources was disclosed. Second, the community behind the Copyright Hub project was a close-knit one, whose members usually had knowledge of or had worked with one another for extended periods of time. Therefore, the problem of keeping the sources of information anonymous became even more acute as one might be able to guess "who had said what" based on the subtlest hints in exchanges between the interviewer and interviewees. In cases where the recorded interviews contained information which could lead to the identification of the participants, further measures were employed, including the removal of reference data in the transcripts or the complete erasure of the recorded interviews.

Finally, ethics policy and procedures of other organisations that were involved in this study were considered and appropriately incorporated into the design of this research. The proposed study was fully adhered to the research ethics procedures developed by the School

of Social and Political Science, University of Edinburgh. The research was at level 1 of the assessment, indicating that no special ethical issues were identified³⁹.

II. Fieldwork, Data Collection & Analysis

A. Planning Fieldwork

The process of designing fieldwork in this research was strongly influenced by the BOAP perspective. To recapitulate⁴⁰, Pollocks and Williams (2009a) propose an approach called “strategic ethnography”, which emphasises that the researcher’s choice of settings and scopes of studies should be informed by provisional understanding (both theoretical and empirical) of the spaces where the innovation is being developed. As a result, this approach requires the research to engage with multiple locales and moments that are strategically crucial in the innovation journey, as well as addressing extended timeframes through complex temporal designs consisted of longitudinal studies, follow-up studies and long-term historical investigations. Such a gigantic feat of research is undoubtedly the result of a decade-long programme of interrelated studies shared amongst a community of enquiry. Therefore, the BOAP perspective could not be applied exactly as specified, but instead, the approach was tailored down to fit the constraints and limitations of doctoral research.

As mentioned above, a pilot study had been conducted to help the researcher gain insights into the Copyright Hub project before full-fledged research was carried out. Outcomes of this pilot helped identify a few critical “ecologies of interconnected actors” (Hyysalo, Pollock and Williams, 2018) rallied behind the development of the Copyright Hub initiative, which included publishing, images, music, and audiovisual sectors of the creative industries, the

³⁹ Referencing Appendix A for Level 1 Ethics Form.

⁴⁰ Cross-referencing page 84.

Linked Content Coalition, the Digital Catapult and the Copyright Hub Ltd. The next step was to pinpoint “interstices”⁴¹ or the critical moments and sites where various focal actors in these ecologies shape and influence each other, as well as the evolving technology. Based on preliminary findings from the pilot study, it was anticipated that most of these interstices would occur in London, where both the Digital Catapult and the Copyright Hub Ltd. were based. By the time the researcher embarked upon his fieldwork, it had been revealed that the Digital Catapult was constructing a brand-new office in King’s Cross, where it would house both the development team of the Copyright Hub project and the management team of the Copyright Hub Ltd. Future events related to the Copyright Hub project were also expected to be held in this place. Consequently, the Digital Catapult centre became the ideal site for the researcher to observe not only the daily operations of these two organisations, but also committee meetings, press conferences and other special events associated with the Copyright Hub project.

Having firmly secured funding for fieldwork from CREATE as a part of a bigger research project, I began my full-fledged data collection in January 2015. The fieldwork was designed so that the researcher would spend one full week every month in London interviewing people and collecting data, while the rest of the time was spent on transcribing recorded interviews, conducting preliminary data analysis, and most importantly, contacting potential participants and arranging interviews for the next fieldwork trip. There was no rigid timeframe dictating when the next fieldwork trip should take place. Following Pollock and Williams’ (2010a, p.532) suggestion that choices of research design could be “necessarily influenced by opportunism and pragmatic exigencies”, decisions about the time for each fieldtrip were made based on the progress of the Copyright Hub project, the occurrences of important

⁴¹ For a more detailed discussion of the concepts of “interstices” and “ecologies of interconnected actors”, cross-referencing page 85.

events, and the number of interviews the researcher had managed to arrange. By the time the fieldwork ended in June 2016, seven fieldwork trips had been made to London and a few other cities in the UK, which yielded, in total, 49 in-depth interviews and over 36 hours of recording. For a summary of the interviews conducted for the case study of the Copyright Hub, see Appendix B.

In addition to fieldwork in the UK, it was originally planned that the researcher would conduct some data collection in Singapore, where he spent two semesters (between July 2015 and May 2016) as a student of the Joint PhD Programme between the University of Edinburgh and the National University of Singapore. The initial prospect of such an arrangement was particularly promising as the Singapore government, in April 2013, had announced their ten-year master plan to guide the country towards becoming a global Intellectual Property Hub in Asia (IP Steering Committee, 2013). Furthermore, the Intellectual Property Office of Singapore (IPOS) was also in contact with the Copyright Hub Ltd. to discuss the potential for future exchange and collaboration between the two initiatives. The CEO of the Copyright Hub Ltd. eventually visited Singapore for such a meeting in September 2015, at the time when the researcher was already in Singapore. These circumstances suggested great potential for further fieldwork in Singapore, which could supplement the one I had conducted in the UK. Nevertheless, this attempt was later proved fruitless due to two reasons: (1) the focus of the Singapore government's master plan at the time was on establishing "a strong and reliable IP regime that is well plugged into international networks" (Intellectual Property Office of Singapore, 2017, p.1); this strong focus on the legislative aspect thus had little in common with my research interest; and (2) the talks between the Copyright Hub and IPOS did not lead to any concrete actions due to the stagnation of the Copyright Hub project. As a result, I had no choice, but abandoned the original plan to conduct fieldwork in Singapore.

After returning to the UK in June 2016, there were strong signals in the field that called upon the researcher to make another fieldtrip to London. This was due to a series of resignations from both the Copyright Hub Ltd. and the Digital Catapult, beginning with the departure of Richard Hooper as chairman of the Copyright Hub in early May 2016, to the withdrawal of the CEO of the Copyright Hub at the end of the same month, to the stepping down of the Digital Catapult's CEO in June 2016. These critical changes in personnel indicated the change of direction of the Copyright Hub project under a new leadership, as well as the closure of a phase in the innovation journey, which naturally constituted the conclusion of fieldwork for this research. Hence, the researcher made his final round of data collection in London in June 2016, mainly re-interviewing key actors who were closely associated with the development of the project. A small batch of three post-fieldwork interviews via Skype and a number of email exchange with several crucial stakeholders, whom the researcher could not meet in person, were done in order to supplement the data collected in the last fieldwork trip.

B. Data Collection, Data Analysis and Writing up

Interviews, Fieldnotes and Documents

As mentioned above, data in this study were collected from three sources: (1) in-depth qualitative interviews and elite interviews; (2) fieldnotes; and (3) publicly (and semi-publicly) available documents.

With regard to interviews, the process generally began with the researcher contacting the potential participants and making arrangements for interviews. In each fieldwork trip, the researcher first prepared a general outline of important topics and issues that were of research interests for each visit. The researcher then studied the interviewees' background through platforms, such as LinkedIn or companies' websites, to learn about their experience, expertise and professional interests. Based on this information and the general interview

guidelines, a specific interview schedule would be devised for each individual participant. As a result, each interview schedule could provide a stable structure that covered all important research topics, while being relevant enough to appeal to the interviewee and flexible enough to allow the interviewer to pursue unexpected points of interest when they emerged during the interview.

Intriguingly, the empirical fieldwork revealed a wide spectrum of interviewing patterns ranging from the most “normal” qualitative interviews to the most “elite” interviews. In the former cases, interviewees tended to shy away from providing sophisticated answers to the questions being asked and they were usually timid by being recorded during the interview. As a result, the interviewer had to take charge of the interviewing process by adopting a structured approach to asking questions (usually in the pre-prepared order), as well as attempting to elicit as much information from the participant as possible through probing and follow-up questions. By contrast, the interviewees in the latter cases were much more comfortable with being recorded and they often took charge of the interview by responding in a free-flowing manner, or deliberately ignored the order of the questions being posed and provided (highly elaborate) insights into matters which they deemed important. Therefore, the interviewer’s role in such cases were less about leading the interview, but rather ensuring that important research topics were addressed, and unexpected themes emerged during the interview were explored by means of follow-up questions. The rest of the interviews fell between these two extremes, where the interviewer and interviewee alternately took charge of the interviewing process and loosely followed the pre-prepared interview schedule.

With regard to fieldnotes, there existed a fascinating phenomenon about the shift in the interviewee’s attitude after the recording device had been turned off at the end of each interview. It had been found that participants were generally off their guard and became

more inclined to speak their minds once the exchange went off the record. Although this information could not be used directly as quotes, some of them were deeply revealing insights which served either as background information or suggestions for novel themes and topics that needed further investigation during fieldwork. Consequently, the researcher often found himself looking for a quiet corner on the busy roads of London in order to scribble down as much as he could the off-the-record conversation he had with the participant after the interview⁴². These data, together with a daily research diary⁴³ the researcher kept during fieldwork, constituted fieldnotes – the second source of data used in this research.

With regard to documents, there were two main types of documents that the researcher collected to help guide and strengthen his research. The first type was publicly available documents that anyone could find with the help of a search engine, e.g. Google, and proper uses of key words. These documents came in various sizes and shapes: from a one-page press release from the Copyright Hub, to a few pages of a minute meeting, to a hundred-page document from the government's report. These official documents, whose information was specifically related to the Copyright Hub project, were supplemented by data collected from online newspapers, professional magazines and companies' websites, which offered broader overviews of the socio-political context in which the project was taking place. The second type of documents was semi-public or private documents, which were neither easily identifiable nor accessible online using the former method. These documents were collected with the assistance of a few research participants, who kindly shared those documents from their private collections. These documents were either so venerable that they could not be found on the Internet, e.g. historical documents of previous initiatives that were similar to the Copyright Hub, or too recent and sensitive to be widely distributed, e.g. confidential

⁴² For an example, see Appendix E.

⁴³ For an example, see Appendix D.

reports of the Copyright Hub project, and thus were only circulated within a small circle. These documents undoubtedly offered unique insights into the case study, which could never be found in publicly available data sources.

The overall process of data collection, data analysis and writing up

The overall scheme of data collection, data analysis and writing up employed in this research is summarised in Figure 8 below. The research process began with the initial literature review, the purpose of which was to determine relevant theories to be used as a point of departure for the research, in conjunction with a pilot study aiming at obtaining some early empirical insights into the case study. The pilot study, during which data were collected through a small number of in-depth interviews, was theoretically informed by the initial literature review and in turn, the insights obtained through these interviews were used as feedback to help refocus the effort to narrow down the relevant literature. This effort resulted in a First Year Board Paper, which identified the “social learning framework” and “infrastructure studies” as potentially relevant literature for studying the Copyright Hub.

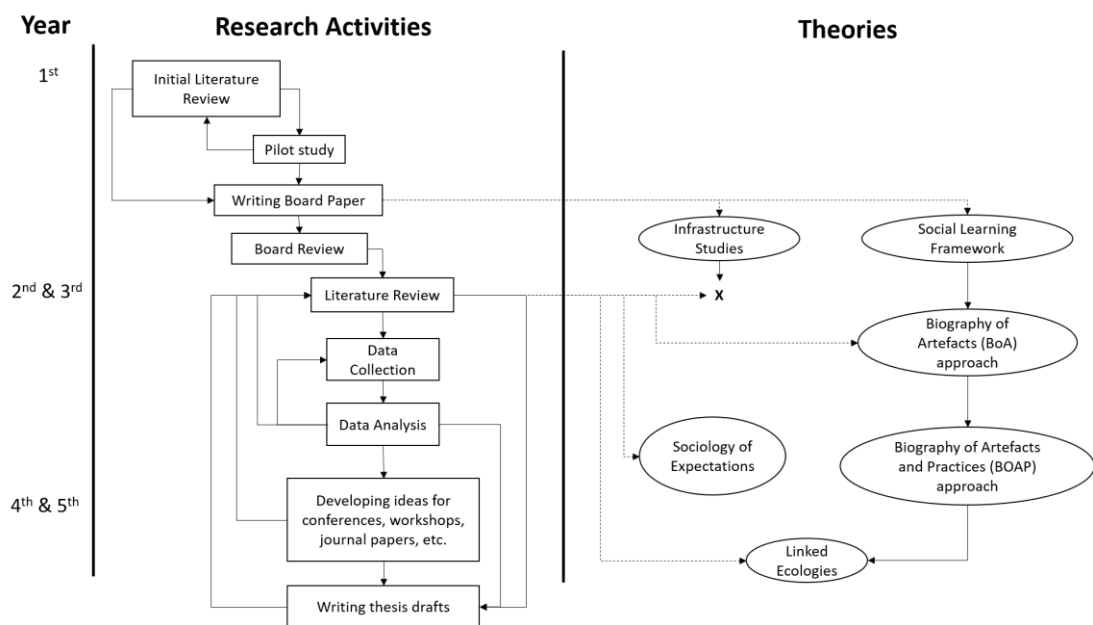


Figure 8 The overall scheme of data collection, data analysis and writing up

The Social Learning Framework was proposed by Stewart and Williams (2005) as an extension to the Social Shaping of Technology (SST) perspective with a focus on the development process of technologies. The meaning of 'social learning' is twofold. First, it illuminates the fact that properties of a technology are not always taken for granted by users, but are learnt, experienced, and enhanced through their exercises and practices with the technological artefact. Second, it also implies that, by learning about the product's deficiencies and potentialities through users' experiences, suppliers would gain considerable advantage from having access to an invaluable source of knowledge for subsequent product innovation. Stewart and Williams (2005, p.7) remark:

This underlines the importance of the linkages between users and producers that can act as a vehicle for this kind of knowledge exchange. To innovate successfully, producers may depend critically on information from users, and vice versa... The social learning framework draws attention to the way in which these knowledge flows are achieved (often by the efforts of key intermediaries) through processes that Sørensen (1996) describes as 'learning by interaction'.

In addition, this framework also identifies two different, but interrelated, social learning processes for technology development and use. First, innovation emphasises the fact that technology innovation does not stop at the supplier's site, but continues throughout the life of the artefacts as they are diffused and adopted by users (Fleck, 1993). Second, domestication refers to the efforts of users to incorporate a technology into their contexts and purposes, ranging from integrating new innovations into their families' settings to tinkering and using artefacts in ways that are not anticipated by the designer (Silverstone and Haddon, 1996; Haddon, 2006). These two differing sides of the innovation process are combined in the social learning framework to form an integrated approach to studying the evolution and biography of technological artefacts and user practices, which is appropriate for guiding research on longitudinal, multi-sited innovations, as in the case of the Copyright Hub.

On the other hand, literature on infrastructure studies (Star, 2002) was deemed fitting because the Copyright Hub initiative was initially regarded as an attempt to develop a new e-Infrastructure for streamlining the copyright licensing market. Four core concepts highlighting distinct aspects of infrastructures were selected to help guide the process of data collection and analysis in the early days of this research.

The first concept was “boundary objects”, which was developed by Star and Griesemer (1989) to depict objects which are flexible enough to meet the informational needs and constraints of various parties, and yet durable enough to make them recognisable across different sites. Boundary objects are thus at once “ambiguous and clear”, they are “loosely structured in common use, and become more tightly bound in particular locations” (Star, 2002, p.18). Consequently, boundary objects can give researchers an intriguing window into different stakeholders’ perspectives and the ways mutual understanding and relationships are shaped within heterogeneous environments. Therefore, during the early stages of my fieldwork, I paid particular attention to visions acting as boundary objects, such as “the answer to the machine is in the machine” or the Copyright Hub as a “one-stop shop for licensing” or a “maker of a new market”, which helped facilitate the communication and understanding of the project between various stakeholders across the ecologies of policy-making, business, and standard development.

The second concept revolves around the development of standards and classifications. Bowker and Star (2000, pp.149-152) define a classification as a spatial, temporal segmentation of the world, which arises from a historically situated system of activities; while standards are “any set of agreed-upon rules for the production of (textual or material) objects”. Together, standards and classification become a key site of work, politics, and struggles within any infrastructure. By focusing on examining standards and classifications, I was able to identify the data model, which the Copyright Hub adopted from the Linked Content Coalition (LCC), as a key site of tensions and activities within the project. Studying this site early on helped reveal and enabled the researcher to follow the dynamics between key stakeholders involved in the development of the Copyright Hub and hence, offered a plausible explanation for the trajectory of the Copyright Hub’s development.

The third concept is about the “master narrative” or a single voice representing “the pseudo-inclusive generic [which] does not problematize diversity” (Star, 2002, p.19). This is a bias in infrastructural and material representation, in which things that are deemed important by

the master narrative are made visible through normal categories, while the outliers – things that do not fit in any categories or standards – are rendered invisible or disappeared into the nearest file holder, which is normally labelled as “not elsewhere specified” or “other” (Star, 2010, p.609). This notion of marginality emphasises the importance of revealing the master narrative, as well as reconstructing voices of “the other”, prior to conducting any further analysis of an infrastructure. As a result, great effort was placed upon reconstructing and examining various IP narratives, their struggle and dynamics, which set the stage for the emergence of the Copyright Hub (see Chapter 5, section I).

The final concept is concerned with “invisible work”. It is argued that as boundary objects, standards, classification and master narratives become taken for granted, they create a false sense of easiness which devalues much of the work that contributes to the construction of infrastructures. In this sense, certain work is embedded in the background and becomes invisible. As Star and Strauss (1999) argued, this creates different layers of silence and arenas of voice for work in practice. Consequently, what is counted as work and who gets to define it has profound implications for understanding how work is organised, displaced, and valued in certain circumstances, which eventually leads to a more comprehensible account of how the infrastructure is constructed. This concept was thus important to help remind the researcher to pay closer attention to the invisible work that had gone into the construction of the Copyright Hub, as well as those silenced voices which could not be easily identified through other publicly available data sources.

After the practicality of applying literature on infrastructure studies and the social learning framework to the case study of the Copyright Hub was affirmed by the First Year Board Review, the researcher began to conduct full-fledged research in the field. The main research activities in this period included literature review, followed by data collection and analysis, the preliminary findings of which were further developed into workshop presentations, conference papers, and drafts of journal papers. This interim work was eventually compiled to assist the researcher in the writing process of the final thesis. It is crucial to note that these research activities did not follow a linear model, but instead they occurred in a complex, iterative manner. While the literature review helped guide the process of data collection, data analysis, and writing up, collecting and analysing data in the field, as well as writing up the thesis, also provided critical feedback on the feasibility and appropriateness of the chosen methods and literature. For instance, the four core concepts in the literature on

infrastructure studies were initially used to remind the researcher of what he should be looking for during fieldwork. Yet, empirical insights collected during fieldwork effectively foreclosed any possibility of the Copyright Hub becoming an infrastructure⁴⁴ in the copyright licensing market due to slow technical progress. As a result, although the literature on infrastructure studies was helpful as a theoretical point of departure at the early stages of this research, it soon proved inappropriate for the purpose of studying the Copyright Hub as an innovation-in-the-making.

The iterative nature of the process of reviewing literature, collecting and analysing data, and writing up thus had substantial implications for determining the research methods and theories that eventually appeared in the final form of this thesis. A more thorough review of the literature disclosed that the social learning framework belongs to a well-established tradition, known as the Social Shaping of Technology (SST), developed mainly by scholars at the “Edinburgh school” of innovation studies (Williams and Edge, 1996; MacKenzie and Wajcman, 1999). The social learning framework was argued to belong to the second wave of SST research emerging in the 2000s, which advocated methodologies and frameworks engaging with a broader conception of relevant actors and sites of technological transformation (Hyysalo, Pollock and Williams, 2018). Built on the strength of this wave of research, Pollock and Williams (2010a) developed what they called the Biography of Artefacts (BoA) approach, which aims to address the short-comings of “snap-shot” studies by means of strategic ethnography, or theoretically-informed, multi-site and longitudinal studies. As a result, the social learning framework was soon replaced by the BoA approach, and the notion of strategic ethnography consequently played a crucial role in guiding the design of this research.

In the last instance of literature review during the writing up process, the researcher was informed of the latest development of the BoA approach since the mid-2010s. By incorporating insights from a similar strand of Finnish studies of health technology innovations, a more coherent approach, which emphasises the evolution of not only the technology in question, but also organisations and practices involved in the process, was developed and the BoA approach was renamed the Biographies of Artefacts and Practices (BOAP) framework to reflect such change (Hyysalo, Pollock and Williams, 2018). This thesis

⁴⁴ Here, I followed Star and Ruhleder (1996, p.113) in defining an infrastructure as “a fundamentally relational concept. It becomes infrastructure in relation to organized practices”.

eventually adopted the BOAP framework as the state-of-the-art development of the BoA approach and incorporated a number of newly-developed concepts from the BOAP framework, such as a “series of configurational movements” and “ecologies of interconnected actors”, to help facilitate the process of data collection and analysis.

With the literature on infrastructure studies being dismissed due to being irrelevant, there was a pressing need to find appropriate literature that could help analyse the case study of the Copyright Hub, which was characterised as an innovation-in-the-making that was driven primarily by expectations and promises. The researcher soon identified the sociology of expectations as suitable literature for the purpose of guiding the process of data collection and analysis in this empirical context due to its proven track record of successful application to similar case studies in a wide range of scientific fields and technical domains⁴⁵. Further empirical insights collected from the field also suggested that the Copyright Hub was a project of divergent pressures: while the UK government sought to stimulate the economy through fostering sustainable digital industries, the creative industries at the same time appealed to the government against further erosion of copyright and IP protection by means of using digital technologies to streamline the copyright licensing process. Consequently, the case study of the Copyright Hub occurred not within a single ecology of actors, but across multiple ecologies of policy makers, businesses and IP standard developers. This circumstance called for additional literature, which could provide the necessary conceptual tools to help analyse the dynamics of expectations in multiple ecologies. Such a theory was found in Abbott’s (2005) notion of “linked ecologies”, which conceptualises the social world as linked ecologies that act as a flexible surround for one another. The iterative process of reviewing literature on “linked ecologies”, collecting and analysing data, and writing up drafts of the thesis gradually proved the merit of this notion in dissecting the complex dynamics of expectations occurring within the case study of the Copyright Hub.

Studying “linked ecologies” also led to another discovery of Abbott’s (1995) earlier work on the relation between social entities and boundaries. In his seminal paper titled “Things of boundaries”, Abbott put forward an explanation for the origin of social entities, in which he argued that social entities emerge from the process of social actors “yoking” various proto-boundaries together. This conception inspired me to reconceptualise the notion of

⁴⁵ Cross-referencing Chapter 2, page 22, for examples of the successful application of the sociology of expectations to various fields.

“protected spaces” in the context of technological innovation by arguing that protected spaces emerge through a similar process, in which various actors yoke different pre-existing sites of differences together. This reconceptualisation showed great potential for discarding the notion of “protected spaces as black-boxes”, as well as explaining not only the formation, but also the dissolution and the dynamics occurring within those spaces. Unfortunately, since the Copyright Hub was a high-profile, ongoing project whose data still largely remained confidential by the time this thesis was written, this argument has not been developed thoroughly due to the lack of available data to back up the theoretical discussion.

In comparison with grounded theory methods

Since there was no clear rule dictating the processes of analysing qualitative data (Spencer, Ritchie and O’Connor, 2003), the author did not conform to any strict form of data analysis. Nevertheless, the process, which I adopted for analysing data in this research, could be argued to resemble grounded theory methods (Glaser and Strauss, 1967). According to Charmaz (1996), grounded theory methods possesses the following six characteristics: (1) simultaneous involvement in data collection and data analysis; (2) analytic codes and categories are developed from data, not from pre-conceived hypotheses; (3) the development of middle-range theories to explain processes; (4) writing analytical memo as the crucial intermediate step between coding data and writing drafts of the paper; (5) theoretical sampling or sampling for theory construction; and (6) delay of literature review. In the following section, I will discuss in more detail several aspects of the processes of data collection and analysis and compare them with Charmaz’s prescription of grounded theory methods in order to highlight the similarities and differences between the two approaches.

First, as mentioned above, the boundaries between data collection and data analysis phases were blurred in this research. The early-collected data were subjected to preliminary analysis during fieldwork, which in turn provided feedback on which further data would be collected. In other words, the emerging analysis during fieldwork had play a crucial role in shaping my data collection procedures. For example, it was revealed during the first fieldwork trip that the data model, which the Copyright Hub adopted from the Linked Content Coalition initiative, was central to the successful development of the project. Early interviews indicated

that this data model was the most contested site of the technical implementation process due to competing ideologies, differences in development practices and professional beliefs. This finding led the researcher to enquire further into the subject and subsequently discovered a number of critical themes (e.g. how different professions justified their claims of expertise and authority over the data model; how this data model had been developed through a series of loosely-connected initiatives since the mid-90s; and how key actors migrated through a string of different projects, and yet, still contributed to the development of the same data model), all of which provided new insights into the topics of interest in this research.

Second, I began this study with certain research interests (i.e. how the dynamics of expectations shape the development of the Copyright Hub) and a set of analytical concepts (e.g. arenas of expectations, linked ecologies, hinges etc.). These concepts served as points of departure for developing new ideas and provided focus for data collection, listening to interviewees, and thinking analytically about their narratives. I was thus not limited by preconceived ideas and theories, but I was able to address both my initial research interests and other emerging topics deemed crucial by the research participants. Through such processes, I was capable of deriving my own analytical categories directly from the data, which Charmaz (1996, p.32) claimed such an indicator to be “the hallmark of grounded theory studies”.

Third, the types of data which I collected for this research were what Charmaz’s (1996) described as the “rich, detailed data”, which were generally gathered for grounded theory studies. She wrote:

When I ask for rich, detailed data, I ask for full or ‘thick’ [...] written descriptions of events observed by researchers, extensive accounts of personal experience

from respondents and records that provide narratives of experience [...]. Participant observers' field notes, interviewers' transcriptions, patient autobiographies, student journals, may all produce rich, detailed data. (Charmaz, 1996, p.33)

The research diary (see Appendix D) and field notes (see Appendix E), as well as transcriptions of in-depth interviews and documents, which I accumulated during fieldwork afford me a comprehensive understanding of the empirical context where the Copyright Hub project took place and the individual meaning and experiences from the points of view of each participant. Furthermore, the process of data collection was closely-coupled with the process of data analysis, which resulted in the data gathered became increasingly focused, with the aim of ultimately developing new theories (e.g. the new conceptualisation of protected space, theorisation of how multiple arenas of expectations could be "linked" together, and so on). Such an aim was another archetype of the grounded theory research.

Fourth, Charmaz (1996, p.36) argued that "the most important basic rule for a grounded theorist is: *study your emerging data*⁴⁶". Studying data had always been central to the process of data analysis in this research. From the very beginning of my fieldwork, I kept a daily research diary of events which I observed in the field⁴⁷. Such notes were written in the evening to help me reflect upon important events occurred during the day and were reviewed in the next morning to remind me of critical points of interest and emerging themes that needed further enquiry. In addition, I transcribed the majority of the recorded interviews myself to learn the nuances of the research participants' language and meanings. After each fieldwork trip, preliminary analysis of the data was conducted, and early findings were then

⁴⁶ Emphasised as in original document.

⁴⁷ Referencing Appendix D.

presented to my supervisors. Based on these insights and with the aid of my supervisors, I learnt to identify promising venues, themes and future directions which my data could take me in the subsequent fieldtrips.

Another crucial aspect of the data analysis process was coding the data. After an interview had been fully transcribed, I conducted initial coding by examining each line of data and made detailed comments on any actions, events or topics which were deemed important either by the participant or by myself. The process of initial coding was particularly useful for breaking data into categories and for helping me look at the data critically and analytically, without being lost in the “forest of details”⁴⁸. The next step of coding involved applying a number of codes, which continually appeared in the initial coding, to a large set of data⁴⁹. This process of coding was thus much more focused and directed than the initial coding, which helped me identify the most significant codes capable of categorising my data most accurately. Compared with the processes of coding prescribed by Charmaz (1996), the two processes that I described above were equivalent to “line-by-line coding” and “focused coding” in grounded theory methods.

However, the next step after “focused coding” was when my approach to data analysis diverted from Charmaz (1996), who recommended “memo-writing” as the intermediate step between coding and the first draft of the completed analysis. Charmaz argued that memo-writing was similar to free-writing or pre-writing – the process in which the researcher explored ideas about their categories, without the need to worrying about making the writing presentable to an audience. Consequently, memo-writing emphasised the importance of jotting ideas down as quickly and clearly as possible, while accepting overuse of prepositional phrases, repetitive structures, and lengthy sentences. In the case of this research, however,

⁴⁸ For an example of the initial coding, see Appendix F.

⁴⁹ Referencing Appendix G.

I was placed under mounting pressure to present my data and findings to a wide array of audiences very early on, as a way to fulfil my obligations to CREATE – the research consortium which provided funding for my fieldwork⁵⁰. As a publicly funded body, CREATE was committed to demonstrating the high level of impacts of those studies, which they had funded, through a variety of channels: from weekly blog posts, to conference presentations, to journal papers. The constant pressure to produce presentable pieces of work did not afford me the luxury of developing lengthy and “for my eyes only” memos, but instead I was engaged in developing a number of blog posts, conference presentations (see Table 2 below), and a draft of a journal paper for various types of audience. Although these pieces of work did help me explore and develop further my ideas about the categories which had been identified from focused coding⁵¹, they were proved to be not as efficient as Charmaz’s “memo-writing” method in terms of bridging the gap between coding and writing the first draft of a completed analysis. As a result, I had to go through a much more complex and time-consuming process of translating presentations and ideas, which I had developed in various venues for different audiences, into the draft of this thesis whilst having no intermediate layer of writing to draw upon.

Table 2: A list of conferences, at which I presented during my doctoral research

No.	Conference Name	Location	Date	Prime Audience
1	4 th Innovation in Information Infrastructures (III) Workshop	University of Warwick Coventry, UK	October 2015	Academics (Infrastructure studies)
2	40 th Annual Meeting of the Society for Social Studies of Science (4S)	Denver, Colorado, USA	November 2015	Academics (STS)

⁵⁰ Cross-referencing page 101.

⁵¹ For an example, see Appendix H.

3	CREATe Festival	London, UK	June 2016	Academics Policy Makers Industries
4	8 th Annual Workshop of the International Society for the History and Theory of Intellectual Property (ISHTIP)	CREATe University of Glasgow Glasgow, UK	July 2016	Academics (Laws)
5	41 st Annual Meeting of the Society for Social Studies of Science (4S)	Barcelona, Spain	August – September 2016	Academics (STS)

Finally, I did not leave the exhaustive process of literature review until the very end of the writing process when I had fully developed my conceptual analysis of the data. Instead, as discussed above, the literature review went through numerous iterations, which provided guidance for, and subsequently received feedback from, the data collection, data analysis and writing up process. In the final iteration of the literature review, I had covered the chosen literature (e.g. on sociology of expectations, linked ecologies, boundaries and social entities, etc.) thoroughly and explicitly weaved it into my work. With the gaps in the existing literature carefully identified and explained, I had managed to juxtapose this research with the state of the art of scholarship on social studies of technological expectations, while ensuring that my analysis was derived from the data and was not dictated by preconceived ideas and theories. The process of literature review employed in this research was thus dissimilar, yet it still shared certain characteristics with the process of deferring literature review, which Charmaz (1996) identified as one amongst the distinguishing characteristics of grounded theory methods.

Chapter 4 – Understanding the Backdrop of the Copyright Hub’s case study

I. Dreaming a Dream of Silicon Valley

On 4th November 2010, to the surprise of many spectators, the then newly-elected Prime Minister David Cameron announced his ambition to turn London’s East End into a world-leading technology city which could potentially rival Silicon Valley (GOV.UK, 2010d). This speech was also accompanied by announcements of an independent review of the UK’s IP framework, which was later known as Hargreaves Review, and the establishment of an elite network of Technology and Innovation Centres to help businesses accelerate their route from R&D to commercialisation (HM Government, 2010). Underneath Cameron’s persuasive speech on what over a hundred high-tech companies around Old Street and Shoreditch might offer and the government’s readiness to turn this vision into reality, one could not help but notice three interrelated threads running through his rhetoric (GOV.UK, 2010b).

First, in the aftermath of the 2008 financial crisis, the significant downturn of the UK’s economy had compelled the government to deal with a number of pressing socio-economic issues by throwing them back at the private sector. As David Cameron (ibid.) had succinctly put it:

... [I]n a world where money is incredibly tight... [the role of government is] to agitate for, cajole and inspire the change we want to see... [Businesses, on the other hand, will be] using their expertise and applying their resources to making

London a centre for innovation for putting Britain on the path to economic dynamism. That's what I mean when I say we're all in this together.

Second, from the perspectives of the UK's creative sector, Cameron made evident the bias in the government's plan towards the so-called "Google-model" of innovation (Sherwin, 2011). Considering Silicon Valley both as the role model for development and as important investors in the government's plan, Cameron bluntly remarked (GOV.UK, 2010b):

The founders of Google have said they could never have started their company in Britain... Over there, they have what they are called 'fair-use' provisions, which some people believe gives companies more breathing space to create new products and services... I want to encourage the sort of creative innovation that exists in America.

Consequently, it was conceived by the creative industries that Cameron's favouritism of the American model would directly benefit technology companies and start-ups at their own expenses (Sherwin, 2011). In addition, some leading laws firms also warned the government against proposals to introduce fair use exceptions⁵² into UK copyright laws, which was (and still is) stringently dictated by European Copyright Directive (Harbottle & Lewis, 2010; TaylorWessing, 2010). Therefore, any changes to copyright exceptions, they argued, would need to be discussed at European level and the UK cannot act unilaterally on this matter. As a result, Cameron's announcement of another review of the UK's IP framework was received with contrasting attitudes: it was warmly welcomed by Google and the Internet campaigners

⁵² Fair use provisions in the US laws allow any copying of copyright-protected materials for a limited and transformative purpose, such as commentary and criticism, parody, teaching and research, etc. (For more details see Stanford University Libraries 2010)

at large, while being strongly detested by the creative industries and legal practitioners (BBC, 2010d).

Third, Cameron's address also made clear the light-touch approach, which the government would adopt in carrying out this strategy, as a result of 'instructive lessons' from Silicon Valley. In Cameron's words (GOV.UK, 2010b):

We understand where previous governments have gone wrong. They believed that they could design and create a technology cluster from on-high. But the lessons from Silicon Valley are instructive. There was no grand centralised plan... This teaches government some simple things. Go with the grain of what is already there. Don't interfere so much that you smother. But do help out wherever you can.

In short, Cameron's speech was characterised by three interrelated threads: (1) an attempt to shift the socio-economic burden of reforming the UK's economy onto businesses; (2) a strong bias toward the American model, especially the provisions of fair use in copyright; and (3) a light-touch approach to carry out this strategy. Nonetheless, the real motives behind this move toward building a technology city were still left unanswered. Under what circumstances did David Cameron make his speech in Shoreditch? What was the social, political, and economic context in which the newly-elected coalition government devised and adopted such a plan? The following sections are dedicated to giving some insights into these issues.

II. UK Through the Looking Glass

Before going into more details of the empirical case study of the Copyright Hub, it is essential for one to take a step back to apprehend the bigger picture in which this story unfolded.

Three important factors of the UK's socio-political context, in which David Cameron made his announcements, are carefully chosen to be discussed at length in this section, which aims at providing not only background information, but partial explanation of why certain decisions was made.

A. The Great Recession

The first factor deals with the impact of the recent global financial crisis on the UK's economy. Starting in early summer of 2007 when the U.S. sub-prime⁵³ mortgage market began to collapse, the crisis rapidly spread throughout the global banking and financial systems as banks refused to lend to one another, citing concern over asset-backed securities (BBC, 2009b). This resulted in "the complete evaporation of liquidity in certain market segments" (BNP Paribas, 2007), which eventually pushed a great number of major banks to bankruptcy (Sorkin, 2008) and many countries into recession (Allen, 2008; Roubini, 2009). The UK was amongst the hardest hit in what was later called the Great Recession (Grusky, Western and Wimer, 2011).

In January 2009, the UK was officially in deep recession after two consecutive quarters of negative economic growth, witnessing the contraction of gross domestic product (GDP) by 1.5% in the last three months of 2008 (BBC, 2009c). It was also projected that the economy would further shrink by 2.8% in 2009, the worst prospect amongst developed countries (BBC, 2009d). Unemployment rate, in addition, had been raising sharply between April 2008 and June 2009, and finally reached its peak in October 2011 at approximately 2.7 million - the highest level in the UK for 17 years (BBC, 2015). This time, the labour market was by no means a lagging indicator of the crisis (Bell and Blanchflower, 2010). The recession also left the government with the largest budget deficit of £175 billion and the total government debt of

⁵³ Sub-prime loans are high risk loans to people with poor or no credit histories.

£1 trillion by 2014 (BBC, 2009a). As a result, cuts in public spending was expected to be 'deeper and tougher' than Margaret Thatcher's in the 1980s and the country would need 'two parliaments of pain' to mend 'the black hole in the state's finances' (Elliott, 2010). The UK's recovery from the crisis was indeed found to be relatively weak in comparison with previous recessions (UKCES, 2014). The UK finally managed to exit the Great Recession in the third quarter of 2013 when GDP returned to its peak in the pre-crisis period (Chan and Spence, 2014).

B. A Newly-Elected Government

It is also equally important to note the forming of the Conservative - Liberal Democrat coalition government in May 2010, against the turbulent backdrop of the economic downturn (BBC, 2010b). In his first speech as prime minister, Cameron emphasised the urgent need to "rebuild trust in the political system", by reducing budget deficit and reorganising the parliament, and to build "a more responsible society" where "everyone pulls together", indicating the government's plan to shift some of its responsibilities onto the private sectors (Cameron, 2010). In order to achieve these goals, the coalition government introduced a number of measures, two of which are of particular interest to this story. On the one hand, the Fixed-term Parliaments Act, which received the Royal Assent on 15th September 2011, guaranteed the fixed-term existence of five years for every parliament (Legislation.gov.uk, 2011). As a result, the Act gave significant support for the coalition government to embark on its long-term strategies, without fear that they would be interrupted by an early general election. On the other hand, the government considered its most urgent task was "to implement an accelerated plan to reduce the [budget] deficit" (HM Treasury 2010, p.1), which resulted in six billion pounds of public spending cuts in 2010 alone (Osborne, 2010).

In the second and third quarters of 2010, the UK's economy witnessed unusual rapid growth due to stimulus packages introduced by the previous government (BBC, 2010e). Despite these optimistic indications, the recovery appeared to be short-lived as data of the final quarter of 2010 indicated the shrinking of GDP once again by 0.5% (Wearden, 2011b). While the government blamed "icy weather" for the disappointing GDP reading⁵⁴, opposition politicians immediately seized this opportunity to challenge the government's austerity programme, arguing against public spending cuts which they considered being made too deeply and too rapidly. Ed Balls - the then new Shadow Chancellor - condemned Cameron and Osborne's deficit-reduction plan as a "reckless gamble", which "put political ideology or expediency before economic logic" (Balls, 2011). Furthering this argument, the outgoing general director of Confederation of British Industry (CBI) - Sir Richard Lambert - criticised the coalition government for not only being ruthless in pursuing public spending cuts, but also lacking a vision for long-term economic growth. Lambert (2011) remarked:

Rather than a big picture of the kind of economic eco-system that the Government wants to champion, we are left with a few rather vague ideas about the scope for supporting a number of predictable sectors, and the promise that more ideas will be forthcoming at the time of the spring budget. And when it comes to micro policy initiatives, politics appear to have trumped economics on too many occasions over the past eight months.

In the face of negative economic growth and mounting criticisms, it came as no surprise that the government did everything they could to defend their standing, which partially explained why both the independent IP review and the implementation plan for Technology and

⁵⁴ The then Business Secretary Vince Cable commented on Today Programme: "There is a reasonable consensus that this was a pretty bad quarter, mainly because of the weather" (Wearden, 2011a)

Innovation Centres were set to be reported within only six months after their announcements. This politico-economic context indeed made short-term concrete achievements particularly appealing to the government, as these figures are the only proper ammunition one can use to fight 'the war of visions'.

C. Previous Attempts to Review the UK's IP framework

Prior to David Cameron's call for an independent review of the UK's IP framework in November 2010, numerous attempts had already been made by previous administrations in order to intervene in this domain. To this end, one can go as far back as December 2005 when the Labour government commissioned Andrew Gowers - the former editor of Financial Times - to establish whether the UK's IP system was fit for purpose in the digital age (Out-Law, 2006). Twelve months later, a comprehensive 147-page document, which was later known as Gowers Review, was published alongside the annual pre-budget report of the Chancellor of the Exchequer (HM Treasury, 2006). In his review, Gowers found 'the current [IP] system to be broadly performing satisfactorily' and thus '[it is not] in need of radical overhaul' (Gowers 2006, pp.1-4). Instead, Gowers proposed an exhaustive list of 54 recommendations divided into three main areas: (1) strengthening IP enforcement, (2) reducing costs of IP registration and litigation, and (3) creating balanced and flexible rights, which aimed at tweaking the current legal framework to better serve the interests of all parties involved (ibid. pp.6-9). Moreover, Gowers admitted that he had not "shied away" from making recommendations at European and international levels where amendments were deemed necessary (ibid p.1). Despite Gowers' attempt to strike a balance in his approach to protect the rights of all parties involved, the Labour Administration took forward these recommendations with a clear bias towards right-holder businesses and IP enforcement. In an immediate response to Gowers Review, the government affirmed its position in

‘endorsing the full Gowers enforcement package to tackle piracy and other IP infringement’, while mentioning virtually nothing about how the other two areas of recommendations would be approached (HM Treasury 2006, p.60).

The same narrative was found echoed in subsequent Labour government’s strategic reports on digital economy, including the Creative Britain report in 2008, the Digital Britain report in 2009, and the Digital Economy Act (DEA) in 2010. Especially in the case of DEA, the bill was rushed through the parliament and received Royal Assent on 8th April 2010, in the wash-up period right before the general election (BBC 2010c). The most controversial aspects of DEA were that it imposed obligation on Internet Service Providers (ISPs) to inhibit illegal peer-to-peer file sharing and granted the Secretary of State unprecedented power to intervene in domain name registration (Parliament.uk, 2010). Under the provisions of DEA, ISPs were obliged to track down subscribers, who appeared to have engaged in infringing activities, and notified them through a series of three warning letters, before enabling legal and technical actions against serious offenders. The new power also allowed the government to use court orders to block access to websites identified with infringing content (Legislation.gov.uk, 2010). These measures were, unsurprisingly, met with angry denunciation and legal challenges from ISPs, Internet-based service companies and end-users (for detailed stories, see Arthur 2010; TaylorWessing 2011; BBC 2011; Hörnle 2012). As a result, a large proportion of DEA’s original measures were either completely removed (DCMS, 2011), or significantly delayed (BBC, 2012), or reserved without being actually implemented (Parliament.uk, 2013a).

One of the main arguments underlying criticism of DEA and its precursors was that the legislature had failed to strike the right balance between protecting the interests of the creative industries, especially those which are still clinging persistently to their old business

models of the pre-digital era and preserving the rights of others who participate in the thriving digital economy. Mansell and Steinmueller (2013) argued that this imbalance was largely due to the dominant lobbying power of the creative industries and the inaccurate 'economic calculus' of tightening control over digital copyright infringement, which was based on false assumptions and misleading methods. Consequently, these statutory interventions were largely perceived by ISPs and Internet users as the negative outcomes of policy initiatives, which were driven by lobbying instead of empirical evidence (BBC, 2009). Against this backdrop, it is reasonable to argue that Cameron's announcement of another IP review was, at least to a certain extent, a political move to gain credit for the then newly elected government by means of redressing fiercely contested policies introduced by the prior administration. In fact, as discussed in more details in the following section, conscious decisions had been made to ensure that outcomes of the Hargreaves Review were everything that the Gowers Review was not.

D. Summary

In summary, the Great Recession, the coming into power of a new government and prior attempts of the Labour administration to intervene in the UK's IP framework had had a profound impact on how decisions were subsequently made. Due to the economic crisis, pulling the country out of recession was at the top of the government's agenda. Blaming the Labour administration for the colossal budget deficit and government's debt, the then incoming government shifted its focus from economic stimulus packages to austerity programme with deep and sudden cuts in public spending. Nonetheless, poor GDP reading in the final quarter of 2010 provided political ammunition for the opposition to fight back and put the new government in defence of their standing and visions. Consequently, the coalition government expressed a strong preference for a long-term plan which, at the same

time, could produce immediate quantifiable achievements to boost the economy, without the need to deepen the hole in the government's pocket. In addition, the ill-perceived controversy around the Digital Economy Act and previous administration's approach to statutory interventions in IP were exploited to give the coalition government credit for rectifying a controversial topic. Ironically, the premature judgement on adopting fair-use provisions and explicit favouritism towards technology companies in Cameron's narrative had brought even more chaos to the issue.

III. The Dreamer, the Co-ordinator & the Geek

In the turbulent context of the UK, and more generally Europe, in 2010, how did the story of the Copyright Hub begin to unfold? The following section is devoted to detailing three series of events occurring in parallel with one another (i.e. the first two took place within the UK's context, while the last one arose at European level), which laid the foundations for three crucial strains of work in the story of the Copyright Hub: (1) the formation of creative industries' alliances which provide socio-political support for the project, (2) the accumulation of necessary resources for technical development, and (3) the distillation of decades' worth of experience and expertise into a workable data model for interoperation across different media types. Alongside these, sketches are provided in order to introduce three main organisations in this story, namely the Digital Catapult, the Copyright Hub, and the Linked Content Coalition, before we delve into their mutual shaping relationships and interactions in subsequent chapters.

A. A Tale of two UK Policies

Blueprint for Technology was the title of an official document published by the government to accompany Cameron's speech in Shoreditch (HM Government, 2010). In this document,

the government detailed a number of new policy measures, ranging from the introduction of a new Entrepreneur Visa to a new 'peer to patent' system, and a framework, which could help make these goals achievable (GOV.UK, 2010a).

Amongst these propositions, there are two announcements, which are of utmost importance and interest to this case study. First, it was the announcement of an independent review of the UK's IP framework, which was to be reported on six months later, in April 2011. This decision was mainly justified on the grounds that existing IP laws were no longer fit for purpose in the digital age and hence, the review should evaluate and identify room for improvement, which includes considering whether the introduction of US-styled fair use provisions would benefit the UK's economy. Second, the government also announced the establishment of an elite network of Technology and Innovation Centres, which would help businesses bridge the gap between research and commercialisation and thus shortening the time to market. The Technology Strategy Board was put in charge of developing a strategy and implementation plan for this network of centres and was scheduled to report in April 2011 - at the same time as the independent review of IP framework.

The reason for highlighting these two announcements is that they mark the beginning of two lines of work within the UK, which were crucial to the development of the Copyright Hub later on. In particular, the announcement of IP review resulted in the Hargreaves Review, which was followed by Richard Hooper's feasibility study and the proposal for the construction of the Copyright Hub itself. On the other hand, the elite network of Technology and Innovation Centres, which was later renamed Catapults, has been implemented by Technology Strategy Board throughout the period between 2011 and 2015⁵⁵. One of these

⁵⁵ As of August 2015, nine Catapults have been established, including Cell Therapy, Digital, Future Cities, High Value Manufacturing, Offshore Renewable Energy, Satellite Applications, and Transport Systems.

centres - the Digital Catapult - plays a vital role in moving the project forward by providing the Copyright Hub with necessary resources and technical capabilities to design and build its foundation technology. Nevertheless, it is important to note that the relationship between the Copyright Hub and Digital Catapult came as a result of contingent circumstances and by no means the fruit of a carefully crafted government's strategy. As examined in more details below, these two lines of work were running in parallel, but completely independent from one another, until an equal partnership between Digital Catapult and the Copyright Hub were formed.

Policy 1 - Building an elite network of Technology and Innovation Centres

In March 2010, Dr. Hermann Hauser published a seminal report titled *The Current and Future Role of Technology and Innovation Centres in the UK*, in which he urged the government to provide 'sustained and substantial support for an elite group of Technology and Innovation Centres' in order to bridge the critical gap between research findings and commercial propositions (Hauser 2010, p.1). Hauser (ibid. p.5) defined Technology and Innovation Centres (TICs) as 'organisations focused on the exploitation of new technologies, through an infrastructure which bridges the spectrum of activities between research and technology commercialisation'. These activities constitute different levels of technology readiness, as shown in Figure 8 below.

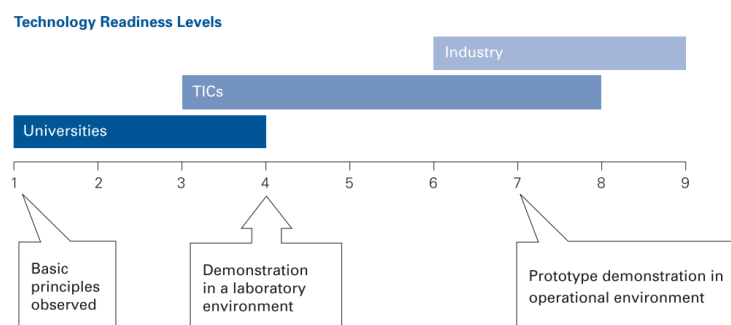


Figure 9: TICs in the spectrum of Technology Readiness Levels. (Reproduced from (Hauser 2010, p.5)

Drawing his conclusions from case studies of similar 'translational infrastructures' all over the world, Hauser (ibid.) recommended the government to focus its efforts on limited areas where: (1) multibillion pound worth of global markets exist; (2) the UK has the leading edge in scientific research; and (3) a significant part of the value chain can be anchored in the UK once the capacity has been developed. Furthermore, it was also emphasised that this elite network of TICs should be benefited from 'sustained and predictable flows of public funding' in the order of £5-10m per annum per TIC, over an average period of ten years (ibid. p.24).

In response to Hauser's report, PM David Cameron announced the government's commitment to invest £200 million in TICs in his speech in Shoreditch and assigned the Technology Strategy Board to oversee this initiative (Geere, 2010). In January 2011, a prospectus was published to found the primary principles underlying operational aspects of TICs, as well as announcing the establishment of the first centre in high value manufacturing (Technology Strategy Board, 2011a). It was also envisaged that each TIC would be funded using the one-third model (i.e. one third of their budget is predictable core funding from public money; a further third from business-funded research contracts won competitively; and the final third from collaborative applied research projects funded jointly by public and private sectors, also competitively bid for). In December 2011, the elite network of TICs was officially branded Catapults by the Technology Strategy Board (2011a).

By the time Hauser published his review of the Catapult network in November 2014, seven Catapults had been established, which attracted approximately £1.4 billion from public and private investments over the period of five years (Catapult, 2014), and the Technology Strategy Board had been renamed 'Innovate UK' to reflect its new focus on supporting innovative businesses to boost the UK's economy (ICOM, 2014). In his review, Hauser (2014, pp.3-6) concluded that the programme has 'excellent performance' and urged the UK

government to maintain its focus and commitment 'with a view to having 30 Catapults by 2030... [and] bringing the Innovate UK budget closer to £1 billion per annum by 2020'.

The Digital Catapult

The Connected Digital Economy Catapult (or Digital Catapult) was the fifth centre established by the Technology Strategy Board (2012). Becoming operational in June 2013, the main emphasis of Digital Catapult was placed upon unlocking new value from the data value chain. As a result, the Digital Catapult was constructed by default to engage horizontally with all other sectors and TICs. As Neil Crockett - CEO of the Digital Catapult - revealed:

So, the interesting position for us was we have the creative sector - digital creatives - and we have the ICT sector... And our engagement has been designed not to be sector-engagement, to be horizontal engagement... So it was set up in a way that was creating us as a layer in all sectors, including the digital creatives, not being a digital creative, if that makes sense. (Transcript F3)

As of 2015, the Digital Catapult had identified and worked with its partners to address four major challenge areas in the data value chain: (1) personal data, privacy and trust; (2) integrating diverse data sets; (3) next generation connectivity labs and city demonstrators; and (4) reusing creative digital content. It was within the last area that the Digital Catapult collaborated with the Copyright Hub to develop a new digital infrastructure for copyright licensing.

Policy 2: Reviewing the UK's IP framework

On 10th November 2010, only six days after Cameron made his speech in Shoreditch, it was announced that Professor Ian Hargreaves would be put in charge of the independent review of the UK's IP framework (GOV.UK, 2010c). Despite being a well-respected figure in

journalism and the current chair of Digital Economy at Cardiff University, the appointment of Hargreaves to lead the review was a surprise for many spectators, including Hargreaves himself. As revealed in a later interview:

I don't even know for sure who the key signatory [for the appointment] were because they never talked to me about it. Nobody discusses anything. They just rang me up on... the day before they were due to announce it and said would I made myself available at the event tomorrow morning because they were going to announce this. And I said "Actually, I can't make myself available tomorrow morning..." But they announced it anyway and off it went. So it's a close process. Certainly close from the point of view of the person who is nomination being discussed and then eventually being chosen. (Transcript E5)

Apart from being a hasty decision, this appointment was also cautiously received by many due to Hargreaves' lack of experience and expertise in the IP domain. Considering himself as an 'interested and honourably intentional outsider', Hargreaves later conceded:

Well, I had very little background in intellectual property issues prior to being asked in 2010 to take on a review of UK's intellectual property laws and framework. To the extent that I have encountered intellectual property issues, that happened a little, but only a very little in my work as a journalist, which is what I've spent most of my career doing prior to this review. And I certainly had no expertise in laws or in any detailed ways in technology. So I was very much the interested and honourably intentional outsider brought in to make some judgements on fiercely contested arguments. (Transcript E5)

Leading the review under such circumstances, Hargreaves pointed out a number of critical factors to the design of the study, which were not elected by him but rather being “predetermined” by the government, and thus making his review much less ‘independent’.

As recalled by Hargreaves:

The other fact is that... how was the review conducted were determined by others.

So, for example, it was predetermined that the staff support for the review would come from within the Intellectual Property office... At the beginning, one of its point of important was that it enabled me to be reasonably confident that this team of people would not allow me to make errors, given my lack of detailed knowledge of IP as I became more familiar with the subject.

It was clear that they were looking to me to make judgement, but I was looking to them to reassure me about the quality of the evidence. They looked to me for ideas about gathering evidence and places where we didn't have good evidence. For example, among smaller technology companies who everybody talked about a lot but nobody seemed to talk to...

There was also an advisory group, which was an important part of the process. They were largely pre-selected. Not chosen by me. They were not people that I knew personally... I hoped that they would prove to be a group that would give good advice, and they did. (Transcript E5)

Consequently, Hargreaves admitted that he had to make two “arbitrary” decisions very early on in order to lead the reviewing process. First, a definite decision was made that the review would meet the strict deadline imposed by the government, which allowed Hargreaves and his team only six months to compile their report. Second, Hargreaves had made a political

judgment on what could be done to distance his work from previous government's attempts to intervene in this arena, particularly from the Gowers Review. As Hargreaves clearly remarked:

It's fair to add as well that in terms of what came before prime minister Cameron called for the review that I conducted, the outgoing Labour-led government had itself conducted a review of Intellectual Property issues. It was so called Gowers Review, named after Andrew Gowers. And it had led to proposals for change. And those proposals had pretty much imploded just before the general election in the parliamentary queries... So that was quite important precedent, even though it was largely a precedent of undelivered promises because it's all got broken up in the election... And I think the other important thing that you had was the recent experience of failure, [which] tends to make people think "we need to try to get it right this time and get something that is workable". And I was very mindful of that...

I made one or two, you can say quite "arbitrary" decisions early on. One was that we would meet our deadlines. Two was that we would produce a report that would not have more than ten recommendations. The Gower report I think had fifty-four or fifty-something recommendations. And I thought if we produced a report with fifty-something recommendations, the chances of the ones that are really most important getting acted upon is much smaller. If you give politicians fifty-four choices, they're quite likely to choose the ten things you least want them to choose. So I said to the team that was formed around this "We're aiming for ten!" and we delivered ten in the end. (Transcript E5)

Against this backdrop, the Hargreaves Review was swiftly compiled and reported back to the government in May 2011 (GOV.UK, 2011a). In this report, Hargreaves (2011) concluded that the UK's IP framework was falling behind the advancement of digital technologies, especially in the area of copyright. As mentioned above, a list of ten recommendations for reform was proposed, three of which will be discussed in detail due to their relevance to this story.

First, perceiving copyright law as regulatory barrier to innovation and creativity, Hargreaves urged the government to 'take long overdue action' to modernise the existing framework by (1) supporting moves to achieve cross border licensing in the EU, (2) enabling licensing of orphan works, and (3) taking advantage of European Copyright Directive to introduce more exceptions at national level (ibid. p.4). Most importantly, Hargreaves proposed the construction of the world's first Digital Copyright Exchange (DCE), which was expected to help in streamlining the licensing process and contributing towards an open and efficient digital market for content in the UK. In his vision, the main aim of such DCE was 'to establish a network of interoperable databases to provide a common platform for licensing transactions' (ibid. p.33). Hargreaves recommended that the government should not itself create the DCE, but appointed a 'highly respected figure' to lead the initiative. It was also suggested that these arrangements should be put in place by the end of 2012 and the DCE could be straightforwardly self-funded by small user charge (ibid. p.34).

Second, regarding concern over fair use provisions, the Hargreaves Review concluded that "importing Fair Use wholesale was unlikely to be legally feasible in Europe" and suggested introducing EU-compliant copyright exceptions to UK's law as an alternative measure (ibid. p.5). To support this conclusion, entrepreneurship, risk-taking and investor culture were cited as the prime reasons for Silicon Valley's success, rather than the shape of IP laws in the US. In addition, Hargreaves also warned the government against any attempts to transpose fair use

into EU legal framework, as the benefits cannot be “expeditiously obtained” in the UK due to “protracted political negotiation, against a highly uncertain legal background” (ibid. pp.45-46).

Third, Hargreaves regarded enforcement as a theme which connects all areas of IP and therefore, an integrated solution, consisting of (1) modernising copyright law, (2) promoting copyright education, (3) enhancing enforcement, and (4) encouraging an open digital market for licensing, was presented as a viable proposition to replace prior policies, which emphasised solely on enforcement factor. In addition, Hargreaves requested that the government should ‘carefully monitor’ the strong enforcement measures of the Digital Economy Act and make necessary adjustment ‘in the light of evidence’ (ibid. p.6).

On 3rd August 2011, the government announced its ‘broad acceptance of recommendations’ in the Hargreaves Review (GOV.UK, 2011b). In its official response, the government stated:

Our overall goal is to have measures in place by the end of this Parliament that will do justice to the Review’s vision and will already be delivering real value to the UK economy and to the creators and lawful users of IP. We have committed to no further major review of the IP system in this Parliament. (HM Government 2011, p.1)

In addition, the proposition of a Digital Copyright Exchange was wholeheartedly accepted and fully embraced by the government. Believing in the prospect of ‘a functioning digital market in rights clearance’ enabled by the DCE and the estimated benefits of additional £2.2 billion per annum to the UK’s economy by 2020, the government promised to make ‘arrangements [for an enquiry into DCE] in due course’ (ibid. pp.4-5). Evidently, the Hargreaves Review was largely successful in getting its message across and securing support from the government.

Outside the government's immediate circle, however, attitudes towards the review were found to be much more diverse (Sweney, 2011). On the positive end, one could find a number of organisations like Open Rights Group, which warmly welcomed the Hargreaves Review and described it as 'significant but sensible copyright reforms to allow a huge range of creativity and economically useful activity to take place' (Bradwell, 2011). On the negative end, discontented responses were raised by a few, especially those working in the music industry, which considered these changes to be made at the expense of their own businesses (Music Ally, 2011). Between these two extremes, an ambivalent attitude towards the Hargreaves Review was proved to be more common. In general, these responses all shared the same position on applauding the rejection of US-styled fair use and expressing caution towards the idea of DCE due to the lack of implementation details (see Thomas 2011).

The Copyright Hub

On 22nd November 2011, the government appointed Richard Hooper - a renowned civil servant for his proven track record in leading projects converging media, telecommunications and information technologies - to chair the feasibility study on DCE (GOV.UK, 2011c). From the very beginning, Hooper decided to divide his work into two distinct phases. The first phase was designed with a particular emphasis on meeting key stakeholders and gathering empirical data in order to determine the challenges facing the licensing market. Building on this understanding, the second phase was dedicated to producing a feasible solution for implementing the DCE suggested by Hargreaves.

In March 2012, Hooper published the first report in the series, entitled 'Rights and Wrongs - Is copyright licensing fit for purpose for the digital age?' (Intellectual Property Office, 2012). In this report, Hooper (2012) argued that although the UK licensing system performed

relatively well in comparison with other countries', there was still room for improvement. In his own words:

Copyright licensing can be made more streamlined, easier and cheaper to use, especially for the small and medium-sized enterprises (SMEs) which make up 90% of the creative industries, without eroding the rights of rights owners. (ibid. p.6)

Furthermore, the report also revealed significant problems with copyright licensing within certain sectors of the creative industry, as well as across sectors and national boundaries. These problems include (1) unjustified complexity of the licensing process, (2) repertoire imbalance⁵⁶ between the physical and digital world, (3) difficulty in identifying right owners, (4) difficulty in making accurate payment, (5) lack of mechanism for support high-volume, low-value transactions, and (6) lack of common standards for cross-sectoral communication. As a result, Hooper concluded that the construction of the DCE, as outlined in Hargreaves Review, was justified.

On 31st July 2012, the second report entitled 'Copyright works - Streamlining copyright licensing for the digital age' was published, co-authored by Richard Hooper and Dr. Ros Lynch (GOV.UK, 2012a). In this report, the authors proposed the construction of an Internet-based portal, named the Copyright Hub, which has the capacity for connecting to the ever increasing networks of licensing databases and legacy systems, using cross-sectoral and interoperable open standards for communication and data building blocks (Hooper and Lynch, 2012). The Copyright Hub was expected, by design, to serve the long tail of users and uses of copyright occurred at the bottom of the market, where the existing system had no

⁵⁶ Repertoire imbalance refers to the shortage of equivalent legal content in digital formats (e.g. available for legally downloading and/or streamlining directly from the Internet), compared with its counterpart in physical forms (e.g. CDs or DVDs)

available mechanism to cultivate, and hence portraying itself as a maker of a new market, rather than a threat to current business models. In Hooper's and Lynch's vision, the Copyright Hub would provide five main services: (1) signposting and navigation; (2) copyright education; (3) copyright registration; (4) digital copyright licensing; and (5) an authoritative place for the use of orphan works.

Unlike Hargreaves Review, the 'Copyright works' report was warmly received by both public and private sectors. The then Business Secretary Vince Cable described the idea of the Copyright Hub as 'an ambitious undertaking and one that could clearly yield great benefits for the UK's creative industries and consumers' (GOV.UK, 2012a). Strong support for the Copyright Hub also came from various key stakeholders in the world of copyright licensing, including Copyright Licensing Agency (Fitzgerald, 2012), Newspaper Licensing Agency (Pugh, 2012), Publishers' Association (2012), PRS for Music (2012) and so on. This time, the UK's music industry at large appeared to be united under the banner of 'streamlining copyright licensing in the digital age' and became avid supporters of the Copyright Hub, despite their initial criticism of the idea of DCE in Hargreaves Review (UK Music, 2012).

B. Brave New (Copyright) World

Apart from those aforementioned events occurred in the UK, the emergence of the Copyright Hub was also set against a wider backdrop of substantial changes in the copyright narrative at European level. These changes are presented most lucidly in two interwoven aspects: (1) effective and collaborative control of vocabularies in order to depict copyright as neither complicated nor confusing, but an inherently complex system which needs to be simplified; and (2) a shift of emphasis in portraying copyright users as compliant, instead of the prevalent negative image of pirates and copyright infringers. This shift in narrative consequently demanded a shift in approaches to reforming copyright, which placed

emphasis upon streamlining organisations and licensing processes, instead of imposing enforcement and copyright laws upon businesses. The two aspects of this shift are discussed in detail below.

First, the ways in which vocabularies are effectively controlled are illustrated through our conversation with a manager of a major British education licensing agency. The interviewee remarked that prior to Hooper's reports, the creative industries had already begun collaborating through an initiative called the Rights Industry Forum and, in their opinion:

[A] lot of the stuff that appeared to have come out of the Hooper's reports, we were doing it already. But the government review lit a fire underneath us. It [heated up] the situation. (Transcript A3)

One of the main outcomes of this initiative was a concerted shift in discourse on copyright, which was characterised by the effective control of vocabularies used collectively by the creative industries to deliver their desirable narratives.

We were told as if we didn't know by the Hooper's report that copyright licensing in education is complicated and it was confusing. You will now never hear anyone in my job using a word 'complicated' or 'confusing'. Those words have been banned from our vocabularies... We eliminated those words from our vocabularies and our new words were 'simplify', 'streamline'... What people want is one plug point that plug into the wall and looks neat. Behind that plug point, there is a complex massive wiring and that's my best analogy for copyright. And I believe our role is to hide the wiring. (Transcript A3)

The deliberate abandonment of certain words, such as 'complicated' and 'confusing', and the collective use of carefully chosen terms, such as 'complex', 'simplify' and 'streamline', whose

evidence was found in numerous interviews across sectors of the creative industries, indicated conscious, concerted efforts in creating the new discourse. As discussed earlier, the debate on reforming intellectual property since Gowers Review in 2006 has always been about striking a balance in statutory interventions between protecting the rights of right holders and fostering creativity through innovative use of content. In contrast, the new narrative depicted copyright laws as a well-functioning legal framework, while insisting on the inherently complex nature of copyright itself. Accordingly, just like any other sophisticated technical systems, its complexity needs to be hidden away from end-users; and practitioners should be the ones who take charge of this process. As a result, creative industries and copyright practitioners were well-placed within the new discourse, while legislators were effectively ruled out.

Second, although the new image of copyright users was presented in a number of sources, it was particularly vivid in our discussion with Macbeth (pseudonym), an expert who has witnessed the transformation of the publishing industry over four decades: from metal- to film-setting, to computerised back office, and to the digital age. He narrated a story of a Polish IP lawyer, who makes stop-motion animations as his hobby. The problem, which this copyright user/ amateur creator encountered, was articulated as follow:

I've been trying to get a synchronisation licence to put music with these [animations] for the last ten years, he said. I'm an IP lawyer, I have to be compliant. I can't even get the music societies to reply to my question. None of them will even answer. (Transcript B3)

This story, within Macbeth's narration, implied a typical case of individual copyright users, who want to be complaint, but are usually ignored by right holders. This portrayal is distinct from the conventional image of copyright users in three ways. First, common users are no

longer passive consumers of content but increasingly engaging in producing new materials. They thus constitute an emerging group of stakeholders, namely the digital 'prosumer' in the copyright licensing value chain, whose importance is increasingly felt as the Internet is inundated with user-generated content (Ritzer and Jurgenson, 2010; Ritzer, Dean and Jurgenson, 2012). Second, this new group of users and their uses of copyright are characterised by granularity. In other words, they are individuals instead of companies or collectives. They tend to use (and thus need licenses for) only small parts, instead of the whole piece, of content. Third and most interestingly, they are portrayed as compliant users, rather than being normally framed as IP thieves, illegal file-sharers, and so on. This new image of copyright users consequently requires a new way to look at how copyright works: i.e. it should work for, rather than against, copyright users. As evident in Macbeth's response:

[T]he only way we're going to win [this fight] is on the back of making life easier for ordinary people to be compliant. We can't expect ordinary people to go through immensely complicated difficult licensing processes in order to do stuff which seems to them to be straightforward and obvious. We've got to make it really easy, and technology is the way that will make it really easy...

My view is that for as long as we, as an industry, leave people who want to be compliant unable to be compliant, we have only ourselves to blame for the lack of, for anybody using stuff, and also for the threat of exceptions. Because if we don't make it possible for people to license then they deserve to have exceptions. We can't say we're going to have these rights and we're going to sit on them and we're not going to let anybody else have them because it's inconvenient to us to do it. So from my point of view, the user point of view is really strong and it's all about saying we've got to make it simple for people like me, and for other people

like my friend - the Polish lawyer - to get the permissions that they need. We've got to make it really simple. (Transcript B3)

In November 2010, this shift in master narrative regarding copyright management was recognised by the European Commission as one of seven 'Big Ideas' to advance its Digital Agenda strategy (LCC 2010). The proposal, entitled 'The Answer to the Machine is in the Machine'⁵⁷, was submitted to the commission by the European Publishers Council (EPC), representing the voices of owners and CEOs of leading book, magazine, newspaper, database and online publishers in Europe. In this document, EPC (2010, pp.1-2) argued:

Our thesis is straightforward. Copyright as law is entirely fit for the new environment of networks and digital dissemination. But traditional practice for the management of copyright – individually lawyer-crafted licences, communication on paper, people-heavy processes – is a thing of the past.

We need to find ways of managing copyright that go with the grain of technology rather than falling back on cross-grained attempts to maintain a vanishing status quo...

The primary issue is about using technology to do what technology is really good at – managing data, particularly managing well-structured and standardised data, and using that data to automate the processes that control everything around us. Rights and permissions data needs to move centre stage, particularly in the regulation of business-to-business transactions.

⁵⁷ This is a famous aphorism accredited to Charles Clark, a renowned publisher and copyright expert (Hugenholtz, 1996).

In retrospect, it was evident that a new narrative was arising in the European copyright world at approximately the same time as the UK government's call for another review of its IP framework. Interestingly, these two strains of work had been evolving from completely contradicting premises. On the one hand, the underlying assumption in Cameron's Shoreditch speech was "an IP system created in the era of paper and pen may not fit the age of broadband and satellites" and thus, efforts should be focused on updating IP law so that "it meets the needs of the digital age" (BIS, 2010). On the other hand, EPC advocated modernising the practice of copyright management via deployment of digital technology, while arguing strongly against unnecessary changes to copyright laws and legislations. This contrast in narrative had not only had significant consequences for a later shift in approaches to copyright reform within the UK, but also set the stage in Europe for the emergence of Linked Content Coalition - another essential character in this case study.

Linked Content Coalition (LCC)

Following up from the proposal 'The Answer to the Machine is in the Machine', EPC presented a demonstration of how their vision could be realised at the Digital Agenda Assembly in June 2011 (LCC, 2016). Using examples from twenty-five use cases spanning across numerous sectors, including software, music, publishing and audiovisual, EPC's Project Director, Mark Bide (2011), noted three common themes under which the creative industries needed to improve their effectiveness: (1) communicating rights and permissions within the supply chain; (2) communicating rights and permissions with copyright users; and (3) developing a voluntary and effective market for automated and semi-automated rights trading. Highlighting the siloed, sector-based nature of existing approaches to tackling these problems, Bide advocated the establishment of a Creative Content Access Alliance in order to help develop a standardised communication layer across the creative industries. In

September 2011, EPC opened up the project and invited stakeholders to participate in the new alliance, which was then renamed the Linked Content Coalition (LCC) (EPC, 2011d).

In a briefing paper to the creative industries in October 2011, EPC (2011, pp.1-2) announced:

We have tentatively called this alliance of interests the Linked Content Coalition. Our aim is to encourage existing standards organisations to work together to create interoperability and commonality in the area of rights management on the internet. We are not proposing the creation of a new standards organisation; rather we are seeking to harness and coordinate the energies of existing standards initiatives in the media – driven primarily by sectoral trade standards organisations.

Apart from issuing a formal definition of LCC as a ‘meta-organisation’, EPC also provided insights into two crucial aspects of the new alliance. First, they depicted a three-layer model of a ‘networked market in rights’, which consists of ‘Registries’, ‘Exchanges’ and ‘Communication’, and clarified the scope of contribution, which LCC could make to this market (see Figure 9).

In this model, Registries are databases containing information about who owns what rights to what content in what jurisdiction. Registries therefore play a critical role in managing and

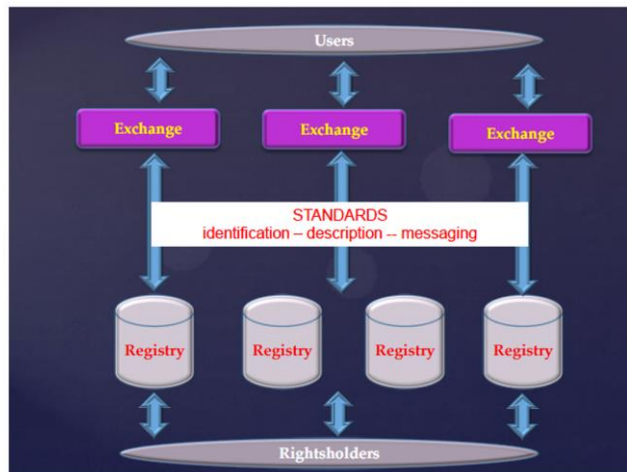


Figure 10: A simple schematic of three layers of the rights management infrastructure. (Reproduced from (EPC 2011))

supplying data to the market and serve as interfaces between the market and rightsholders. On the other hand, Exchanges provide transactional services to rights users and therefore serve as interfaces between the market and right users. Between these two layers is Communication layer, whose responsibilities include standardised identification, comprehensible description of content via metadata, and effective cross-sectoral messaging. Communication layer consequently 'provides the "glue" to hold the entire system together' (EPC 2011, p.2). While leaving the market to create sector-based, proprietary solutions for Registries and Exchanges layers, EPC (ibid. p3) argued strongly for 'an open infrastructure underpinned by standards [which] provides the critical element of choice and low switching costs for both rightsholders and rights users - in a market that might otherwise be monopolised' and thus urging the creative industries as a whole to support a meta-organisation, like LCC, in creating and managing such a standardised Communication layer.

Second, a comprehensive list of characteristics was provided by EPC as guiding principles for building LCC or any organisations with similar aims and objectives. In essence, these characteristics included: (1) be cross-media and global in reach; (2) be flexible and supportive of any and all business models and technologies; (3) be open to participation from all stakeholder communities; (4) be built on the best existing solutions and avoid 'not invented here' attitudes; and (5) be a facilitator and not a market participant. These principles played a vital role, not only in guiding the development of LCC, but also in shaping ideas and directions of the Copyright Hub in subsequent stages.

The LCC Project

In late October 2011, EPC (2011a) disseminated a detailed plan for the LCC project, which aimed at undertaking an initial programme of work in order to form the basis for the new alliance. The project was expected to be completed within twelve months and required one

million euros of funding to proceed. Distinguishing the LCC project from previous attempts to create sector-based standards for communication, EPC (ibid. p.5) argued:

Standards creation is not in itself the answer to any of these questions [of how to build an open, cost-effective, and user-appealing environment for IP trading] – it is the implementation of the standards within a comprehensive technical and commercial environment which matters. (Italicised emphasis as in the original document)

As a result, activities of the LCC project were divided into four different workstreams: (1) Non-technical deliverables dealing with a business case for implementing cross-media communication standards and recommendations for long term governance and further development of outcomes of the LCC project; (2) Technical deliverables composed of a generalised conceptual data model for rights and licensing, as well as numerous sets of functional requirements for identifiers, semantics, interoperability between different data schemas deployed in different sectors, messaging and syntax, and so on; (3) Project management concerning with activities related to the project itself; and (4) Technical demonstrator providing ‘proof of concept’ for the otherwise intangible outputs of the LCC project. Amongst them, the work of Technical deliverables and Technical demonstrator workstreams is of great interest to this case study and therefore will be discussed at length in sections below.

The LCC project was initiated in March 2012 as an unincorporated coalition of more than forty stakeholders from across sectors of the creative industries, including multiple representatives of creators and artists (LCC, 2015a). The project finally concluded in April 2013 with the publication of the LCC Framework. In order to maintain the framework and

help develop further the work initiated by the LCC project, the Linked Content Coalition Ltd., a not-for-profit global consortium of standard bodies, was established in March 2014.

To conclude, this section serves as a brief introduction to three series of events occurring in early 2010s, which resulted in the establishment of the Copyright Hub, the Linked Content Coalition, and the Digital Catapult. In addition, it is interesting to find a stark contrast in narratives between the UK's and EU's remits on "the fit for purpose" of current IP legislations and copyright laws in the digital age. What happened when these competing narratives grew out of the discursive realm and collided in the real world? What consequences did this collision have on the trajectory of the Copyright Hub, as well as the Linked Content Coalition? Answers to these questions are explored in the next chapter.

Chapter 5- Connecting Boundaries & Forming Alliances: How the Copyright Hub was born

I. The Collision of Narratives

In November 2010, there was a stark contrast in narratives between the UK government and European Commission regarding the functionality of the current IP framework, especially copyright, in the age of Internet and digital technology. The UK's government, on the one hand, asserted that the current IP system was created in 'an era of paper and pen' and thus updates were needed to keep it 'fit for purpose' in the digital age (BIS, 2010). With unambiguous intention of creating a favouring environment for Google-like companies, as well as introducing more exceptions to the UK's copyright framework, it is not surprising to find the government's narrative received "overwhelming" support from Internet start-ups and technology companies (BBC, 2010a). In line with this assertion, Hargreaves (2011, p.1) conceded that his review was set out to answer Cameron's "exam question" on whether or not "[IP] laws designed more than three centuries ago... are today obstructing innovation and economic growth?". Consequently, the government's call for another IP review led by Hargreaves was met with hostility and anger from the creative industries when it was first announced. This was reflected vividly in Hargreaves' memories of one of his earliest meetings with people working in the music sector, when he had "a good hour of" listening to comments about how "unhelpful" the review would be:

And it was a curious meeting because, on the one hand, they clearly felt that they had been clever and fortunate to have arranged to meet the person who was going to do this job so quickly. But it was also obvious that they were really, really angry that there was to be another review of copyright issues. That's the bit they were concerned about. I had, you know, a good hour of: "this is not needed", "what's going on", "we've spent all our lives being reviewed", "we don't want to be reviewed". So even though, I had quite a bit of relationship with them at that point, otherwise we wouldn't even be meeting to talk about other things, but they did not conceal their view that this was unlikely to be helpful to them - the assessment. (Transcript E5)

To give an explanation for this overwhelmingly negative reaction, Hargreaves castigated the creative industries for their "lobbyist" position on reforming IP laws, which focused solely on preserving their diminishing commercial interests via increasing enforcement.

And this was the period when the official music industries, film industries, to a slightly less extent publishing industries, and television industries' stand on copyrights was: "The only thing that matters is more intense enforcement"; "Don't talk to us about anything, other than how you are going to increase the resources [into] enforce with and the penalties attached to breaches of the law". That was what these lobbyist industries spokes people have been employed to say and to argue. (Transcript E5)

Consequently, from Hargreaves' point of view, the creative industries were perceived as a major impediment to IP progression. This was in stark contrast with a concurrent narrative in Europe, which placed the creative industries at heart of the IP advancement process. In particular, the European Publishers Council (EPC) proposed "Big Idea for the Digital Agenda:

The Answer to the Machine is in the Machine”, which accumulated significant political and financial support from both the European Commission and the creative industries ever since its germination in late 2010.

The differences between the two narratives were polar opposite. While the UK’s government sided with the tech sector to denounce the existing IP framework as a barrier to innovation and economic growth, EPC was advocating on behalf of the creative industries that the core principles of IP laws, especially copyright, were still functioning well in the networked environment. What needed to change, however, was the practice of management of rights and permissions, which was still far too complicated, time-consuming and people-intensive (EPC, 2011c). The fact that these two competing narratives were arising at the same time in proximate IP landscapes of the UK and Europe made their collision and mutual shaping somewhat inexorable (see Figure 3).

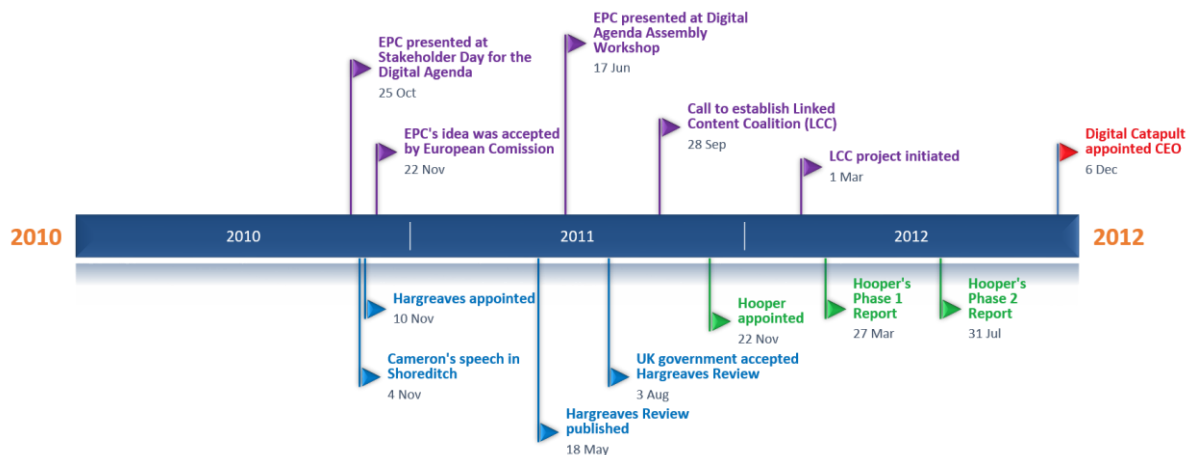


Figure 11: The intermingling of two IP-related series of events occurred in the UK and Europe between 2010 and 2012

A. Planting a Seed of Change

In March 2011, EPC submitted a response to the ‘Independent Review of IP and Growth’ in order to inform Hargreaves and the UK government of existing initiatives and emerging

movement in Europe. Emphasising that “this is not a tired call for a tightening of copyright regulation”, EPC’s submission was an attempt to pitch the idea of moving away from traditional people-intensive mechanisms to machine-to-machine management of permissions and rights (EPC 2011b, p.3). In particular, they urged the government to create “a copyright-aware internet” through provision of two main kinds of support: (1) political support for upholding the basic values of copyright, and (2) practical support for facilitating industry initiatives which aim at automating copyright management. They wrote (ibid., p.5):

Unwavering support for the basic values of copyright, in the face of the continuing assault on its most fundamental precepts from those in whose commercial interest it is to see copyright diminished.

Practical support for copyright industry initiatives in the development of approaches to the automated management of copyright and permissions, such as that proposed by the European Publishers Council’s project **The Answer to the Machine is in the Machine**. (Emphasised as in the original document)

Not only employing the formal channel to advance the creative industries’ newly formed narrative, Amelia (pseudonym) - a senior management of EPC - also made a great deal of effort to present the idea to Hargreaves in person, in an attempt to divert the seemingly predetermined course of his review. As it was later recalled, Amelia introduced the alternative IP narrative to Hargreaves at an industry meeting in early 2011 (Transcript D1):

I’m not saying I personally changed [Hargreaves’] mind but I was at an industry lunch meeting, where there were lots of people... All the copyright industries were very defensive about not changing copyright and they weren’t... very open-minded. So I expect this lunch was probably in the first quarter of 2011 because it

would have been after we launched the big idea. And when it came to my turn, I just said:

“Look! You’ve heard everybody... Everyone here wants to kind of protect what I regard as a vanishing status quo. And I would like you, professor Hargreaves, to use your intellectual ability to think about this in a different way: *It’s not to do with the law of copyright. It’s to do with the way we manage our rights*” and to sort of giving him the whole pitch.

This initial contact resulted in a series of personal exchanges, which were claimed to become the origin of the idea of establishing a Digital Copyright Exchange as a new way of streamlining copyright management in the Hargreaves’ report:

And he was absolutely fascinated and he said ‘How does this work? How would it work?’... And he really took this up and we had several conversations and several exchanges of emails and he put it into his report. I mean he didn’t call it, what we were calling it. And it was before the Linked Content Coalition has been founded. But he put the whole thing in there, called the Digital Copyright Exchange.
(Transcript D1)

Thus, the next section is dedicated to examining how well this planted idea had been developed in the Hargreaves Review and the ways it was received by the creative industries at the time of the report’s publication.

B. The Hargreaves Review: Outcomes and Responses

Six months after the government’s first announcement of the new IP review, the independent study led by Hargreaves came to an end with the publication of the final report

in May 2011. In this report, Hargreaves concluded that the UK's IP system had fallen behind the advancement of the digital economy and become "a regulatory barrier to creation" of new, internet-based businesses. Consequently, the report urged the UK government to update its legal framework, especially introducing further exceptions to the copyright laws, in order to facilitate innovation and economic growth in emerging business sectors. The report stated:

We have found that the UK's intellectual property framework, especially with regard to copyright, is falling behind what is needed... *The UK cannot afford to let a legal framework designed around artists impede vigorous participation in these emerging business sectors*⁵⁸... IP law must adapt to change. Digital communications technology involves routine copying of text, images and data, meaning that copyright law has started to act as a regulatory barrier to the creation of certain kinds of new, internet based businesses.

(Hargreaves, 2011, pp.1-3)

Nevertheless, Hargreaves also added to his list of recommendations for legal changes a proposal to establish a Digital Copyright Exchange – a technical solution which was deemed to protect the rights and commercial interests of the "hugely important creative industries" against the side effects of legislature intervention (ibid. pp.1-4):

This does not mean, however, that we must put our hugely important creative industries at risk... In order to grow these creative businesses further globally, they need efficient, open and effective digital markets at home, where rights can be speedily licensed and effectively protected... [The] review proposes that

⁵⁸ My own emphasis.

Government brings together rights holders and other business interests to create in the UK the world's first Digital Copyright Exchange.

Elaborating upon his idea of the proposed solution, Hargreaves wrote (ibid. p.4):

[The Digital Copyright Exchange] will make it easier for rights owners, small and large, to sell licences in their work and for others to buy them. It will make market transactions faster, more automated and cheaper. The result will be a UK market in digital copyright which is better informed and more readily capable of resolving disputes without costly litigation.

Therefore, it is reasonable to argue that Hargreaves' initial vision of a Digital Copyright Exchange (DCE) had been strongly influenced by ideas championed by EPC and the creative industries at the time. Although Hargreaves, in the end, did not divert far from the government's predetermined perspective on updating their legal framework, his proposal for establishing a DCE still served as a good indicator of the raising of an alternative narrative in the UK's IP landscape.

The Hargreaves Review provoked a storm of ambivalent responses from the creative industries at the time of its publication. On the one hand, Hargreaves' intention of broadening exceptions to copyright sparked not only fear, but also fury from the creative industries, who believed copyright exceptions were to be unfairly introduced and considered constant statutory intervention a nuisance to their businesses. In a response to the Business, Innovation and Skills (BIS) Committee inquiry on Hargreaves Review, for instance, News Corporation (2011) stated:

We are concerned about any proposals to introduce mandatory cross-border or extended collective licensing, or broader copyright exceptions, where there is no

evidence of market failure. Introduction of these measures could inhibit News Corporation and other companies in the creative industries from contributing to such growth.

From the creative industries' perspectives, what lay at the root of Hargreaves' distorted review of the UK's IP framework was the government's bias toward technology companies. As Sophie (pseudonym) - CEO of a major society representing publishers in the UK - recalled:

[The Hargreaves Review was perceived] not very well [by the creative industries]. Because we felt that it started from the wrong premise. And it started on the basis that copyright was a problem and it was obstructive. And in fact, you know, we didn't agree with that view. But it seemed to be a Google's view that David Cameron was adopting... [Hargreaves] started off very hostile towards copyright and so, when we read his report that, you know, said we need a lot of exceptions to copyright, we didn't really agree with that. Didn't agree with his reasoning. He didn't provide any evidence to support what he was saying. And we didn't really think that the problems he was trying to solve existed. (Transcript D3)

Apart from this, the creative industries also felt that their views were not heard and taken on board during the Hargreaves Review. To them, the conclusion seemed to have already been formed before the review was even started. Recalling her conversations with stakeholders immediately after this period, Ros Lynch - co-author of the feasibility study on the Digital Copyright Exchange (DCE) - commented:

From the stakeholders' point of view - the creative industries' point of view - they didn't feel that they had the same kind of open, honest conversation with professor Hargreaves. They felt that [Hargreaves] came to meetings with fixed

ideas already of what he wanted to see happen and irrespective of what they said.

(Transcript C5)

Finally, many rightsholders and IP practitioners also discredited Hargreaves's conclusion on the grounds of his lack of experience and expertise in intellectual property. The strict deadline imposed by the government made the review even more ill-conceived. This was emphasised by Selena (pseudonym) - a senior civil servant and IP lawyer - who had been closely involved in responding to Hargreaves Review and later participating in the establishment of the Copyright Hub:

So the previous reports were written by people who had a much greater knowledge of what it was that they were writing about and what the law was and how it worked in practice. Whereas Hargreaves just has a very limited knowledge of a very small area of copyright. And he was only given six months to produce a report, which I think was a tour for anybody and indeed it was very ambitious of him to accept it... So he produced a report in which he said that copyright was not working in the 21st century. That's the view with which I am, most practitioners, and indeed most copyright owners disagree. (Transcript E3)

On the other hand, the review was also received in a much less negative light by a number of organisations working in the creative sector, most notably EPC. This was primarily due to the fact that EPC had managed to get their narrative across and eventually succeeded in getting part of it woven into Hargreaves' arguments. Evidently, in chapter 4 of the review, Hargreaves (2011, p.30) prefaced his proposal for the Digital Copyright Exchange (DCE) by stating:

It is widely acknowledged that the solution to these difficulties lies in the very technologies that created the problem. Just as digital technologies provide new and exciting ways of using content, they offer a means of transforming the efficiency of licensing. As the submission from the European Publishers Council states: “the answer to the machine is in the machine”.

Having successfully planted the first seed of their narrative in Hargreaves Review, EPC exploited the idea of DCE as rhetorical leverage to oppose the government’s attempt to broaden exceptions to copyright. In a press release issued immediately after the publication of Hargreaves Review, Amelia (pseudonym) - executive director of EPC - plainly remarked:

Exceptions should always be an instrument of last resort and strictly limited in order that they do not undermine the commercial exploitation of copyright material. Harnessing technology to innovate in licensing should be the preferred route... In a well functioning technological environment we should need fewer, not more, exceptions...

This digital rights exchange idea has the potential to benefit everyone in the copyright chain - creators, producers and distributors along with citizens and all consumers of digital content and services. We call on the Government to move this proposal forward quickly. (EPC, 2011e)

In reply to this and other calls from the creative industries for a change in the course of action, in August 2011, the government issued a formal response to Hargreaves Review, in which their concern for the ‘falling behind’ of the UK’s IP framework and the urgent need for its adaptation, especially in the realm of copyright, was reaffirmed (HM Government, 2011). In this document, the government stated (ibid. p.2):

There is a constant need for the IP system to adapt to new forms of innovation, creativity and technology, but that need is now particularly marked in copyright because technology has made copying and communicating many works very easy and created opportunities for the widespread and efficient use of digital content...

The challenges of today are around digital copying. That is where most adaptation is currently needed.

It was from this perspective that the government proceeded to confirm their initial support for establishing “the world’s first” DCE in the UK:

The Government agrees it is right to help develop effective markets in copyright licensing where they are not emerging spontaneously. We believe a Digital Copyright Exchange (Recommendation 3) has the potential to offer a more efficient marketplace for owners and purchasers of rights, as well as opening up new markets to creators who may not have previously been able to access them.

(ibid. p.4)

Therefore, the idea of DCE was portrayed as an additional solution to the falling behind of legislations on copyright and thus it helped strengthen, instead of weakening, the government’s narrative on reviewing its IP framework.

To summarise, the Hargreaves’ proposal for establishing the DCE was perceived very differently by different stakeholders. It could be seen either as an additional technical solution to strengthen the government’s narrative on statutory intervention or a rhetoric leverage to prevent further changes to the IP framework by the creative industries. This is due mainly to the fact that neither the Hargreaves Review nor the subsequent government’s response succeeded in providing a precise prescription for what would entail in the

construction of the proposed DCE. From Hargreaves' point of view, the vagueness in the proposal was purposely put in place so that the idea of the DCE could be further developed by relevant businesses:

I didn't try to imagine in details what it would be because, I thought, if I did that it would be likely to be an obstacle to the idea being developed. The idea needed to be developed in real life, in real time by interested parties. (Transcript E5)

Nevertheless, Hargreaves also warned against the prospect of which such malleability of visions would be exploited by the creative industries to help them triumph over the government's narrative. Reflecting upon this matter, Hargreaves remarked:

Well, it's important to recall what I proposed should happen. I proposed an outline idea, which was an interoperable single-click route via which you could purchase digital materials that have enjoyed copyright protection. And I, in launching the idea, said that this was something that would only succeed if the relevant businesses wanted it to succeed. But that, it may be an example where the convening power of government would help get the things started...

But I thought that we need a defence in that proposition against the right-holders' businesses making the argument that this was going to be the answer to all difficulties in the market faced by consumers in getting digital content and digital media. Because I felt sure that they would use this up as an argument against making another legal reform. And indeed that's exactly what they did. (Transcript E5)

From the creative industries' perspectives, an ambiguous vision of the DCE represented a problem, but also a window of opportunity to turn the tide of the battle over copyright

narratives. It was apparent that no matter how visions of the DCE would have been moulded and shaped, such a proposal would only succeed if it were able to gain sufficient support from the rightsholders. Therefore, the DCE became a pivotal point of determination in this battle, in which the creative industries could engage at full strength to turn the idea to their advantage.

C. Defining the DCE

Evidence of the proactive engagement of the creative industries in defining the DCE and its associated characters were not difficult to find. The most notable example of such attempts was EPC's (2011a) submission to the Business, Innovation and Skills (BIS) Committee enquiry in September 2011. In this document, entitled 'Creating a Digital Copyright Exchange', EPC made an unequivocal account of the need to build "a global market infrastructure" for the automated management of rights and how the DCE initiative should be developed to fulfil this vision:

What we need is the development of a global market infrastructure which enables the automation of managing rights on the Internet; this is not Digital Rights Management as commonly understood but rather the development of a *standardised data infrastructure for the management of digital rights*. (ibid. p.4)

Elaborating upon their proposal, EPC suggested that the DCE, as a standardised data infrastructure, should be built in "a distributed way, not through huge and costly centralised IT development projects" (ibid.). In addition, they argued that the majority of the technical components required to achieve such an infrastructure had already existed in sectoral and/or territorial silos. Therefore, the main challenge lay in implementing these technologies and standards, rather than inventing new ones.

To reinforce these arguments, EPC first referred to the Hargreaves Review for legitimisation. Citing a section in the report which, EPC claimed, “best captured” the initial ideas of the DCE in Hargreaves’ vision, they wrote (ibid. pp.4-5):

The Hargreaves vision of the DCE is best captured in Section 4.31 of his report: “The aim is to establish a network of interoperable databases to provide a common platform for licensing transactions.” The report stresses the need for standardisation “to facilitate open competition between services based on different technologies”. It also stresses that this should not be seen as a Government IT Project. “That way lies a nightmare of IT procurement followed by the birth of a white elephant. The task for Government is to use its convening power, to show leadership to achieve an outcome which others have not been able to manage.” We agree with this entirely.

In this excerpt, the DCE’s projected qualities of being interoperable, standard-based, pro-competition, and a non-centralised IT project were especially emphasised. Unsurprisingly, these qualities were highly compatible with EPC’s vision of the DCE as a standardised data infrastructure. Furthermore, EPC argued that this definition of the DCE as “an infrastructure” was significantly different from other interpretations of the initiative, such as “a service” or “a single, publicly accessible register”, which could be found in other parts of the Hargreaves Review, and subsequently, in the government’s response:

However, the [Hargreaves] report goes on to talk about the DCE as “a service”. This we find considerably more worrying. There is a considerable difference between a DCE as a distributed standards based market infrastructure (open, voluntary and non-proprietary) and a specific market place. It is clear that this distinction has been lost.

This distinction is even less clear in the Government response, which speaks at one point of “a single, publicly accessible register”. This looks more like a Government IT project than the creation of a standards infrastructure; indeed this is to some extent confirmed by the proposal that it should follow the “model of independent traders using amazon.co.uk”. Amazon is not providing a standards infrastructure but a highly sophisticated trading floor (in which it acts as a principal). (ibid.)

The differences between these interpretations of the DCE are stark. On the one hand, the DCE could be developed as a standard-based infrastructure, which is highly distributed, non-exclusive, voluntary and industry-led. On the other hand, it could be built as a centralised, government-controlled IP service or registry, whose properties are inherently exclusive, compulsory and policy-led. As a result, choosing either of these interpretations has significant consequences not only in shaping the trajectory of the project, but also in inscribing the roles of the government and other stakeholders associated with it.

It was, therefore, not surprising that EPC went the extra mile for persuasion in their submission. They warned the UK government against “a one size fits all approach”, which would certainly be “unworkable” due to lack of participation from the creative industries (ibid. p.5):

Participation in a distributed standards based market infrastructure can only work if [it is based on the] voluntary and evolutionary model. Every content sector is in a different position regarding licensing models, existing registries, metadata etc., which is why a one size fits all approach or any compulsory element would be unworkable.

Furthermore, the government was also reminded that the DCE initiative, no matter how it would be defined and developed, could “only ever be a component in a global system”. Similarly, any changes to the UK’s IP framework would still be regulated by international laws and treaties, such as the Berne Convention, and therefore, the UK government would be more likely to encounter legal challenges if they were to make “the DCE registration de facto mandatory” (ibid.):

We also reject the notion that participation could be incentivised, linked to the ability to enforce rights. Not only might this make DCE registration de facto mandatory which would run contrary to the Berne Convention, but the aspiration should be for a market-led initiative in which there is a clear commercial incentive to participate.

[...] There is a further challenge to a UK initiative. It can only ever be a component in a global system. The UK has an opportunity to provide leadership on the global stage and the potential for first-mover advantage, but nothing more.

Extending their arguments to address the overarching narrative on IP and standardisation, EPC wrote:

The building of this right management infrastructure is not an exciting, headline-grabbing opportunity to build a one-off, high-profile system that someone can point to and say: “It’s complete”. Rather, we should be talking about development in the relatively unglamorous world of standardisation of automated rights communication and content asset identification. This is a task that like all standardisation simply continues over time, and is never complete. (ibid.)

Evidently, EPC refuted not only the notion of the DCE as a “quick technical fix” for IP problems, which had been hinted at in the government’s narrative, but also the significance of the government’s roles in leading this project. By emphasising the ‘unglamorous’ and ‘never complete’ nature of developing such a standard-based infrastructure, EPC vouched for a voluntary and market-led model of development, in which the creative industries would be primarily responsible for delivering the desired outputs over an extended timeframe. The government, on the other hand, was expected to use its convening power to create a favourable environment for the initiative to grow and flourish. In other words, it was the rhetoric of power delegation, in which the majority of control over resolving current IP issues was deemed to be shifted from the government’s hands to the creative industries’.

As discussed above, the act of defining the DCE was inseparable from the act of determining the roles of the UK government, the creative industries, and the overarching narrative on IP and standardisation. Consequently, it was unsurprising to witness the influence of the DCE initiative reaching far beyond the boundaries of the British Isles. In fact, events occurred in the UK had significant impact on bringing IP reform to the forefront of discussion at the European Commission. As Amelia (pseudonym) - a senior manager of EPC - recalled:

So the UK was very important in the development of all these things because they brought prominence to the questions in play, which was really good. And the European Commission took note of what the UK was doing. European Commission copyright people felt very besieged. You know, I think they felt that Ian Hargreaves and everyone else were telling them what to do and was making it very difficult for them. (Transcript D1)

At a more granular level, the perils of substantial changes to IP laws and the possibility of new copyright exceptions being introduced to the UK’s IP framework also had a positive

effect on catalysing the formation of the Linked Content Coalition (LCC). Understandably, the UK's creative industries were more eager to join force when they were put under the imminent threat from statutory intervention. In the first project plan for the LCC released in October 2011, EPC (2011b, p.3) justified the urgency to form their proposed consortium by referring to adverse events occurred in the UK as follow:

We believe that this project is now timely and needs to move ahead with due urgency in the light of the current political and commercial climate. It will take a considerable period of time for implementation to become widespread, so early development is essential.

D. Summary

IP-related events occurred in the UK and Europe between 2010 and 2011 were intertwined, shaped and being shaped by one another. As shown above, movements in Europe had left an undisputed mark on the development of initial ideas of the DCE. In turn, the UK government's review of its IP framework also brought prominence to the IP debate and stimulated the establishment of the LCC project. Interestingly, these two series of events came from two opposing IP narratives, which rendered their collision unavoidable. Which narrative would finally win the day under the UK's social and political climate? How was one able to navigate one's way through the maze of conflicting interests and disparate ideologies in order to turn a DCE feasibility study into a Copyright Hub project? The next section is dedicated to giving some insights into these questions.

II. The Establishment of the Copyright Hub

In August 2011, the government's acceptance of Hargreaves Review posed an imminent threat of introducing new exceptions to the UK's IP framework and thus threatened to make inroads into existing businesses of many segments of the creative industries. The political pressure was further increased when three months later, Richard Hooper was appointed to lead an independent review of the DCE proposal. The review resulted in two consecutive reports penned by Richard Hooper and Ros Lynch, a civil servant who was assigned by the Secretary of State to work with Hooper on the feasibility study. Lynch later described the two-phase process by which the review had been conducted: first, they attempted to identify existing copyright licensing issues through intensive exchanges with the creative industries; and second, in collaboration with these stakeholders, they proposed establishing the Copyright Hub as a solution for these problems. As she recalled in an interview in March 2015:

Richard was asked to do a feasibility study as an independent reviewer, and practice in government is that whenever there's an independent review, you get to find a civil servant to work with you. So I was assigned by the Secretary of State from the department of Business to work with Richard on the feasibility study...

Richard came with a clear idea of how he wanted to do this. First of all, to identify what the issues were; and then to look for solutions, rather than jumping straight into (a) either select solution or (b) trying to do it all together... So we spent the first three months largely just talking to people and also issues to people to sending comments. And then in March published the first report. And then went back and talked to the same people plus a few others to arrive at the solution. And

I worked with Richard until we published [the second] report in July 2012.

(Transcript C5)

As a result, the inception of the Copyright Hub was officially marked with the publication of the two Hooper's reports and thus, they constitute a point of departure for our discussion in this section. Nonetheless, before moving on to examining Hooper's findings and solutions, it is imperative to highlight the close engagement of the creative industries, most notably publishing, music, image, and audiovisual sectors, in producing these outputs. As Lynch later conceded:

It was across all of them, so music, publishing, audiovisual and photographs. And we spoke to people in all four of those main sectors. We didn't really have much engagement with [other sectors]. Well, we had no engagement at all with the game industry. And we had a small bit of engagement with the technology type sector. And we only had very limited engagement with consumers. So, it's the main four big industries that we normally [engaged]. (Transcript C5)

It is interesting to point up the fact that Hooper, from the very beginning of his journey with the Copyright Hub, took an opposite stance on IP issues to the one which had been generally adopted by the UK government. Instead of sidelining the creative industries on the IP reform process as in the case of the Hargreaves Review, Hooper put them in the position to lead and drive the DCE feasibility study forward, in what he called a "bottom-up" exercise:

That was from the industries. So no, [the Copyright Hub is] absolutely driven by the stakeholders. So this is not a top-down exercise; very bottom-up. (Transcript B1)

The implications of such a decision for the future of the Copyright Hub, as well as the consequences for the collision of two opposing IP narratives which concurrently initiated by the UK government and the European Commission, will be discussed in the following sections.

A. Two Milestones of the DCE Feasibility Study

Rights and Wrongs - Is copyright licensing fit for purpose for the digital age?

'Rights and Wrongs' was published in March 2012 as the first-phase report of the DCE feasibility study. In this paper, evidence from the UK's creative industries was collected to identify existing problems in the copyright licensing process. Declaring his aims and objectives, which was to "interrogate the [Hargreaves] hypothesis", Hooper (2012, p.21) stated:

This first phase of the Digital Copyright Exchange Feasibility Study seeks to interrogate the hypothesis which emanates from the Hargreaves Report... The hypothesis can be described thus:

Copyright licensing, involving creators, rights owners, rights managers, rights users and consumers across the different media types and the different industry segments is not fit for purpose for the digital age⁵⁹.

Having analysed responses to the Call for Evidence and numerous face-to-face meetings with the creative industries, the first Hooper's report suggested that answers to this hypothesis were much more diverse and nuanced than the one which had been claimed by Hargreaves.

⁵⁹ Bold type as in the original document.

It was found that, although copyright licensing processes in the UK were functioning well in comparison with other countries in the world, there was still room for improvement, especially in the cross-sectoral areas. In particular, seven problems of the copyright licensing processes were identified: (1) complexity of processes; (2) complexity of organisations involved in those processes; (3) the lack of equivalent contents in digital format compared with physical ones; (4) the lack of mechanisms for identifying appropriate rightsholders of content in different territories; (5) the lack of mechanisms for fairly distributing revenues for creators of content; (6) the incapability of existing copyright licensing processes to support high-volume, low-value transactions due to their labour-intensiveness, complexity and high expenses; and (7) the lack of common standards and of a common language for sharing and managing rights across sectors and national borders.

These problems were specifically found in six sectors: (1) libraries, archives and museums; (2) educational institutions; (3) audiovisual; (4) publishing; (5) music; and (6) images. With regard to cross-sector problems, Hooper reasoned that the “agglomeration” of the creative industries was proved to be much less efficient, while being compared to specific organisations and sectors scrutinised separately in close-up (ibid. p.45):

It is a consistent finding of this diagnostic report that specific organisations or sectors scrutinised on their own, seen in close-up, are often sensibly efficient and modern in outlook. But when one pulls back to the wide shot and looks at the totality of sectors within the creative industries or the agglomeration of organisations often within a sector doing similar things (for example collecting societies), the picture is not so efficient and not so modern, due to the differences in standards and licensing practice that have evolved in the different media sectors.

The sources of these problems and inefficiency, Hooper argued, lay in not only technical difficulties, but also a number of social and legal factors which hindered the integration of rights management across sectors and media types. Amongst them, the lack of commonly agreed standards for “expressing, identifying and communicating rights information” was especially emphasised (ibid. p.45):

The barriers to integrated cross-border and mixed-media rights management are only partly technological. A combination of differences in law, in custom and practice, and in commercial interests is equally influential.

Copyright licensing is siloed and is insufficiently international in focus and scope and is therefore difficult to use and difficult to access - in one very particular sense.

There are no agreed and operational standards across the creative industries in the UK and internationally for expressing, identifying and communicating rights information. These standards can and do exist within a specific sector but often end there⁶⁰.

These findings thus constituted the foundation upon which solutions for streamlining the copyright licensing processes could be built in the second phase.

Copyright works - Streamlining copyright licensing for the digital age

‘Copyright works’ was published in July 2012 to provide a conclusion to the second phase of Hooper’s DCE feasibility study. In this report, Hooper and Lynch (2012) made a number of recommendations to tackle existing problems of the UK’s copyright licensing processes.

⁶⁰ The whole quote above was highlighted using bold letters in Hooper’s report. The part which is bolded here is my own emphasis.

These recommendations were categorised under four main topics: (1) data building blocks; (2) orphan works and mass digitalisation; (3) repertoire imbalance; and (4) streamlining copyright licensing. Only through understanding these recommendations that one would be able to grasp the true extent of the emergence of the Copyright Hub. Therefore, this section is dedicated to examining at length these four categories.

First, data building blocks highlighted the essential role of data in the licensing processes. It was strongly recommended that international standards for identifiers, whenever they existed, should be accurately and consistently used to identify creators, creative works, and their associated rights. In sectors where such identifiers had not been established, relevant organisations were advised to join forces in order to develop common approaches that work for the industries as a whole. In a similar vein of argument, Hooper and Lynch condemned the practice of metadata stripping on a commercial scale, while advocating the development of the Global Repertoire Database and Global Recording Database as exemplars of good practices for creating “better databases... of who owns what rights for what in which country” (ibid. p.3). In addition to these projects, the Linked Content Coalition (LCC) was explicitly cited as “a very real and necessary building block for the Copyright Hub” due to its potential for establishing a common language for cross-sector communication:

We are supporting the Linked Content Coalition (LCC), an international project that emanated from the European Publishers Council, but is now moving into new sectors beyond publishing. The LCC is all about developing a common language and a set of communications standards so proper interoperability is achieved, a very real and necessary building block for the Copyright Hub and its associated databases and DCEs. (ibid. p.3)

Second, orphan works refer to those contents whose rightsholders cannot be identified or, if identified, cannot be located for numerous reasons, which contributes to the complexity and effort needed in order to acquire licenses for using them. In addition to this complication, the lack of a legal framework and appropriate mechanisms also makes any attempts to digitalise orphan and non-orphan works in mass quantity extremely difficult to achieve. This represents the problem of orphan works and mass digitalisation, which results in the denial of users' access to a significant amount of culturally and commercially value content. Consequently, both legal and technological measures are required in order to tackle this problem.

Having decided to leave legislative responses to the Intellectual Property Office (IPO), Hooper and Lynch focused their attention on existing technological projects, which could potentially provide solutions to the problem. In particular, they expressed support for the ARROW and ARROW Plus projects, whose objectives were to demonstrate ways in which due diligent search for orphan works can be done automatically via interlinking and searching libraries around the world. What is more, Hooper and Lynch's feasibility study also pointed out the criticality of "a public-private partnership" in developing such practicable solutions. This approach, which will soon be discussed in the following section, bore significant implications for the development of the Copyright Hub in later stages. As Hooper and Lynch stated in their report:

We support the work that is being done to develop and further enhance the technological solution to the orphan works and mass digitisation issues across Europe. ARROW and ARROW Plus have demonstrated both the value in seeking cross border solutions and the benefits of a public-private partnership in finding a

workable solution. The latter relationship is one we believe is crucial for taking forward many of the recommendations outlined in this report. (ibid. p.33)

Third, repertoire imbalance represents the lack of contents in digital formats compared with the wide range of equivalents in physical forms. This phenomenon has been repeatedly used as justification for copyright infringers to defend their practices of sharing and consuming copyright-protected materials from illegal sources when legitimate services are unavailable. The problem was found to be most notorious in, but not exclusive to, the audiovisual sector, which persistently advocated that repertoire imbalance was more perception than reality. They argued that, although repertoire imbalance did exist between the digital and physical worlds, the phenomenon did not significantly affect the users' consumption of content in practice owing to the most popular titles had already been made available online.

Despite such claims from the creative industries, Hooper and Lynch insisted that perceptions could drive public opinion, as well as political views, and thus, they urged the content business "to remain vigilant and do all it can to reduce the imbalance" (ibid. p.34). This aspect especially reflected the political dimension of Hooper's and Lynch's report in which the tense relationship between the government and creative industries was carefully mediated, i.e. the more and better copyright services are in place, the stricter measures the government are willing to enforce in order to protect the rightsholders. In Hooper's and Lynch's own words:

The political dimension of our work constantly reappears. The industry must make licensing easier thus providing more and better services for the consumer, but the Government must in response do all in its power to defend legitimate copyright interests against infringement – in either the digital or the physical worlds. (ibid. p.34)

Fourth, streamlining copyright licensing consisted of measures aiming at reducing the complexity and expense of organisations and processes involved in copyright licensing within three main areas: (1) educational institutions, (2) the music industry, and (3) across all creative sectors, and where possible, across national borders. Interestingly, the measures proposed by Hooper and Lynch in this section were emphatically characterised by the notion of “one stop shop”.

Within the educational sector, Hooper and Lynch praised the effort of the Rights Industry Forum⁶¹ in creating a new ‘one stop shop’ website (www.copyrightandschools.org) to provide comprehensive information on copyright-related activities in schools, as well as pointers on relevant sources where appropriate licenses could be procured (ibid. p.26). In addition, they promoted initiatives, which helped reduce the number of licensing points for educational organisations, most notably the one in which copyright licenses for state-funded schools in England would be purchased centrally by the Department of Education and thus removing local authorities from the process.

Within the music sector, copyright licensing consists of two main categories: blanket or collective licensing⁶² and direct licensing⁶³. The first type of licensing requires two separate licenses to be obtained from two different collecting societies (i.e. from PPL which represents performers and record companies; and from PRS for Music which collects royalties on behalf

⁶¹ Rights Industry Forum was a working group comprising representation from the Copyright Licensing Agency (CLA), Phonographic Performance Limited (PPL), Education Recording Agency (ERA), PRS for Music, Christian Copyright Licensing International (CCLI), Public Video Screening Licence (PVSL), Motion Picture Licensing Corporation (MPLC) and News Licensing Agency (NLA).

⁶² Blanket/collective licenses cover the rights to use music in radio and TV broadcasting, public performances (e.g. nightclubs, restaurants, etc.) and not-on-demand Internet uses (e.g. radio services on the Internet).

⁶³ Direct licensing covers sales of CDs to retailers, on-demand sales over Internet such as iTunes downloads, and other uses which might raise concerns over moral or artistic rights (i.e. uses of certain pieces of music in political campaigns or advertisements).

of songwriters, composers and music publishers). This arrangement thus created two, instead of one stop shop for blanket/ collective licenses. As a result, the effort of PPL and PRS for Music to create more joint licensing, which allowed organisations to deal with only one, instead of two societies, was fully supported. With regard to direct licensing⁶⁴, it was argued that aggregators and intermediaries played a crucial role in simplifying the licensing processes.

Finally, to illustrate how the licensing system might be further streamlined, Hooper and Lynch cited the words of Geoff Taylor, CEO of British Phonographic Industry (BPI), in which the benefits of having a new mechanism for ‘better signposting’ in the short term and the potential of developing a DCE platform in the medium term were clearly articulated. This quotation provided more than a hint of how Hooper and Lynch envisaged fitting their Copyright Hub’s proposal into the big picture of the copyright licensing landscape:

[The industry] believes that in the short term the licensing process can be simplified by much better signposting for users how and where to go about obtaining direct licences for specific uses. In the medium term, it believes that the creation of a DCE platform would offer the opportunity for direct licensing to be automated in appropriate cases, so that rights for uses that are already established in the market could be simply obtained, while retaining the ability for copyright owners to compete on price. (ibid. p.29)

To summarise, the ‘Copyright works’ report can be considered as a well-crafted dialogue between Hooper and Lynch and the three interested parties involved in the UK’s copyright

⁶⁴ Direct licensing is inherently more complex and less streamlined than collective licensing due to the sheer number of stakeholders involved in the process, which normally ranges from eight to ten, or even more.

reformation process. First and foremost, it was a call for rallying the UK's creative industries behind an oppositional IP narrative, which focused on streamlining organisations and processes, instead of changing the laws. As a result, collaboration, standardisation and togetherness were emphasised as key elements of success for the creative industries to continue fighting (and eventually winning) the copyright war. Secondly, the report promoted digital technology as an agent of change and drew the majority of its inspiration from European initiatives, such as the Global Repertoire Database and Linked Content Coalition (LCC). Not only it provided the UK's creative industries with a feasible option to move ahead, but also assisted in drawing them closer to their counterparts in Europe, and thus gaining the support needed to help kick-start the construction of the Digital Copyright Exchange (DCE) in question. Thirdly, with regard to the UK's government, the report offered a neat resolution to defuse the tense relationship with the creative industries at the time. Rather than having to balance the interests of the creative sector and Internet-based companies via legislative means, the government was invited to join in "a public-private partnership", whose objective was to create a "one stop shop" for copyright licensing. Hooper and Lynch named this initiative the Copyright Hub and presented an embryonic form of their ideas in the 'Copyright works' report. The following section is thus dedicated to a careful examination of their proposal.

The Copyright Hub - An Embryonic Proposal

Creating the Copyright Hub was the main recommendation made by Hooper and Lynch in the "Copyright works" report. In particular, it was recommended that "a not-for-profit, industry-led, industry-funded Copyright Hub with some possible Government pump-priming in the early stages" would be built around agreed data building blocks and common standards

(Hooper and Lynch 2012, p.20). A definition was further provided, albeit sketchy, to help clarify the authors' vision:

The Copyright Hub will be based in the UK and will link via spokes interoperably, scalably and intelligently to the growing national and international network of private and public sector digital copyright exchanges, right registries and other copyright-related databases, using agreed cross-sectoral and cross-border data building blocks and standards, on a "voluntary, opt-in and non-exclusive basis".

(ibid.)

Although Hooper and Lynch used the "hub and spoke" model as a metaphor for the development of the Copyright Hub, they acknowledged that the actual implementation of the IT solutions would be "much more sophisticated" and the report could only provide some "early thinking on the IT aspects of the Hub" (ibid. pp.20-21). In particular, it was suggested that the Copyright Hub would fulfil four main purposes: (1) copyright education and information, (2) registries of rights, (3) a marketplace for copyright licensing, and (4) an authoritative place for dealing with orphan works. These functional requirements were expected to be delivered in consecutive phases commencing with the launch of a simple website for copyright education, signposting and navigation. This would then be followed by the introduction of a more sophisticated mechanism for multi-media searching, which would enable potential licensees to identify both the content they required and its associated rightsholders. Afterwards, the Copyright Hub would be instituted as a new market place where rights could be registered and monetised; where licenses would be generated, paid for and delivered through automated processes; and where diligent searches for orphan works could be sufficiently performed and recorded. Finally, Hooper and Lynch envisioned

the Copyright Hub to offer “a single licence for multiple-media types” when the project reached its eventual stage (ibid. p.53).

Despite such an illustrative account of the Copyright Hub’s phasing solution, the lack of technical specifications was evident in the “Copyright works” report. To compensate for this shortcoming, Hooper and Lynch elaborated upon a number of vital principles which, they proposed, would ensure the successful development of the project. First, it was recommended that the Copyright Hub would, whenever possible, reuse accomplishments made by other initiatives in the area, rather than attempting to reinvent everything from scratch. Announcing the banishment of what they called “the Not Invented Here (NIH) syndrome”, Hooper and Lynch (ibid. p.21) wrote:

The NIH syndrome (Not Invented Here) should, we believe, be banished from any thinking about the Copyright Hub. There is not time or money for reinventing wheels, hubs and spokes. The Hub will only work on the basis of much collaboration within and across sectors, within and across nations and much learning from each other and from past investments.

Second, the Copyright Hub should be able to serve the needs of licensors and licensees across multiple sectors of the creative industries, as well as reaching to those who are well beyond the UK’s border. The project was therefore determined to be multi-media in form and international in scope from the very beginning. Third, the report urged that the Copyright Hub should focus particularly on the high-volume, low-monetary value transactions originating from the “long tail” of smaller users and uses⁶⁵, which was expected to create

⁶⁵ Examples of the “long tail” of users and uses, according to Hooper and Lynch, included:

- Start-ups offering novel services, which are built upon the creative use of images, music and text.
- The teacher, who needs to use copyright-protected materials for her classes.

greater revenues for the creative industries via more licensing and novel services tailored to this new market. The Copyright Hub was thus projected as a maker of a new market and a viable solution to the rapidly declining revenues of analogue sales in many sectors of the creative industries:

Increasing the size of the overall pie will be a major benefit to come from streamlined copyright licensing as a result of more licensing and more services especially from the long tail of users. A key incentive driving industry funding and industry leadership for much of the work in this report is that revenues, especially revenues from the internet, increase as a result of better licensing procedures. At a time when analogue revenues continue to decline, in some cases rapidly, this is vital to the health of the creative industries. (ibid. p.21)

Furthering this line of argument, Hooper and Lynch reiterated the final, and perhaps most critical, guiding principle of all: the creative industries should take, and should always remain at, the helm of the Copyright Hub's development. Attributing the success of their feasibility study to the close involvement of the four creative sectors - music, publishing, images and audiovisual - the authors gave more than a hint on how continuing industries' support would further ensure the prosperity of the project:

[W]e need solutions to the very high volume of low monetary value copyright licensing transactions that are the hallmark of the digital age... The Copyright Hub and its federation of linked computer systems is that solution in the view of the four UK industries closely involved in this work – music, publishing, audiovisual

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- The individual user, who creates new content by using works of other creators and posts it on social media platforms, such as YouTube.
 - A broadcaster wanting a particular film clip for a documentary programme.

and images. The Copyright Hub was presented in draft form at a stakeholder event held on 29 June 2012 and received a high level of support from those present with valuable suggestions as to how it should be taken forward and where the risks also lay. (ibid. p.22)

Not only did this aid in reaffirming the industries' commitment to the idea of the Copyright Hub, it was also a call for the UK's government to adopt an alternative political stand to the one which they presented in Shoreditch (GOV.UK, 2010b), and to take a new course of action accordingly. This political dimension of the proposal was especially highlighted in Hooper's and Lynch's concluding remarks, when questions regarding "the connection" between streamlining copyright licensing and future changes to copyright legislation were posed (ibid. p.36):

The creative industries have, we are pleased to report, agreed in principle to fund and provide an office to continue this work for one year in the first instance, subject to more detailed discussions with the Government. In those discussions with Government, industry would like to understand the connection between the work being carried out to streamline licensing described in this report and future proposed changes to the law, for example in relation to exceptions. Would, for example, the work to streamline licensing in education obviate the need for an educational exception? Would the creation and operation of the Copyright Hub with its satellite of digital copyright exchanges and rights registries obviate the need for other changes to the law? It is for Government ultimately to reach a view on the right regulatory and legal framework within which copyright licensing takes place.

It was clearly evident from the above excerpt that, from the point of view of the creative industries, the Copyright Hub was regarded as the most crucial bargaining chip in their negotiations with the UK's government. The industries indeed promised to fund the Copyright Hub in exchange for the prospect of having fewer copyright exceptions and a legal framework which would work in their favour. Consequently, the Copyright Hub, which emerged from the urgent need of the creative industries to fend off statutory interventions from the government, was inherently a political initiative. Meanwhile, the demand for and specifications of the project from a technological point of view were of much less significance to the creative industries.

In support of the creative industries' proposition, Hooper and Lynch argued that "the ball is firmly at the feet of the politicians" and urged the government to act swiftly in order to retain the momentum of the initiative (ibid. p.37). Laying their recommendations in concrete action points, Hooper and Lynch proposed the establishment of two interim working groups: (1) the Copyright Hub Launch Group (CHLG) to oversee the design, funding, governance and technical implementation of the Copyright Hub, and (2) the Copyright Licensing Steering Group (CLSG) with a wider mandate to ensure both continuing coordination across sectors of the UK's creative industries, and where possible collaboration with stakeholders operating outside the country's border.

To summarise, the embryonic proposal of the Copyright Hub was rich in prescriptive accounts of the political discourse behind the project, as well as the guiding principles on how it should be phased and governed, yet the lack of technical specifications on how it should be implemented was prominent. While the creative industries had promised "in principle" to fund and continue the work for another year, they indeed were waiting for the desired

response from the government before committing themselves to the initiative. Against this backdrop, the story of the first year of the Copyright Hub continued to unfold.

B. The First Year of the Copyright Hub (Oct 2012 - Oct 2013)

Breaking through the Copyright Hub's waiting game

After the "Copyright works" report was published in July 2012, Hooper's and Lynch's work on the Copyright Hub came to a momentary halt due to lack of actions from both the UK's government and the creative industries. Both sides seemed to engage in what Robinson et al. (2012) called a "waiting game", in which one side was waiting for the other to take the first step before they made their move. Despite the fact that the creative industries had agreed "in principle" to provide funding for the first year of work on the Copyright Hub, they appeared to be indifferent to fulfilling this promise right after the publication of Hooper's and Lynch's second report. Recalling this situation, Sophie (pseudonym) - CEO of a collective management organisation representing British publishers - disclosed:

And then when [Hooper] published his second report, he said "Right, you know, now it's over to the industries. They need to fund this Hub. They need to lead it". And I looked around and nothing was happening. No one was doing anything. I thought "This is terrible! He's given us this solution. And we have to show [the] government that we can do something for ourselves. We can make life easier for everyone." (Transcript D3)

Being frustrated with the stagnation, Sophie took the matter into her own hands and, through her networks and connections, successfully rallied multiple sectors of the creative industries behind the project. Detailing the process through which £150,000 from publishing,

images, music, and audiovisual sectors was raised to fund the first year of work on the Copyright Hub, Sophie remarked:

And this is a very honest [story]. So I looked around and, you know, the days and weeks started ticking by and I thought “This is really bad!” He’s done such great job. So I called together all the industries. Cause I -- having worked in the music industry for a very long time and then the publishing industry, I actually knew quite a lot of people across the industries and I pulled everyone together from different sectors, including the BBC. You know, there’re audiovisual sector and images and music and publishing. And I said, you know: “what are we gonna do about this?” And in the end, we agreed that we needed to raise money.

We needed to employ someone to take it forward. Ros Lynch was up for that so we worked out how much money we needed and I went around to all the industries’ organisations and said “Look, you know, we need x, can you contribute?” So we raise in the first year £150,000 and I divided it between the four sectors and tried to make it even between them; so publishing/ text, music, images, audiovisual. It was quite difficult to get the images sector, particularly, but you know we raised the money. And we employed Ros; she has an assistant and then we moved on. (Transcript D3)

Having secured firmly the financial and political support from the creative industries, the Copyright Hub Launch Group (CHLG) was set up in October 2012 to “oversee the design, funding, and implementation of the Copyright Hub” (Copyright Hub, 2013). As a result, there were three strands of work under the CHLG that are of particular interest to this case study. The first strand, which was led by Ros Lynch, looked into the opportunity to obtain additional funding from the government through collaboration with the Catapult project. The second,

which aimed at specifying the scope and functional requirements for the Copyright Hub, was presided by Goldman (pseudonym) - a data expert and technical architect of the Linked Content Coalition (LCC) project. Finally, Selena (pseudonym) - a seasoned politician and Intellectual Property solicitor - was put in charge of devising a governance structure for the Copyright Hub.

In addition to the CHLG, the Copyright Licensing Steering Group (CLSG) was established in November 2012 to coordinate efforts in implementing Hooper and Lynch's recommendations across four sectors of the UK's creative industries. Under the umbrella of the CLSG, six workstreams were established, each of which looked into: (1) implementing the Copyright Hub; (2) streamlining education licensing; (3) publishing Voluntary Code of Practice for metadata of images; (4) introducing new joint PRS/PPL music licenses; (5) launching new initiatives for streamlining digital music licensing; and (6) the adoption of interoperability of common data standards.

With the CHLG and CLSG in place, the impasse was finally resolved, and the government was soon engaged in discussion with the CHLG on opportunities to provide additional funding for the project. Speaking at the "Securing Growth through Intellectual Property" event on 17th December 2012, Vince Cable - the then Secretary of State for Business, Innovation and Skills - acknowledged "the potential [of the Copyright Hub project] to yield great benefits for creators and consumers, and to increase profits for business" and commented on how he did not desire "progress to founder due to a lack of finance in the early days of its development" (Publishing Scotland, 2012). In addition, the government's readiness to "act as a guarantor for the Hub" was also unveiled at this event (ibid.). In March 2013, the government honoured their promise by giving £150,000 of funding to help build the first phase of the Copyright Hub's website for signposting and copyright education purposes, matching the amount

contributed by the industries (Gov.uk, 2013). In retrospect, Ros Lynch described this move as “a way of encouraging industries to actually put money into it if they can actually see something happening” (Transcript C5).

The government’s pump-priming for the Copyright Hub and their political support for the new narrative on streamlining copyright licensing indeed triggered overwhelmingly positive reactions from the creative industries. Shortly after the disclosure of the government’s support, the CLSG issued a press release on 25th March, in which they announced the participation of twelve collective management organisations⁶⁶ in providing services to the first phase of the Copyright Hub’s website and promised to make the site go live in that summer. Commenting on the progress, Richard Hooper fondly remarked “The Copyright Hub until now has been just an idea. Today it begins to become an exciting reality.” (Flanagan, 2013).

Cementing Alliances: The Usual Suspects and Strange Bedfellows

Despite the fact that the Copyright Hub project began to build up considerable momentum in the first quarter of 2013, Hooper did not slack off on his efforts to convince a wide spectrum of stakeholders to participate in and continue to support the initiative. Presenting at the London Book Fair in April 2013, Hooper used his Charles Clark Memorial Lecture as an opportunity to cement existing alliances, as well as attempting to build new ones. His messages were conveyed by means of four exhortations. First, he addressed the Houses of Parliament, the Intellectual Property Office (IPO), the government and lobby groups on the current shift of narratives on copyright. Hooper argued that spending more time and effort

⁶⁶ Twelve organizations providing services to the Copyright Hub in phase one included: the BBC, the British Association of Picture Libraries and Agencies (BAPLA), Copyright Clearance Centre (CCC), Copyright Licensing Agency (CLA), Federation of Commercial Audio-visual Libraries (FOCAL), Getty Images, the Newspaper Licensing Agency (NLA), Pearson, the Picture Licensing Universal System (PLUS), Phonographic Performance Limited (PPL) and PRS for Music.

on debating changes to copyright laws would “only prolongs the wars of attrition”, and urged stakeholders to reallocate their resources on streamlining copyright licensing processes:

We have spent years first with the Gowers Review and then the Hargreaves Review discussing and debating changes to copyright law... The time has come to move on. Let us now reallocate the immense resources of energy and time and money away from lobbying and into making copyright licensing processes and organisations more and more fit for purpose for the digital age... No more time needs to be spent on the legislative dimension. Legislative indecision only prolongs the wars of attrition. (Hooper 2013, p.10)

Second, Hooper urged the politicians to introduce more vigorous measures to enforce and protect copyright which, he believed, resides “at the heart of a [thriving UK’s] knowledge-based economy” (ibid. p.10). The third exhortation was aimed at technology companies, which thus far had little involvement in the Copyright Hub project. Hooper asked the technology companies to treat copyright in the same way as patent rights, and recommended them to “work with the grain of the copyright industries and not against the grain - to the benefit of consumers and economic growth” (ibid. p.11). The final exhortation was reserved to address the main audience at the London Book Fair: publishers, creators and other members of the creative industries. Hooper emphasised time and time again that by supporting the new copyright narrative, and the Copyright Hub in particular, the creative industries were put “in the right place” to demand favourable actions from the politicians. In his own words:

It is important to be in the right place at the right time. I believe that you [the creative industries] have got yourself into the right place at the right time. I believe that your stance towards and support for innovative and streamlined copyright

licensing and the Copyright Hub put you in the right place. The ball now moves from your court to the politicians'. It is now time for the politicians to deliver the proposed changes to the law so that the endless debate can be closed down. And it is now time for politicians to deliver more rigorous and equitable enforcement of copyright. (ibid. p.11)

Not only reassuring the creative industries about the prominent benefits of the Copyright Hub project, Hooper also made sure that it would not be perceived as a potential threat to existing business models. In June 2013, only one month before the Copyright Hub's website went live, Hooper and Lynch published a document titled "Charting a course for the Copyright Hub in the Spring 2013", which served as a timely reminder of how "innocuous" the project would be towards the creative industries. In this document, the Copyright Hub was neatly defined as two things: (1) a web portal which helps connect organisations from different sectors of the creative industries and allows potential users to find and acquire licenses; and (2) a forum for collaboration between those organisations and sectors. It is imperative to notice that references to some of the Copyright Hub's initially-proposed technology, such as federated searches⁶⁷, which had the prospect of raising a few eyebrows amongst those who were offering similar services in the market, were conveniently missing from such definition. Calling the Copyright Hub "a catalyst for change and innovation", Hooper and Lynch (2013, p.1) described how "a virtuous circle" could be created to benefit the whole industries:

[T]he Copyright Hub is already proving to be a catalyst for bringing organisations out of their own "silo" domains to work together on technical issues (how do you identify copyright works) and service provision... As the functions and services

⁶⁷ Federated searches service allows the Copyright Hub to send queries to multiple right managers' databases and the answers will be returned to the user via the Copyright Hub's interface. This feature was referred to as "a multi-media search capability" in the 'Copyright works' report.

made available through the Copyright Hub grow, organisations are likely to collaborate, learn from and compete with each other to productive effect. The technical agreements reached through the Copyright Hub will also improve the effectiveness of registration and licensing services more generally, thus creating a virtuous circle.

Furthermore, the market envisaged by the project was described as “new and largely untapped market... [which] is yet to be the subject of a fully-fledged business case” and thus avoiding any suspicion that the Copyright Hub might cannibalise sales made by existing stakeholders (ibid. p.1).

Finally, it was emphasised that the project was funded and led by the industries, and operated under the principles of being “voluntary, opt-in, non-exclusive, pro-competitive and not for profit” (ibid. p.4). Hooper and Lynch promised that the Copyright Hub would be “not going too fast but also not going too slowly. Not building out a vast infrastructure in the hope that ‘they [the customer] will come’. Not duplicating infrastructure of members. Not competing with members.” (ibid. p.4). In other words, the Copyright Hub was destined to become a reliable ally of the creative industries, rather than a potential threat or a legal-technical nuisance being imposed by the government. These promises were proved to be crucial for the Copyright Hub to attain significant industries’ buy-in, especially in the project’s early phases. Commenting on this issue, Selena (pseudonym) - a founding member of the Copyright Hub Launch Group - explained the ways in which the Copyright Hub, as an “industry project”, accumulated a vast array of supporters from publishing, images, music and audiovisual sectors:

It’s been very important in the development of the Hub that it was nothing to do with government and government policies, but it was an industry-led and industry-

funded project, which it remains today although it's now getting a lot bigger and the funding basis may move on. But in order to get industries' buy-in, putting their materials into the Hub, it was absolutely essential that the project was an industry project, and not something imposed from outside by government... We have buy-in from all four sectors and we expect materials to be available from all four sectors. (Transcript E3)

Such growing support from the UK creative industries played a pivotal role in transforming the Copyright Hub from abstract ideas and discourses into a concrete socio-technical project, as explored at length in this chapter.

A Year of Innovation - Looking Back & Into the Future of the Copyright Hub

On 8th July 2013, the Copyright Hub's website - www.copyrighthub.co.uk - was officially launched in pilot mode with connections to 35 organisations providing information on licensing opportunities and copyright education (Copyright Hub Launch Group, 2013). This figure was nearly triple the number of organisations originally signed up to the first phase of the project as a direct result of Hooper's relentless outreach work, which was deemed "a key part of this first year" by the CHLG (ibid. p.4). The number of affiliated organisations continued to grow until the end of 2013 as the site added a wide range of new suppliers to its hyperlinking infrastructure.

On 25th September 2013, the Copyright Licensing Steering Group (CLSG) launched a report entitled "Streamlining Copyright Licensing for the Digital Age" to recount the progress made in implementing recommendations put forward a year ago by Hooper and Lynch in the

“Copyright works” report. This event was accompanied by the publication of UK Music’s⁶⁸ report entitled “A Year of Innovation - Licensing Works: A report by the Music Industry”, which highlighted the efforts and achievements in streamlining licensing processes within the music sector. The event thus became an excellent showcase for the creative industries to express their ardent political convictions towards streamlining copyright licensing: from the launch of the Copyright Hub’s website to simplified steps for licensing in the education sector, to the introduction of new joint PRS/PPL music licenses, and so on.

The notions of togetherness, commitment and collaboration were found to be particularly prevalent in the narratives of these reports. For instance, in the preface of the CLSG’s report, James Lancaster - chair of the CLSG - applauded “a unique collaboration” between numerous sectors of the creative industries, which worked together “with a focus on developing pragmatic solutions” for streamlining copyright licensing, and their “close co-operation with Government” (CLSG 2013, p.2). Lancaster proceeded to argue that the strength of the UK creative industries was essentially supported by three pillars: (1) a robust framework of copyright legislation, (2) strong action against piracy, and (3) a streamlined licensing regime. As long as the industries were committed to streamlining their own regime, implied the argument, the UK government should do its part to ensure the other two pillars were in place to support and help the creative industries thrive in the ever-changing digital economy. This narrative thus served to strengthen the growing bond between the industries and government within the IP domain, as well as nudging policy makers towards issuing more favourable changes to the UK copyright legislation in the near future.

This event was also held to mark the end of the first chapter in the Copyright Hub’s biography, as well as signalling a momentous shift in the project’s focus in the upcoming phase. It was

⁶⁸ UK Music is an industry-backed lobbying group, whose main objective is to push the key business and political agenda of the music industry within the Westminster (UK Music, 2013).

announced at the event that the Copyright Licensing Steering Group (CLSG) and all of its six individual workstreams, including the Copyright Hub Launch Group (CHLG), would cease to exist by the end of September 2013. They would soon be replaced by a new Copyright Hub Board, which assumed overall responsibility for the delivery of the project from 1st October, with the aid of an Advisory Committee comprising a wide range of industry representatives. Such organisational restructuring also came with a critical change in the project's personnel. It was announced that Ros Lynch would soon depart from the project to return to the Department of Business, Innovation, and Skills following the end of her secondment to the creative industries. As a result, a new Chief Executive with appropriate technical expertise would be appointed to replace Ros Lynch and to lead the project in the second phase, which placed greater emphasis upon developing and implementing the Copyright Hub's technology. Richard Hooper, on the other hand, continued to serve as Chairman of the Copyright Hub Foundation.

This event thus marked the end of the first year of the Copyright Hub project (see Fig. 4)

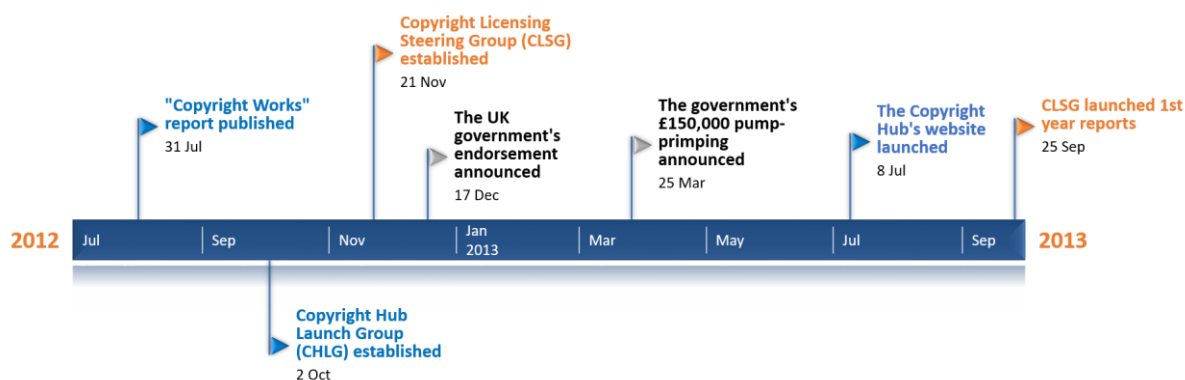


Figure 12: Milestones in the 1st Year of the Copyright Hub project

C. Achievements and Legacies

The first year of work on the Copyright Hub project was conducted primarily by two working groups. On the one hand, the Copyright Hub Launch Group (CHLG) embarked upon three strands of work, which looked into (1) a funding scheme for the project, (2) potential partnership with the Digital Catapult, and (3) the project's scope and functional requirements. On the other hand, the Copyright Licensing Steering Group (CLSG) was campaigning on behalf of the creative industries for a pro-IP narrative and attempted to exert leverage over the UK government via the Copyright Hub initiative. To what extent did the CHLG and CLSG succeed in attaining these goals and objectives? What legacy did the first year of work on the Copyright Hub project leave behind? The main aim of this section is to provide some insights into these questions. Hence, the section is divided into four themes, each of which carefully examines the outcomes of the four workstreams of the CHLG and CLSG.

Fundraising

Finding suitable sources of funding was the longest running, and perhaps the most critical, activity with regard to the Copyright Hub project. On the first meeting of the CHLG on 2nd October 2012, it was agreed that the project would follow the principle of being "industry led and industry funded but with some pump-priming from Government" (CHLG 2012, p.2). Consequently, funding for the Copyright Hub had always come from a mixture of private and public money. In this regard, the project had been very successful in its first year by securing in total £300,000, which was equally divided between the creative industries and the Intellectual Property Office (IPO)⁶⁹. This sum of money was spent on establishing the two

⁶⁹ IPO is the official government body responsible for intellectual property rights in the UK.

working groups, i.e. CHLG and CLSG, as well as developing the Copyright Hub's website into a trustworthy source of copyright education and navigation device.

In addition to the immediate funding needed for the first phase of the project, since October 2012, the CHLG continuously engaged in conversation with the Technology Strategy Board (TSB)⁷⁰, particularly the Connected Digital Economy Catapult (CDEC) (which was later renamed the Digital Catapult), in order to seek a new partner to deliver the Copyright Hub's technology in the second phase. It was emphasised in a series of the CHLG's meeting minutes between November 2012 and May 2013 that the Catapult would not pay the full cost of developing the Copyright Hub, but rather contributing their own technical expertise and human resources to help scope the project. As a result, the Copyright Hub would benefit from an indirect source of funding from the government via the Digital Catapult centre. Such arrangement for the Copyright Hub - Digital Catapult partnership was officially announced in the CHLG's final report in September 2013. The report stated:

CHLG is working in partnership with the Connected Digital Economy Catapult (CDEC) to develop this phase of the Hub. As a Technology Strategy Board initiative supported by funding from BIS CDEC helps UK innovators across the digital economy to achieve sustainable economic growth through supporting collaborative, pioneering projects with the potential to create needle-shifting impact. (CHLG 2013, p.8)

Dubbing this "an arm-length relationship" between the government and the Copyright Hub, Ros Lynch explained how the project was still being supported throughout its second phase by public money, despite the absence of any formal arrangements:

⁷⁰ TSB, later known as Innovate UK, is a government body supporting technological innovation through collaboration with private businesses to "de-risk, enable and support innovation" (Gov.uk, 2017).

Well, obviously the Catapult has been provided with fund via the government. So it's kind of an arm-length relationship with [the Copyright Hub project]. The Catapult is building the technology and that's government's funding going in there. We are still continuing to support it, and ministers at any opportunities they get to talk about the Copyright Hub, they also include it in speeches, in conversation that they have with other parties. So, although we're not doing something very formal, we're still supporting the Hub and still try to encourage it.

(Transcript C5)

Apart from public money, the second phase of the Copyright Hub was equally supported by funding, in kind and in cash, from the private sector. Funding for the second year of the project was secured once again by Sophie (pseudonym), who managed to pull four sectors of the creative industries together in the same way that she did in the first year and divided the contribution evenly between them. Sophie humorously recalled the process through which she "went around begging with the cap" in order to raise £200,000 from the industries:

And then [the creative industries]'ve got to the end of the first year and we realised that we need another year, but we decided to restructure [the Copyright Hub project]. By then, the steering group has served its purpose. And we rode it into the main organisation and Richard [Hooper] became the main chairman. And we raised £200,000 in the second year. Same way, I went around begging with the cap. (Transcript D3)

At the end of the Copyright Hub's second year (i.e. September 2014), the responsibility for raising money resided with Richard Hooper as the project continued seeking for funding in the form of voluntary industry donations. As Hooper summarised the way money was raised in the first three years of the project:

Well, so basically in the final report in July 2012 in 'Copyright Works', Ros and I recommended the Copyright Hub. That idea was very much accepted by the industries and they are now in the third year of funding of the Copyright Hub.

The first year, £150,000 funded, second year £200,000, and this year, we're looking at funding of over £400,000... Right now, first year, second year, third year which we're in, it has been funded by donations... So you've got, roughly speaking, this year, you've got £500,000 of government's funding and then getting towards £500,000 of creative industries funding. (Transcript B1)

It is imperative to note that there had been a steady increase in both public and private funding for the Copyright Hub during the period between September 2013 and September 2015, despite the fact that the project was originally planned to be self-financing from 1st October 2014 (see CHLG 2013). Consequently, it is reasonable to argue that, with regard to funding, the Copyright Hub had been remarkably successful in not only securing the required money for its first year of operation, but also creating a momentum from which fundraising activities in the second phase (i.e. second and third years) could greatly benefit. On the other hand, the immense success in fundraising might also contribute to postponing the establishment of a resilient funding model for the Copyright Hub. While being interviewed about this subject in January 2015, Hooper commented:

The answer [for a resilient funding model is] 'We're not sure'. Right now, first year, second year, third year which we're in, it has been funded by donations... So that's the pattern in the past... I'm just about [to] start chairing a funding group in March to look at funding option for year four, which will be around about October of 2015 because a lot of the current funders don't want to go on just giving money [as] in the past.

So we need to have a much more resilient system... We could easily have commercial ventures sitting on top of the Hub's technology and those could give money to the Hub. That's one possibility. The membership scheme is a possibility. Continuation with donations, although I think that's not as a good idea because people have done it. So we don't know. (Transcript B1)

The reasons for the Copyright Hub's tremendous success in mustering support and attracting funding from both the public and private sectors will be discussed in more detail below, while the implications of such funding for the development of the project will be carefully examined in the discussion chapter.

Partnership with the Digital Catapult

As mentioned above, the partnership with the Digital Catapult was being reviewed very early on by the CHLG alongside its fundraising activities. Interestingly, the relationship between the two associations did not begin at the organisational level. Instead, it was initiated by Selena (pseudonym) - a seasoned IP lawyer who was serving on the advisory boards of both the CHLG and the Digital Catapult. Recalling her story of "matchmaking" the two organisations, Selena commented on how her perception of the Digital Catapult as "a natural home" for developing the Copyright Hub's technology had led her to insist on establishing a connection between the two newly-found organisations:

Having got the sort of political buy in from the industries and acceptance about what [the Copyright Hub] should be doing in general terms, there came a point at which it needs to turn technical development. And I was also closely involved with the creation and formation of the Digital Catapult. And so, I knew that the Digital Catapult, which was intended to bring together the creators and digital industries and stimulate innovation there, was in my view a natural home for doing the

[technical] development for the Copyright Hub. I introduced the two to each other and eventually they agreed that they would develop it jointly, which was happening for the last couple of years. (Transcript E3)

The crucial role of Selena in sparking the Copyright Hub - Digital Catapult partnership was later confirmed by Neil Crockett, who had been appointed to lead the Digital Catapult since January 2013. Highlighting Selena's enthusiasm for making the introduction, he recalled how his organisation was put in contact with the Copyright Hub:

It was through a lady called [Selena]... [who] was on our advisory board. And she was very keen that we looked at/ following up on the Hargreaves' and Hooper's reports. [They were], in her view, one of the big things that the industry couldn't fix and we could maybe help fix by being neutral. And then she connected us to another organisation that she knew [i.e. the CHLG], because she was also in their advisory board. And then we met together. (Transcript F3)

The introduction came at a critical point in time (i.e. late 2012 - early 2013) when both the Copyright Hub and Digital Catapult had just been established and were seeking eagerly for project partners. While the Copyright Hub were in need of an organisation which was capable of technical development, the Digital Catapult were also looking for an ideal project, which helped showcase the kinds of impact they would make to the connected digital economy. As Crockett recalled:

We're sort of talking a bit about how can we mix. We're two not-for-profit [organisations]. We're both [newly established]. We had to assess ourselves whether or not we thought we're going to make the impact. They thought it was.

We thought it was... The chemistry worked... And we just progressively built from there. (Transcript F3)

Commenting on the relationship from the Copyright Hub's perspective, Hooper explained how the Digital Catapult was a good fit for developing the Copyright Hub's technology and how the later became the former's "most important project". Furthermore, it was emphasised that the relationship was "a cooperation of equals", in which there was "no money changing hands":

Digital Catapult was set up to sort of accelerate interests in digital innovations and really from the very early days, they loved the idea of the Copyright Hub. And the Hub became, I would say, their most important project.

Now they did not give us money. This is terribly important. They gave us people... We're given resources of human being and it's a cooperation of equals. It's not a contractor relationship. We're not the client. They are not the contractor. It's a cooperative organisation/ set of organisations. It's collaborative. We work together. (Transcript B1)

The deviation of the Copyright Hub - Digital Catapult partnership from the conventional client - contractor relationship was dubbed by Crockett a "self-generated" model, which he compared to the process of "trying to fly a new airplane while building it at the same time". Furthermore, as equal partners in the relationship, the Copyright Hub and the Digital Catapult were expected to contribute and benefit evenly from the outcomes of the joint project. Elaborating on this "fifty-fifty principle", Crockett remarked:

It was sort of based upon a principle that we'll both probably be contributing fifty percent - fifty percent... So if anything is developed from that is of value then we

share fifty-fifty. Any income that comes in, [cover] the costs that are done by each party, but then any profits, we'll split fifty-fifty. So, this is a sort of agreement that when we have ownership of the materials that have been developed as well. So we just felt the right thing was to, you know, not try to get tied up for months in a big agreement; not try to get tied up when we supposed to set [the joint project in motion]. (Transcript F3)

Thus, this arrangement was portrayed by Crockett as “perfect” as “two parts of the Yin and the Yang”:

We got on and trusted [that] it was perfect: two parts of the Yin and the Yang. You know, they have the market and the knowledge of the sector and we had some knowledge of the sector but we also have desire to build some platforms that will [be capable of] enabling. (Transcript F3)

Underneath this narrative of tranquillity and perfect harmony, a few preliminary indications of imbalance could readily be detected in the relationship between the two organisations, most notably from the Digital Catapult's side. While commenting on the “fifty-fifty principle”, for instance, Crockett disclosed the perceived disequilibrium in contribution toward the joint project due to the intangible nature of the Copyright Hub's contribution:

I think we're contributing quite a lot more [than the Copyright Hub] because we decided that actually it's very hard to [assess the value of their contribution]. Their contribution is industry connections and presence. That's very intangible... [What] they're getting [in terms of] contribution are actual money but this's a bit of intangible throwing on from their side. (Transcript F3).

This problem became more acute due to the fact that the amount of money which the Digital Catapult invested in the Copyright Hub project was “disproportionally larger than anything else [the Digital Catapult were doing]”. Calling this decision as a “big bet”, Crockett commented:

We’re putting in a big chunk of money. It’s a big chunk of our available money in the first [year, i.e. 2014]. [It was] disproportionately larger than anything else we’re doing. So we decided to make this big bet. Our board had to approve it. (Transcript F3)

As a result, the Digital Catapult was regarded, at least from their own perspective, as the leading partner in this relationship and thus they were comfortable with exerting greater influence over the course of the Copyright Hub project. Commenting on this issue after eighteen months working in the joint Copyright Hub – Digital Catapult initiative, Crockett related⁷¹:

I think if you say on a balance, we [the Digital Catapult] actually have the most influence in day-to-day action and trying to bring up the technology platform and approach. (Transcript F3)

This imbalance in the partnership only became apparent when frictions between the two organisations surfaced. From Crockett’s point of view, the Copyright Hub project was perceived as an “experiment” and “an act of good faith”, in which it was hoped that the user would be enticed to adopt the new IP infrastructure (and its practices) once it had been built. In his own words:

⁷¹ This interview with Neil Crockett was conducted on the 17th of June 2015. It was situated in the middle of the collaborative period (i.e. from 2014 to 2016) between the two organisations.

[The Digital Catapult and the Copyright Hub] both wanted to take part in this experiment. Just for this. It's a problem of expenses. It's an act of good faith: hoping that when people see it [i.e. the infrastructure], they will actually then start realising that it should be taken up. It's the breakthrough experiment to try and see if we can kick-start this. (Transcript F3)

Such perception somewhat contradicted one of the main principles which Hooper initially laid down for the Copyright Hub: "Not building out a vast infrastructure in the hope that 'they [the customer] will come'"⁷². The difference in philosophy resulted in tensions between the two parties over what approach should be taken to develop the Copyright Hub. As Crocket explained how the "long-term platform" view of the Digital Catapult sometimes clashed with the "short-term use cases" view of the Copyright Hub:

And then at times, we [the Digital Catapult] were probably trying to look at the longer term platform and they [the Copyright Hub] were looking at the shorter term use cases... I think there's been some disputes. I think this thing about "Let's just develop for the short-term" versus "Let's develop for something which can be scalable later on". So I think there's a bit of a tension about that philosophy. (Transcript F3)

The implications of these tensions and the imbalance in the Copyright Hub - Digital Catapult partnership will be examined in great details in the discussion chapter.

⁷² Cross-referencing this document on page 193.

Scope and functional requirements

Determining the scope and functional requirements of the project was another critical activity of the CHLG owing to the fact that the embryonic proposal of the Copyright Hub was largely equivocal in terms of technical implementation. The CHLG thus delegated this task to Goldman (pseudonym) - a veteran data architect who had over thirty years' experience in providing consultation services for the creative industries on information management, as well as being a leading figure in the development of identifier and metadata standards in the content industries. Goldman was also the author of the data model, which had been adopted by the Linked Content Coalition.

In November 2012, Goldman issued the first version of such a document entitled "The Copyright Hub: Operating Policies", in which he proclaimed (CHLG, 2012b, p.1):

The Copyright Hub's main task is to facilitate the identification and licensing of rights to enable more extensive legitimate use of all kinds of digital content.

In order to fulfil this task, Goldman identified and articulated the following six mandatory services for the Copyright Hub project: (1) enabling users to discover information about content and its associated rightsholders; (2) enabling users to make requests for licenses; (3) enabling rightsholders and/or intermediaries to make offers and to issue licenses to potential users; (4) empowering the Copyright Hub to play a role in the resolution of rights conflicts emerging as a result of multiple queries made through the Hub; (5) providing an educational and information service for both right users and rightsholders about copyright and related rights; and (6) promoting best practices in data standards and management for rightsholders and intermediaries. Amongst them, only the last two services were addressed within the first year of the Copyright Hub project. Accompanying these mandatory services were two optional functions with regards to (1) discovering potential orphan works and performing

diligent search for their rightsholders, and (2) reporting and/or monitoring of the usage of rights.

In Goldman's vision, the Copyright Hub's services would be built upon a technical solution, known as the Linked Identifier Network. Goldman argued that the inefficiency of traditional rights management systems was due largely to a dearth of shared identifiers (i.e. identifiers recognised by more than one party and/or process within a network) and hence, the excessive reliance of many processes upon "manual recognition of ambiguous names" (ibid. p.8):

Rights management (which includes licensing, usage reporting and settlement) is a set of processes that is critically dependent on networks of identifiers, but is one in which the absence of shared identifiers, and of reliable links between them, is at times severe. Many processes still rely upon manual recognition of ambiguous names, and making major improvements in this Linked Identifier Network is essential for the success of the Copyright Hub and of copyright licensing in general.

To address this problem, the Linked Identifier Network exploits shared identifiers, and especially a process called mapping, which allows non-shared, private identifiers to be mapped to at least one other identifier within the network. In this way, the need for human intervention can be greatly reduced and rights management processes within such a network can become highly automated. Emphasising the importance of the mapping process to the Linked Identifier Network, Goldman stated (ibid.):

The more widespread, accessible, transparent and secure those mappings are, the more highly automated the network can become. [...] It is not essential everyone uses the same identifiers (although the more that happens, the simpler the

processes are), but that identifiers are securely mapped to one another so that they can be automatically translated.

Within a Linked Identifier Network, *Identifiers* are used to identify different types of *Entities*, including: (1) *Parties* (e.g. creators, users, and rightsholders of content), (2) *Creations* (i.e. the content itself), (3) *Controlled Vocabularies* defining different types, categories and concepts, most notably relations between parties or relators, (4) *Time* and *Place*, and (5) *Rights* and *RightsAssignments*. These identifiers are then used as materials for the creation of *Links* – the basic building blocks of a Linked Identifier Network – which are defined as statements in which a wide range of Identifiers of Entities are connected through relations and roles, as specified in the Controlled Vocabularies.

Interestingly, in this document, Goldman also stated that “the most important types of Link for the Linked Identifier Network are set out in the Rights Reference Model of the Linked Content Coalition” (ibid. p.10). This statement thus made “The Copyright Hub: Operating Policies” the first documented evidence of the intended connection between the Copyright Hub and the LCC project in term of technological implementation. Furthermore, Goldman also revisited his definition of the Copyright Hub’s main task and provided a very different take on the subject, compared to the one mentioned above. As he wrote at the end of the report (ibid. p.10):

The task of the Hub may be summarized by saying that it aims to give widespread access to the Linked Identifier Network; but as there are many elements of that Network still without shared identifiers, one task of the Hub Organization is to encourage and facilitate the development and use of appropriate identifiers and mappings.

Although the shift from “facilitating the identification and licensing of rights” to “giving widespread access to the Linked Identifier Network” seemed marginal at first, its implications were indeed substantial. While the former description of the Copyright Hub’s mission was general and technology agnostic, the latter was deemed to specifically bind the development of the Copyright Hub to the Linked Identifier Network technology, and particularly the Linked Content Coalition (LCC) project. In other words, the Copyright Hub was meant to be, at least from Goldman’s point of view, “the production version” of the LCC and its subsequent project:

So, LCC had moved forward and it had some success in terms of gaining support and then moving into the RDI project - the Rights Data Integration project - which is, of course, very much like a prototype of the Hub. RDI and the Hub are, as I would -- as I describe them, the Hub is the production version of RDI. (Transcript B7)

Such a view on the relationship between the Copyright Hub and the LCC was later approved by members of the Copyright Hub Launch Group (CHLG). As documented in the minutes of the group’s meeting in February 2013, it was generally accepted that the RDI project “is in effect a prototype Hub and could be useful to the Copyright Hub as it will be able to prove some of the issues the Copyright Hub will face” (CHLG 2013, p.7). In addition, the LCC was enthusiastically endorsed by Richard Hooper as standards on which the Copyright Hub should be built, and its adoption should be considered “one quick win” for the Data Building Blocks workstream of the CHLG. The minutes noted:

The Chair [Richard Hooper] made a plea not to lose sight of the rule to build the Copyright Hub on the LCC standards.

It was noted that one quick win from the Data Building Blocks workstream will be to endorse the LCC. (ibid.)

Nevertheless, the CHLG had to take the Digital Catapult into consideration before fully embracing the LCC standards. In March 2013, the CHLG held a meeting with the Digital Catapult to help scope the technical aspects of the project in the second phase (CHLG, 2013b). This meeting ultimately yielded a number of market and financial questions, for which the CHLG had not been able to provide definitive answers. A subsequent proposal for hiring an external consultant to produce an initial three-year business plan for the Copyright Hub was also disapproved by a majority of the group's members (CHLG, 2013c). As a result, the CHLG postponed the decision to proceed immediately to the second phase with the Digital Catapult as its technical partner, but instead focused on refining and improving the Copyright Hub as a web portal (which was launched in July 2013).

In short, the scoping activities of the CHLG addressed some of the technical issues and functional requirements of the Copyright Hub project, yet they still fell short of expectations of a solid business plan. Through these activities, the CHLG came increasingly to favour the LCC standards to adopt them for the technical development in the second phase, prior to any discussion with its technical partner – the Digital Catapult. This decision added a further complication to the dynamics between the three key stakeholders involved in the development process, i.e. the Copyright Hub, the Digital Catapult and the Linked Content Coalition.

The Triumph of the new IP narrative

As mentioned above, the main aim of the Copyright Licensing Steering Group (CLSG) was to advocate an alternative narrative on intellectual property (IP), which positioned the creative industries at the forefront of the IP advancement process and promoted digital technologies as the solution to contemporary problems of copyright. This narrative contradicted the government's initial intent to impose substantial changes to the UK's IP framework, especially copyright laws, so as to support emerging businesses and innovation within the technology sector. Such contrast in approaches led to mounting tension between a wide range of stakeholders involved in the subject, and consequently turned the Copyright Hub initiative into a spearhead for the crusade against copyright erosion.

By the time the CLSG issued its final report in September 2013, there had been a dramatic turn of attitudes within the government's circle towards protecting the economic interests of the UK's creative industries, while clamping down on tax avoidance by multinational corporations, especially Google and other US-based giants of the technology sector. The first indicator of such a shift in attitudes occurred on 3rd December 2012, when the House of Commons Public Accounts Committee (PAC) issued the result of their investigation into tax avoidance by multinational companies (Parliament.uk, 2012b). The PAC's report listed a series of damning criticisms of both Her Majesty's Revenue & Customs (HMRC) and the multinationals in question⁷³. While denouncing the HMRC for being "persistently unable to get a grip" on large corporations and "too passive in its approach" to closing the tax gap (Parliament.uk, 2012a), PAC also condemned the multinational businesses for "using the letter of tax laws both nationally and internationally to immorally minimise their tax

⁷³ Google, Amazon and Starbucks were asked to provide evidence at a hearing organised by PAC. The committee insisted that their invitations were not intended to "single out" these companies but "to provide an illustration of what we perceive to be a wider problem of possible corporation tax avoidance" (Parliament.uk, 2012d)

obligations” (Parliament.uk, 2012d). The report concluded that, by not paying their “fair share of tax”, multinational corporations had thus gained “an unfair competitive advantage over British businesses which have no choice but to pay their corporation tax” (Parliament.uk, 2012c). Voicing the committee’s concern over the implications of such findings for public perception of the government’s competencies in tax administration, PAC wrote:

There is genuine public anger and frustration because there is an impression that rigorous action is taken against ordinary people and small businesses and British companies based wholly in the UK but, apparently, lenient treatment is given to big corporations, of which almost half have a head office overseas. (Parliament.uk, 2012d)

In direct consequence of this report, the UK government started introducing new action to tackle tax dodgers in December 2012, targeting multinational corporations and marketers of aggressive tax avoidance schemes (GOV.UK, 2012b). In May 2013, PAC conducted a further investigation into how multinational technology companies, particularly Google, used “elaborate corporate structure” to avoid paying UK tax (Parliament.uk, 2013c). The report found that Google had set up “manifestly artificial tax arrangements” to evade its UK tax liabilities by billing the vast majority of its non-US transactions in Ireland (ibid. pp.3-10). Only a small proportion of these transactions were eventually taxed in Ireland owing to the fact that Google subsequently shifted most of its profits to a subsidiary in Bermuda in disguise as royalties paid for using Google’s non-US intellectual property (Ahmed, 2014). What is more, these profits were strategically shifted through a conduit company incorporated in the Netherlands to avoid withholding taxes on profits leaving the European Union. As a result, the Google’s model for IP-based profit shifting became known as the “Double Irish Dutch

Sandwich” structure⁷⁴ (Fuest *et al.*, 2013). Condemning Google for its behaviour over such tax arrangements, Margaret Hodge, chair of PAC, branded the company’s actions “devious... calculated and... unethical” (Parliament.uk, 2013c, p. Ev 23). The Labour MP continued: “You are a company that says you ‘do no evil’, but I think you do do evil, in that you use smoke and mirrors to avoid paying tax” (ibid.).

While the reputations of Google and other multinational technology companies were being tainted in the eyes of the public⁷⁵ and governments both in the UK and Europe⁷⁶ over the tax avoidance scandal, the UK’s creative industries⁷⁷ were characterised in the government’s official report⁷⁸ as critical contributors to the recovery and growth of the national economy. Such a sharp contrast in these portrayals had been exploited by the creative industries to strengthen their calls⁷⁹ for re-evaluating the government’s plan to foster the technology sector at the expense of the UK’s creative industries. Describing these calls as “amazingly powerful”, Macbeth (pseudonym) – a veteran publisher who had been closely involved with

⁷⁴ For additional studies on the subject, see (Thorne, 2013; Brothers, 2014).

⁷⁵ For a detailed report, see (Barford and Holt, 2013)

⁷⁶ In France, for instance, Google faced a €1 billion bill of overdue tax, after its office had been raided by the tax authority in June 2011. Other technology companies, including Microsoft and Amazon, were landed with similar bills, which amounted to approximately €5 billion. In a similar movement, the OECD embarked upon international co-operation to tackle profit shifting and tax avoidance, witnessing the UK joined force with Germany, France, Japan, Canada and Australia to exchange information on the tax strategies of multinational technology companies. For a detailed report, see (Ahmed, Houlder and Parker, 2016)

⁷⁷ The definition of the “creative industries” used by the UK government in the Creative Industries Economic Estimates report was much broader than the one I used in this thesis, which confined the meaning of the term “creative industries” to publishing, images, music and audiovisual sectors. Nonetheless, the argument presented here still remained valid due to the fact that the four aforementioned sectors were able to piggyback on the official statistics to project their images as significant contributors to the UK economy.

⁷⁸ The Creative Industries Economic Estimates report revealed that, in 2012, the creative industries contributed £71.4 billion per year to the UK economy and employed 1.68 million people, which accounted for 5.2 per cent of the UK economy and 5.6 per cent of total number of jobs in the UK respectively. The value of services exported by the creative industries was estimated to be worth £15.5 billion in 2011. For detailed findings, see (Department for Culture Media & Sport, 2014).

⁷⁹ See, for instance, Stop43 campaign (<http://www.stop43.org.uk>)

the establishment of the Linked Content Coalition and the Copyright Hub initiatives – commented:

The IP industries represent a very large piece of European GDP, even higher in the UK... You could argue whether it's six, seven or eight per cent [of the GDP] but it's in that size. All you have to say to a politician is:

“This is the piece of GDP you're putting at risk, it's a significant piece of your GDP... You're willing to give that up in order to improve the lot of the technology companies? [...] They're all American. They're not paying any tax. So why do you want to give more money to these American businesses, which are not paying any tax in Europe at all, and take it away from companies that are actually contributing to the European economy in a big way?”

That's an amazingly powerful argument. (Transcript B3)

In September 2013, the Culture, Media and Sport (CMS) committee adopted a similar stance on the subject and issued a notable report, entitled “Supporting the creative economy”, in which they strongly criticised the Hargreaves Review and its recommendations on changing the UK's IP framework. Censuring Hargreaves for adopting “a significantly low standard” in conducting his review, the committee insisted that Hargreaves had been wrong on his claims of the benefits which further copyright exceptions might bring to the UK's economy, and the recommendations had failed in adequately gauging the dangers of destabilising “the established system of copyright... for no obvious benefit” (Culture Media and Sport Committee, 2013, pp.4-5). The CMS wrote in their report:

Following all the evidence we have received, we think Hargreaves is wrong in the benefits his report claims for his recommended changes to UK copyright law. We

regret that the Hargreaves report adopts a significantly low standard in relation to the need for objective evidence in determining copyright policy. We do not consider Professor Hargreaves has adequately assessed the dangers of putting the established system of copyright at risk for no obvious benefit.

In addition to the critical view of the Hargreaves' report, the CMS fiercely condemned the technology sector, most notably Google, for its "underlying agenda", which strived to meddle with the policy making process. Stating their unequivocal opinions on the topic, the CMS proclaimed:

We are deeply concerned that there is an underlying agenda driven at least partly by technology companies (Google foremost among them) which, if pursued uncritically, could cause irreversible damage to the creative sector on which the United Kingdom's future prosperity will significantly depend. (ibid. p.25)

Furthering this line of argument, the CMS argued that the "evident reluctance" of technology companies to block access to copyright-infringing websites was based on "flimsy grounds" and thus, their inadequate responses to the rightful requests of the creative industries were viewed as "unacceptable":

We strongly condemn the failure of Google, notable among technology companies, to provide an adequate response to creative industry requests to prevent its search engine directing consumers to copyright-infringing websites. We are unimpressed by their evident reluctance to block infringing websites on the flimsy grounds that some operate under the cover of hosting some legal content. The continuing promotion by search engines of illegal content on the

internet is unacceptable. So far, their attempts to remedy this have been derisively ineffective. (ibid. p.19)

Consequently, it was recommended that the UK government should incentivise technology companies to hinder access to infringing material, as well as increasing the maximum penalty for serious online copyright theft to ten years' imprisonment. Within this narrative of the CMS' report, it was noteworthy to point up the fact that technology companies were depicted as accomplices, or even perpetrators, of online piracy, while the creative industries were regarded as the hapless victims of exploitation.

Based upon these arguments, the CMS urged "a powerful champion of IP" on the UK's government (ibid.). Such a champion, the CMS described, would be responsible for (1) protecting and promoting the interests of the UK's creative industries, (2) co-ordinating enforcement of IP rights in the UK and abroad, and (3) educating consumers on the value of IP and the importance of respecting IP rights. These responsibilities bear a striking similarity to the Copyright Hub's aims and objectives and therefore, it was unsurprising that the Copyright Hub was given a full endorsement from the CMS:

The Copyright Hub is a welcome development which should prompt the Government to redouble its efforts at working with industry to develop overseas markets for British IP content. (ibid. p.26)

The CMS's report and other similar calls from within the government's circle⁸⁰ to protect the creative industries resulted in a significant reduction in the scale of changes being made to

⁸⁰ Similar calls include Parliament's All Party IP Group chaired by John Whittingdale; Department for Digital, Culture, Media & Sport (DCMS) select committee enquiry into the creative industries in 2013; and so on.

the UK's IP framework compared to the original recommendations proposed by Hargreaves. Making a remark on this issue, Amelia (pseudonym) – the champion of the LCC initiative – recalled how the copyright reform in the UK became “pretty minor” after the initial success of the Copyright Hub:

But I think the Copyright Hub, as an outcome, is something that UK government should be really proud of. And the copyright reform that they've finally instituted are pretty minor in the grand scale of things. You know, something on education, something on text and data mining but it's non-commercial. You know, they've kind of kept the copyright framework up-to-date without revolutionising it.

(Transcript D1)

Evidence of the triumph of the Copyright Hub initiative and the alternative narrative on IP was not confined to parliamentary discussions and legislative reform, but also became materially embedded in various forms and shapes. Apart from the funding and strategic partnership with the Digital Catapult which were examined at great length above, another notable indicator of the shift in IP narrative came in the form of public appointment. After leaving her role as the second-in-command of the Copyright Hub project in October 2013, Ros Lynch returned to the Department of Business, Innovation and Skills (BIS) and was swiftly appointed as the new Director of Copyright and IP Enforcement at the Intellectual Property Office (IPO) (GOV.UK, 2014). The appointment of a junior civil servant, who just came back from her secondment at the Copyright Hub and was relatively new to the field of IP⁸¹, to

⁸¹ Commenting on her experience in dealing with IP and the UK's creative industries, Ros Lynch admitted:

I wasn't involved in copyright at all in 2011 [when the Hargreaves Review was published].

I was working in the department of Business on apprenticeship. So I only got involved in

immediately take the helm of a highly influential office had given a broad hint of the government's change of direction with regards to their IP policies.

This move became even more perceptible owing to the fact that Ros Lynch was designated to replace Edmund Quilty who, prior to his departure in early 2014, had held the office for six years and served under five different IP ministers (Orlowski, 2014). Quilty was notorious for his radical copyright agenda, which attempted to make copyright an "opt-in" process and to create a compulsory registration database of creative works. He was thus branded by the creative sector as "Britain's unofficial copyright czar", who "look[s] for every opportunity of diluting or abolishing copyright protection" (Focal International, 2014). It was also revealed that Quilty's team of staff from the IPO had played a substantial role in influencing the outcomes of the controversial Hargreaves Review⁸². Consequently, the resignation of Edmund Quilty from his post marked a critical success of the creative industries' campaign against copyright erosion and hence, a reliable indicator of the triumph of the new IP narrative.

In short, these observations suggest that the creative industries had succeeded in imposing the new IP narrative upon the UK's government, and at the same time, persuaded them to abandon their original plan for making substantial changes to the IP framework. Using Lancaster's – chair of the CLSG – metaphor of "the three pillars of the creative industries"⁸³, i.e. (1) a robust framework of copyright legislation, (2) strong action against piracy, and (3) a streamlined licensing regime, the creative industries were capable of securing the full

copyright issue when I came to work with Richard Hooper on the DCE feasibility study, which was December 2011. (Transcript C5)

⁸² Cross-referencing the extract (on page 137) of the interview with Hargreaves in May 2015, when he admitted the influence of the IPO staff on his report.

⁸³ Cross-referencing page 195.

government's support in bolstering the first two pillars, while the CLSG was coordinating the concerted effort of the whole industries to work on the last. Summing up the legacies and achievements of this phase of work, Richard Hooper – the champion of the Copyright Hub “movement” – emotionally remarked in his declaration of victory:

This is the story of my life. Three years ago, the narrative was the problems with copyright - the digital world - change the law. That's it. Almost all Hargreaves [Review] was [about] that... We came along and we said “Wait a minute! This is not as simple as that. [...] Before you rush off and change the law, you sort out and improve your licensing mechanism, processes and organisations”.

That is the story of this project. That is it. That's what we've done. And so now, before you rush and change the law, you have a go at processes. And actually when you do that, there's less requirement to change the law. If there's less requirement to change the law, there are less copyright wars. (Transcript B1)

D. Summary

This section provides a detailed account of the emergence of the Copyright Hub from its embryonic proposal by Hooper and Lynch in 2012 to the successful conclusion of the project's first phase in 2013. It depicts a vivid story of the ways the Copyright Hub was shaped, refined and redefined in order to navigate and bridge the (often unaligned and even conflicting) interests between different groups of stakeholders involved in the process of modernising the UK's IP framework and its copyright licensing practices. This act had been accomplished through a series of loosely coordinated, yet contingent, efforts made by a small group of “infrastructure entrepreneurs”, whose expertise and personal connections span numerous sectors and professional ecologies (i.e. publishing, images, music, and audiovisual sectors of the creative industries; policy making and legal practices; data modelling and standard

governance; etc.). Although the success of the Copyright Hub in this phase had given the project the required momentum for technological development in the future, it also limited the project's choices for partners (i.e. the Digital Catapult and, somewhat unofficially, the LCC) and the type of technology and data standards (i.e. the Linked Identifier Network and, more specifically, the LCC's Rights Reference Model), which it would later adopt in the second phase.

Apart from the success of the Copyright Hub project, this section also provides a testament to the triumph of the alternative IP narrative, which focuses on streamlining copyright licensing processes instead of making changes to the UK's legal framework. This shift in narrative had helped in reducing the propensity of new bills being rushed through the parliament owing to sheer political motives and constant pressure to update copyright laws as occurred in the past. Consequently, the creative industries had not only been able to create a defensible position on "high ground" through the establishment of the Copyright Hub project, but also managed to colonise this elevated terrain and shored it up with political alliances, collaborative relations, and economic interests. What still missing in this system of defence, which consisted in rhetoric, ideologies and partnerships, was a technical infrastructure that was capable of fulfilling the vision and promises of the Copyright Hub project. The development such an infrastructure will therefore be the prime focus for analysis in the next chapter.

III. Understanding the Copyright Hub's Success

This section is dedicated to examining reasons for the successful establishment of the Copyright Hub project. These reasons are studied and presented at three levels of data granularity: (1) the sectoral and national level, which explains the ways in which the Copyright Hub initiative became a solution that worked for both the UK government and the

creative industries, while maintaining an innocuous position towards the technology sector; (2) the institutional and project level, which portrays the alignment of interests in the collaborative triangle between the Copyright Hub, the Digital Catapult and the Linked Content Coalition (LCC); and (3) the individual level, which depicts the roles that key actors, most notably Richard Hooper, played in transforming ideas of the Copyright Hub into concrete developments.

A. From the Bird's Eye View of the Analyst

At the sectoral and national level, the Copyright Hub initiative emerged at a time when the government's intent to impose further changes to the UK's IP framework presented an increasing threat to the creative industries. In April 2013, the UK Parliament passed the Enterprise and Regulatory Reform Act (ERRA), whose Clause 59 was concerned with the licensing of copyright and performers' rights (Parliament.uk 2013b, pp.48-51). This clause, in particular, granted the Secretary of State the powers to provide licenses for works that qualify as orphan works, whose copyright owners could not be identified after diligent searches were conducted. Those orphan works were gathered into an extended collective licensing scheme, which the Secretary of State would subsequently grant to any licensing bodies, such as publishers and internet companies, for commercial exploitation without the need for consent from their rightful owners. Commenting on the consequences of the passing of ERRA, Orłowski (2013) – a veteran copyright columnist noted:

For the first time anywhere in the world, the Act will permit the widespread commercial exploitation of unidentified work - the user only needs to perform a "diligent search". But since this is likely to come up with a blank, they can proceed with impunity.

In the same vein of criticism of ERRA (which the creative industries later dubbed the “Instagram Act”), Dominic Young – who would then be appointed as CEO of the Copyright Hub in December 2013 – asserted the implications of the clause 59 for rightsholders:

Maybe the new powers don’t technically remove copyright from the work, but they certainly remove it from the copyright owner.⁸⁴ (Young, 2013)

In the face of the UK government’s latest “copyright landgrab” (Orlowski, 2013a), the creative industries were evidently brought together under increasing pressure to find a solution, which was capable of warding off the government’s statutory interventions. Such “a glimmer of hope”⁸⁵ was found in Hargreaves’ proposal of the Digital Copyright Exchange (DCE), and later became materialised in the Copyright Hub initiative. For example, the Copyright Hub was used explicitly by the image sector to protest the government’s passing of ERRA (i.e. the “Instagram Act”). Condemning this act as “put[ting] the cart before the horse”, David Baily – a veteran photographer – argued in a note published on the site of Stop43 – a campaign group representing a wide range of British photographers and agencies – as follows:

⁸⁴ Elaborating upon this statement, Young explained that the new powers would remove the exclusive rights from the right owners to determine the terms, price, credit as well as moral rights of the works they wanted to license (or whether they wanted to license these works at all in the first place). Furthermore, Young argued that the new powers implicitly coerced right owners into exposing themselves and their works to the Internet or risked making these works orphan. In his own words:

The fact that someone wants to use your work doesn’t mean you have to let them – and it used to be your exclusive right to decide. If you have a desire to keep work private and restricted, or only licenced on carefully controlled terms, you can and many do. Now if you try that you might just be decreasing the chances of a “diligent search” tracking you down and so decreasing your chances of escaping this odious scheme. If your work is hard to find it becomes subject to compulsory licensing with no appeal and no compensation beyond whatever price a stranger decides to put on your work. (Young, 2013)

⁸⁵ This reference was used by a senior executive working in the publishing industry when she referred to the way the DCE proposal (and later the Copyright Hub initiative) was perceived by herself and some other key stakeholders working in the creative industries (Transcript D3).

Why the rush? [...] A scheme, the Copyright Hub – a scheme backed by the government is being developed to ensure that those who wish to find our pictures can not only do so quickly online, but also find the contact details of the pictures' owners (Lee, 2013)

Evidently, the Copyright Hub was used by the creative industries as a blockage to prevent statutory interventions being introduced by the UK government. The extent to which such a scheme became effective depended largely on the degree to which the Copyright Hub could project itself as a promising sociotechnical initiative to establish a new digital infrastructure for IP trading and management. Due to the lack of details to evaluate the feasibility of implementing the Copyright Hub in technical terms, the degree of the creative industries' endorsement of, and participation in, the project were regarded as the benchmark for assessing the Copyright Hub's future success, and hence, the peer-pressure for the creative industries to rally behind the project "even if nothing was gonna happen". As recalled by Goldman (pseudonym) – an expert on data modelling, who had been involved with Hooper's feasibility study from the outset:

And he had a community, who is brought together largely by the pressure of the government, saying "if you don't improve your performance then we will take away rights". It's always been the pressure cause behind it. So people came somewhat unwillingly to the table but recognising that they had to be there. And also they had to be seen to be there, you know. Even if nothing was gonna happen, they had to, at least, be seen to be there themselves. But what Richard did was he got some good people together and he was able to turn that slightly negative motivation into something positive. (Transcript B7)

Therefore, the Copyright Hub, first and foremost, emerged from the urgent political need of the UK's creative industries to create a defensible position, from which they could fight off the invasion horde of copyright exceptions. Political motivation was thus the driving force; a master narrative promoting digital technology as new means for IP management was mobilised as ammunition; and the prospect of strengthening of copyright protection and potential economic gains were promised as ultimate rewards. As Macbeth (pseudonym) – a veteran publisher and an avid supporter of both the Copyright Hub and Linked Content Coalition (LCC) conceded:

I think they understand that there's a political need for the copyright industries to work together even if there isn't a technical or a commercial need, the political need is just as critical and all of us got to be in the same place politically. (Transcript B3)

Not only did the Copyright Hub bring benefits to the creative industries, it also provided rewards for the UK government in term of (a) stabilising the process of policy making and (b) delegating some of the government's responsibility for stimulating the economy to the private sector. On the one hand, by committing to support the Copyright Hub initiative, the coalition government was able to maintain their control over the area of IP legislation by addressing fiercely contested policies introduced by the prior administration. IP legislation was chosen as a setting for competition because of its high profile and the implosion of controversy regarding the Digital Economy Act (DEA), which arose right before the general election in 2010. Due to the extended nature of the infrastructural development process, the Copyright Hub initiative provided the UK government with an effective mean to counteract

the rapid rate of policy rebundling⁸⁶, which contributed to undermining the government's control over the policy making process as occurred in the past⁸⁷. On the other hand, the Copyright Hub initiative also allowed the coalition government to implement its "light-touch" approach to stimulate the economy by encouraging businesses to invest in developing a digital infrastructure for IP management and trading, which was expected to generate an additional £2.2 billion per annum to the UK's economy by 2020⁸⁸. It was intriguing to note that the realisation of these projected benefits was expected to lie well beyond the end of the coalition government and there was no robust mechanism to assess the validity of such claims. Instead of being rigorously tested and robustly defended, these expectations were indeed provocations that aimed at capturing attention and providing (albeit groundless and short-lived) credibility for the government's programme of actions. These dual rewards provided by the Copyright Hub were thus crucial for warding off criticisms of the government's dearth of a long-term vision for economic growth and its programme of actions to stimulate the economy, which was seemingly the single most important issue in the political agenda between 2010 and 2015⁸⁹. Hence, the Copyright Hub was able to receive the necessary endorsement and support from the coalition government.

Apart from appeasing the creative industries and the UK government, the Copyright Hub also maintained expectations of an innocuous initiative, which aimed at developing a harmless

⁸⁶ A series of rapid political rebundling of IP policies includes the Gowers Review in 2006, Creative Britain report in 2008, the Digital Britain report in 2009, and the Digital Economy Act (DEA) in 2010, and the Hargreaves Review in 2011.

⁸⁷ As evident in the Foreword of the Hargreaves Review, Hargreaves (2011, p.1) urged the UK government to adopt a different approach to IP policies in order to avert the prospect that "the pile of IP reviews on the Government's doorstep – four in the last six years – will continue to accumulate".

⁸⁸ Cross-referencing the government's response on page 140.

⁸⁹ Evidence for this argument could be found in the white paper addressing the UK government policy between 2010 and 2015. In this paper, "UK economic growth" was identified as the most critical issue on the agenda and the government's programme was described as focusing solely on actions to "stimulate strong and sustainable economic growth" (GOV.UK, 2015)

infrastructure toward the technology sector. Recalling her encounter with the technology sector during the process of conducting the DCE feasibility study, Lynch commented on how the initiative was expected to help alleviate the pressure on the technology sector, especially Google, in term of their obligation to “police” the Internet:

We saw the tech companies when we were trying to identify the problems, [e.g.] what sort of issues they face in getting access to license. [...] Google and Microsoft and others were [...] more questioning at first but my understanding is that they eventually were able to see that [...] there were benefits in having something like a Copyright Hub to make it easier. Because I remember Google saying that they don't want to become the policeman of the web and therefore, if people are able to get licenses easy and are able to do the right things themselves, it means that [...] they will have less pressure on them to try to police what people are doing on the web because that's not the function they want to take on. (Transcript C5).

Such an expectation work was vigorously maintained throughout the early stages of the project⁹⁰, when ideas of the Copyright Hub were germinated and developed, to ensure that the initiative did not provoke hostility from the technology sector, as occurred in the previous statutory intervention, namely the Digital Economy Act (DEA) 2010. This critical task fell primarily on Hooper – chairman of the Copyright Hub – who successfully mediated the convoluted relationships between the UK government, the creative industries and the technology sector. A typical example of Hooper's skilful mediation work was his Charles Clark Memorial Lecture at the London Book Fair in April 2013. In this presentation, Hooper (2013, p.10) depicted the Copyright Hub initiative as the creative industries' commitment to

⁹⁰ For a more detailed discussion, see this chapter, section II. B. on *Cementing Alliances: The Usual Suspects and Strange Bedfellows*.

“making copyright licensing processes and organisations more and more fit for purpose for the digital age”. As a result, Hooper argued that the Copyright Hub would benefit the government by helping them evade “legislative indecision [which] only prolongs the wars of attrition” (ibid.) With regard to the creative industries, Hooper emphasised that the Copyright Hub would give them legitimate reasons to ask the politicians “to deliver more rigorous and equitable enforcement of copyright” (ibid. p.11). To the technology sector, Hooper exhorted technology companies to treat copyright as seriously as patent rights and to “work with the grain of the copyright industries and not against the grain – to the benefit of consumers and economic growth” (ibid.). It was apparent that, while the rewards which the Copyright Hub provided for the UK government and the creative industries were meaningful and pragmatic, the rewards which the initiative could bring to the technology sector were much less consequential. To the technology sector, expectations of the Copyright Hub and the benefits it could bring were no more than provocations constructed to attract their attention. Nevertheless, such provocations were indispensable for allaying concern from technology companies and for ensuring that the momentum of the Copyright Hub initiative would not be impeded in the early stages by challenges from the technology sector. In short, at the sectoral and national level, the successful establishment of the Copyright Hub can be explained by the ability of the initiative to convince the UK government, the creative industries, and the technology sector of its (potentially) meaningful and pragmatic rewards and, at the very least, its innocuousness towards them.

B. From the Giraffe’s View of the Project Management

At the institutional and project level, the Copyright Hub succeeded in establishing alliances with the Digital Catapult and the Linked Content Coalition (LCC) due to its ability to identify and fulfil the strategic requirements of these organisations and vice versa. To put it

differently, each organisation engaged in the relationship with the deliberate intention to gain something out of the interactions. The following section is thus dedicated to delineating the reciprocal relationships between the three organisations.

With regard to the Copyright Hub – Digital Catapult partnership, the Digital Catapult provided the Copyright Hub with the necessary resources⁹¹ and technical expertise to develop and implement its digital infrastructure⁹². In addition, being in partnership with the Digital Catapult also served as a token of the government’s commitment to support the Copyright Hub which would, in turn, be employed to further attract and secure the creative industries’ endorsement of the project. As a result, making alliance with the Digital Catapult was crucial for the Copyright Hub to keeping up the project’s momentum. The Digital Catapult, on the other hand, was in need of projects to showcase the kind of impacts they could make to the digital economy. Since the Digital Catapult had been designed to engage with the creative sector and technology sector horizontally, and to become “a layer in all sectors”⁹³, they were seeking for projects which aimed at facilitating the existing market through infrastructural development, instead of developing new services and products to compete in the market themselves. Furthermore, because of the one-third funding model⁹⁴, the Digital Catapult was required to find partners, who had already secured funding from the industries, to conduct joint research projects. All of these elements, coupling with the fact that the emergence of the Copyright Hub was coincident with the inception of the Digital Catapult when the centre

⁹¹ Apart from resources in term of funding, the Digital Catapult also accommodated the management team of the Copyright Hub Ltd throughout the project, as well as providing the Hub with venues for interacting with its stakeholders and organising important events.

⁹² Cross-referencing this chapter, section II. C., on *Partnership with the Digital Catapult*.

⁹³ Cross-referencing Chapter 4, section III. A., p.135.

⁹⁴ The one-third funding model was applied to all Catapult centres, including the Digital Catapult. Hauser (2010) recommended that one third of the centre’s budget was predictable core funding from public money; a further third from business-funded research contracts won competitively; and the final third from collaborative applied research projects funded jointly by public and private sectors, also competitively bid for.

For a more detailed discussion, see Chapter 4, section III. A.

was eagerly seeking for ideas and projects, made the relationship reciprocal and resulted in the Copyright Hub – Digital Catapult partnership.

With regard to the Copyright Hub – LCC relationship, the Copyright Hub was in need of both the political support and resources from the creative industries, as well as a data model that was robust enough to be used in the distributed environment of the Internet, but also flexible enough to cater for the (often unpredicted) future users and uses of copyright content. This was the gap in which the LCC appeared to be capable of filling⁹⁵. Commenting on this issue, Goldman (pseudonym) - the data architect of the LCC's data model – disclosed:

LCC has probably provided [the Copyright Hub with] two things [...] LCC provided some political support [...] [since] the LCC project getting together some consensus of view [from the creative industries] towards creating a better framework for trading. And then the actual technical work, which I led in LCC, which was the modelling. (Transcript B7)

On the other hand, the LCC was also attracted to the Copyright Hub owing to the expectations that the resources made available by the partnership between the Digital Catapult and the Copyright Hub could help transform “linked data” – the foundational technology on which the LCC's data framework was built – from a largely academic endeavour into commercial services and business-ready applications in the real world. Clarifying this point of argument, Macbeth – a veteran publisher who had significant contribution to the establishment of both the Copyright Hub and the LCC – remarked:

The challenge with linked data up until recently has been that it's been a largely academic interest and really rather obscure in terms of the technology, and the

⁹⁵ Cross-referencing Chapter 6, section I. A.

technology itself as a result has not been terribly well developed. If the Catapult do a really good job on developing the repository technology [...] that could take linked data on a very big step forward. [...] Up until now the people you've talked to have all been terribly academic. And when you've tried to get them to do things that were really commercial, they've just fallen over because there's a very big gap between those two worlds. When the first-rate technical people working in the Catapult really get and understand what linked data is about and get excited about it, that's the time at which linked data has some chance of getting some real traction in the rest of the world. (Transcription B3).

Apart from these official partnerships, there also existed a subtle relation between the Digital Catapult and the LCC. Despite the Digital Catapult's resources and technical capability, they still did not have enough knowledge of the creative industries to develop a data model for this domain from scratch. Therefore, the Digital Catapult was seeking for a third-party that could provide them with a solution. As explained by the team leader of the Digital Catapult's development team:

As a development team, we don't particularly want to take on this [task of modelling] because we don't know the domain well enough that [we] would get it right. [...]. There are people out there, who are experts in it and living doing this. We should try to adopt theirs. And we don't necessarily want to own it. We don't want to turn evil. So it's good to have someone else out there who's come collaboration to build the data model that's accepted by the industries and we'll bring it forward. So we don't really want to reinvent that wheel. We want someone else to do it (Transcript C6).

Being a data model that had been developed and accepted by the creative industries since mid-1990s⁹⁶, the LCC's data model was thus an ideal option to help address the Digital Catapult's domain knowledge gap. In turn, the Digital Catapult offered the LCC, through the Copyright Hub project, resources and technical capability to advance their data model and implement some real-world applications using this abstract data model. The relationship between LCC and Digital Catapult was thus reciprocal and was sustained through the Copyright Hub project.

In short, from an institutional and project-level perspective, the Copyright Hub was successful in turning the original initiative into an infrastructural development project owing to a wide range of expectation work that addressed its allies' strategic requirements. Interestingly, the alliance with the LCC became feasible because of the Copyright Hub's promise to bring the Digital Catapult on board, and vice versa. Although each partner of the Copyright Hub was seeking something out of the relationship, that "something" was not necessarily what the Copyright Hub could provide itself. Rather, it was the expectation that the strategic requirements of one partner could be fulfilled by the resource and support, which another partner brought with them to the joint research project. This was the subtle force that was holding the triangular partnership between the Copyright Hub, the Digital Catapult, and the LCC together.

C. From the Frog's Eye View of the Actors' Real-time Perceptions

At the individual level, it was undeniable that the successful establishment of the Copyright Hub project was due significantly to the active participation and interactions made by a number of key actors. Amongst them, there was Sophie (pseudonym), who had rallied

⁹⁶ For more details, cross-referencing Chapter 6, section I. A.

multiple sectors of the creative industries behind the Copyright Hub and secured the industries' funding for the first two years of the project⁹⁷. There were also Macbeth, Goldman, and Amelia⁹⁸ (pseudonyms), who acted as active bridging agents between the LCC and the Copyright Hub, as well as Selena⁹⁹ (pseudonym), who acted as the matchmaker of the Copyright Hub – Digital Catapult partnership. Yet, there was a clear consensus among stakeholders on the decisive role of Richard Hooper in the emergence of the Copyright Hub project and the shift of the IP narrative in the UK. For instance, Macbeth (pseudonym) praised Hooper as “the man who singlehandedly has changed the narrative in the UK”. To clarify this assertion, Macbeth remarked on how the messages of the Copyright Hub initiative were “powerfully carried back” to the government circles owing to his political network and influence:

He [Hooper] carried this back again and again into government over the time that he's been working on this [Copyright Hub project], which is saying “Your solution to problems with copyright on the network is new legislation new exceptions. Our solution is better licensing. Why don't you give us a chance to do better licensing?” I think Richard himself [had done it] in terms of the UK and getting that message through to government, because he's very well connected in government circles. I think that message has been really powerfully carried back in by Richard himself” (Transcript B3).

On the other hand, with regard to the private sector, Sophie (pseudonym) argued that Hooper was the only one, who was capable of using his leadership and charisma to cement the fragile, and often fragmented, alliances between different sectors of the creative

⁹⁷ Cross-referencing page 187.

⁹⁸ Cross-referencing page 156.

⁹⁹ Cross-referencing page 201.

industries and channelled this united force through the Copyright Hub project. Extolling Hooper as ‘the Piper of Hamelin’ of the Copyright Hub project, Sophie commented:

He’s a bit like the Piper of Hamelin - he brought everyone with him, behind him, through his charisma, his personal contact, his deep interest, his passion. And you know, he wasn’t threatening, he wasn’t sort of trying to be a regulator or anything. But he built this, you know, with a genuine belief that this was the right thing to do and he brought everyone with him as I said, and support. (Transcript D3)

To give an example of how Hooper’s charisma and affection for pursuing the ideas of the Copyright Hub had contributed significantly to the successful establishment of the initiative, Sophie (pseudonym) juxtaposed Hooper and his approach with Hargreaves to explain the contrast in the creative industries’ attitudes towards the two proposals:

Professor Hargreaves was very reluctant to talk to the industry. We didn’t manage to have one meeting with him [...] So then the government appointed Hooper, as you know, to look at that concept [of the Digital Copyright Exchange]. And the next thing I knew was Hooper rang, making appointments to come and see me in my office. I wasn’t to go and see him. He wanted to come to my office. And I later learnt he did that with everyone [...] He really made a huge effort to talk to everyone and embrace everyone in the process, which is critical, I think, to its success. (Transcript D3)

Apart from his proactive approach to bringing the creative industries onboard, the success of the Copyright Hub initiative was also dependent on Hooper’s capability to mediate the (sometimes conflicting) interests of different actors involved in the project. To tackle this challenge, Hooper employed a wide range of expectation works that were capable of fulfilling

the subtle nuances of stakeholders' requirements. For instance, despite the perceptible benefits which the Copyright Hub could bring to the creative sector, a portion of the creative industries still held concern over what they regarded as an attempt to build a centrally-controlled licensing infrastructure that "will take all the business away". As illustrated in the following quote from an executive manager of a British picture library:

There's always a concern there. Anything that's trying to bring everything under one umbrella, under one roof, everything into one place. There is a concern from our industry that someone is trying to create the biggest picture library in the world [that] will take all the business away. (Transcript C8)

Therefore, not only did Hooper need to maintain high expectations of the Copyright Hub as an initiative which would bring meaningful and pragmatic rewards to the creative industries, but he also had to employ a certain type of low expectations, which ensured existing businesses that the changes, which the Copyright Hub brought to the market, would not disrupt their existing business models. Hooper accomplished this by placing emphasis upon portraying the Copyright Hub as a maker of a new market, which focuses on the high volume of low monetary value transactions coming mostly from the long tail of the existing market. They reasoned that this is a new market, which has not been exploited by the creative industries due to the lack of an appropriate and cost-effective mechanism. Therefore, the implementation of the Copyright Hub will help in "increasing the size of the overall pie [of licensing]" (Hooper and Lynch, 2012, p.21). This portrayal was of utmost importance to the Hub's emergence, especially in the early days, as it generated significant incentives for the creative industries to support the proposal to establish the Copyright Hub. As conceded by the aforementioned executive manager of the British picture library:

One thing Richard Hooper said right from the start was that if the Hub develops new products or new licence schemes they will not cut across existing business. The idea is to create new opportunities, new rights models, new licensing opportunities that are different to what is already being done. If the Hub simply was to replicate things that were already out there it would not be doing its job and it would simply be cannibalising existing business from existing industry, and that's not its intention. That's why I've been supporting it because I think that is the right attitude. (Transcript C8)

In short, from the perspective of individual actors in real-time interactions, the successful establishment of the Copyright Hub depended significantly on the contribution of a number of key actors. Amongst them, Hooper played the most crucial role in influencing this process through his political connections, creative industries' support, and the skilful manoeuvre of expectation work that fulfilled the nuances of stakeholders' requirement. In conjunction with the analyses at the sectoral and institutional levels, this section thus provides a comprehensive account of the establishment of the Copyright Hub, which does not privilege any particular perspectives nor specific levels of data granularity. This account not only highlights the impact of ecological forces upon the formation of the Copyright Hub project, but also gives due credits to the active roles which individual actors play in stimulating the process of innovation.

Chapter 6- Data Modelling and the

Copyright Hub

I. A short Biography of the LCC's lineage

The complex world of copyright licensing, with which the Copyright Hub has to deal, posed a critical challenge with regard to data modelling. What the project needed was a data model which is not only robust enough to be used in the distributed environment of the Internet, but also adaptive and flexible enough to accommodate a wide range of (often unanticipated) future users and uses. Therein lay the gap in technical development which the Linked Content Coalition (LCC) was capable of filling.

Prior to the LCC, there existed a number of socio-technical projects, whose main objectives were to devise new protocols and standards for automating the communication and rights management processes within the networked environment. The earliest project of this kind, <indecs>, was founded in 1998 to provide an analysis of requirements for metadata, which would enable e-commerce of IP in the networked environment (Cordis, 2001). The <indecs> framework, which provides details on a number of principles necessary to achieve such interoperability, was then implemented in various sectors and industry standards, such as Digital Data Exchange (DDEX) for messaging and data dictionary applications in music and Online Information Exchange (ONIX) for distributing digital metadata of products in publishing (DOI, 2013). The next important project of this kind was Automated Content Access Protocol (ACAP). Emerging from the feud between European publishers and Google over copyright infringement in 2006, ACAP was intended to provide a simple mechanism for

machines to read and to unambiguously interpret copyright terms and permissions of right holders in the digital environment (ACAP, 2006). Despite being wholeheartedly endorsed by European publishers and publishing societies, ACAP as a project was effectively cancelled when Google refused to adopt the proposed technology, resulting in other major technology companies withdrawing their support for the project. As the technical work of ACAP faded away, the political force behind ACAP moved on to the next project, known as Linked Content Coalition (LCC).

Beginning in 2012, LCC was funded partly by the European Commission and partly by the industries to help promote legitimate use of content on the Internet through the effective use of interoperable identifiers and metadata (LCC, 2015b). By the time of its conclusion in April 2013, the project has accumulated enormous political support from the creative industries and managed to turn itself into a permanent global consortium of standards bodies and registries (LCC, 2015a). In October 2013, funding from European Commission and industries was secured to help demonstrate the efficiency of the LCC framework through the Rights Data Integration (RDI) project. As Goldman (pseudonym), chief data architect of the LCC and RDI project, commented on how the Copyright Hub could benefit from the LCC and RDI project by not having to develop the data model from scratch, but instead using “precisely the same data structure” for its technical implementation:

And RDI’s been very helpful because before the Hub’s got going, we had already started developing the mapping and transformation, and repository work... It was simply because the Hub is taking a view that it will reuse everything it can. And the RDI stuff is built for this purpose. So, there’s a great deal of synergy at a deep level, as it’s using precisely the same model, not even a similar model, but precisely the same data structure. (Transcript B7)

Consequently, from the perspective of the Copyright Hub, decisions to adopt the LCC's data model were based on both political and practical grounds. By doing so, the Hub was able to tap into not only the political support and resources of the creative industries at the European level, but also the technical expertise in data modelling, which has been accumulated for approximately fifteen years since the begin of the <indec> project. This data model was proved to be one (if not the most) important component of the Hub's foundation technology and hence a single point of success (or failure) of this phase of technical development.

II. Blueprint for development – A technical discourse

In July 2014, a document entitled 'Blueprint for development' was published in order to specify high-level business requirements and a general plan for technical implementation, with which the Copyright Hub needed to comply (Copyright Hub, 2014). Amongst a number of core principles which had been outlined in this blueprint, two stood out as determining factors for the Copyright Hub's future success. First, it was emphasised that the Hub's technical infrastructure must be developed in anticipation of the future. Or in Ribes and Finholt's (2009) terminology, this principle represents 'the long now of technology infrastructure... [which is] conducted today with an eye toward long-term sustainability'. As specified in the Copyright Hub's blueprint:

In implementing this data architecture, a set of development principles espoused by Digital Catapult will be applied to all aspects of the Copyright Hub technology to ensure that its technology is not only future-proof (in terms of its scalability and flexibility to deal with new challenges and requirements) but is also transferable to implementations in other fields of endeavour beyond the management of copyright. (Copyright Hub 2014, p.11)

Consequently, flexibility and extensibility were prioritised at the expense of functionalities and performance, which poses a great number of consequences for the development of the Copyright Hub in later stages.

Second, the blueprint also insisted on ‘the primacy of data’ in the Copyright Hub ecosystem:

The Copyright Hub Ecosystem is essentially a data communication network... Essentially, this is all about flows of data, connecting through identifiers. In the Copyright Hub Ecosystem, “data is king” – indeed data is “for ever”, while the application and services which depend on that data are likely to be transient (ibid. 19).

As a result, a great deal of effort was subsequently put into specifying and detailing the Hub Data Model in the blueprint. In justification of the utmost importance, which was placed upon the data model, Goldman – the co-author of the blueprint and the principal architect behind this model – explained:

So, the Hub has to have a model, which it can become confident that the technologies may change but the data structure can't. I view data structure like DNA passes from one generation to another... And data is like that. If you've got good data, you can much more easily transform it into new systems. If you've got bad data structure, then you're constantly struggling as you transform from systems to systems. (Transcript B7)

Therefore, within the discourse on technical development, the Hub Data Model has become an embodiment of both ‘the long now’ and ‘the primacy of data’ principles, and hence a determinant of the Copyright Hub’s success.

III. Understanding the LCC's data model

In essence, this data model was based on the LCC's Rights Reference Model, which in turn had been developed from the principles of linked data¹⁰⁰. The Hub Data Model consists of four Core Data Entities: (1) Parties referring to people and organisations; (2) Creations representing any types of content; (3) Right Assignments including licenses, right policies and right delegation agreements; and (4) Rights as entities themselves. Metadata and the relationships between these four entities are illustrated in the figure below, which was reproduced from the Hub's blueprint.

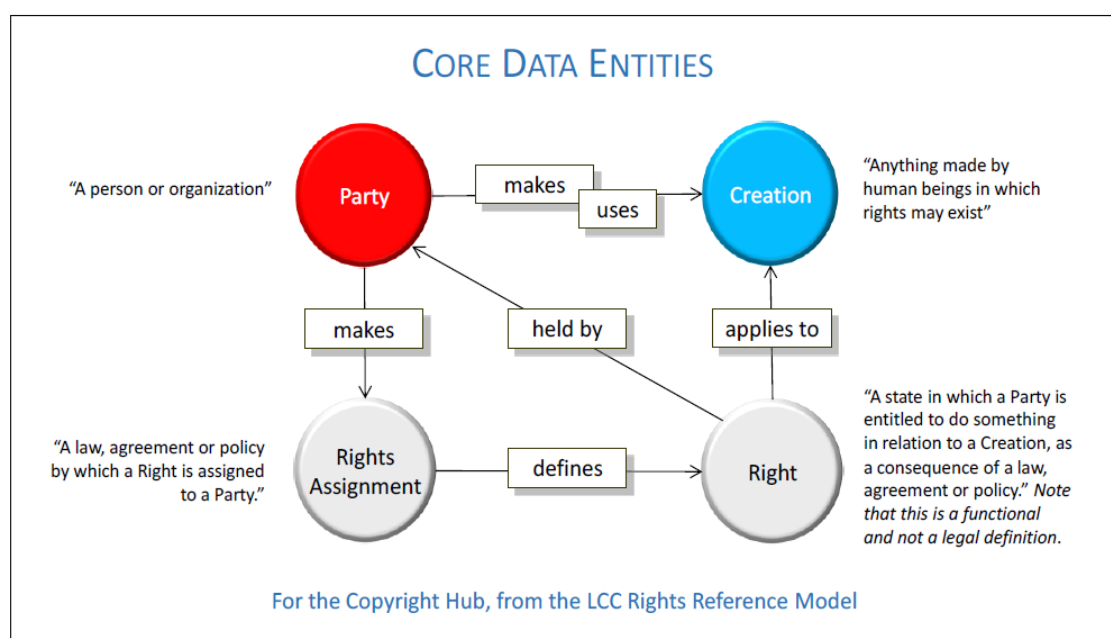


Figure 13 Core Data Entities of the Rights Reference Model

As mentioned above, the adoption of the LCC's data model for the development of the Copyright Hub also came with a number of consequences. First, it was relatively well-known amongst those experts, who helped consult the Hub in this period, that linked data had not

¹⁰⁰ Linked data is a term coined by Tim Berners-Lee to refer to a method of data representation, in which IDs are assigned to entities, then explicit statements are made about them, as well as their relationships to other entities. This type of representation is typically known as 'triples'.

been widely adopted and trialled in the market-based environment. As a member of the Industry Consultant group commented:

[T]he challenges with linked data up until recently has been that it's been a largely academic interest and really rather obscure in terms of the technology. And the technology itself, as a result, has not been terribly well developed. (Transcript B3)

Second, in acknowledging this shortcoming, the principal data architect of this model further admitted two of its primary drawbacks: (1) verbosity refers to the unnecessarily large amount of data which are disclosed when using this data model, and (2) granularity refers to the low-level data, which are redefined and employed in this model. In his own words:

[T]he model by definition, in computing terms, is a verbose. It's very detailed so where in a simpler model, you might only have two or three roles. In this model, you might have fifteen or twenty, you know, to describe the data... [A]part from its verbosity, it's a rather strange model... At the moment, there's not a wide spread acceptance of linked data or use of linked data... And the modelling approach we take makes that even worst, if you like, because the modelling approach, which is a very granular modular approach, is not something that most developers are familiar with at all, or comfortable with at all. (Transcript B7)

Unsurprisingly, these traits of the data model consequently brought great difficulties to the Digital Catapult's development team in the implementation process. Voicing his frustration over the 'exceeding complex' nature of the data model, a former business analyst of the Digital Catapult recalled:

[The development team] have found inconsistency in the LCC's model, a redundancy in it, and they're proposing a much lighter-weight one because the LCC's model was built for the utmost sophistication, which won't be required for

the early stage of the project... [We] developed some visualisation tools there, it looks exceedingly complex with even just a few parameters in there. So, the practicality of working with it as a viable long-term model situations unknown to me presently. (Transcript C3)

Confirming this assessment, a developer, who was responsible for implementing the model since the early days, also criticised it for the lack of performance. He commented: “If you do engineering based on this data model, you can tell it’s not designed for performance or -- yeah, performance is a big problem.” (Transcript C4). Therefore, from the perspectives of those who had to implement this model, there was a general consensus, which was summarised by the tech lead of the development team as:

[T]he data model is a little bit... [long pause] conceptual and abstract since it’s not necessarily that nice of a model to implement... It’s a little idealistic. It’s a bit lofty. It’s trying to do too much and so we can simplify by making it not do as much. It tries to do everything... And so we may have to remove some of the purity in there -- the theoretical side of it out and say let’s get down to practical. (Transcript C6)

Deeming this a reverse engineering process, the former business analyst and product owner of the Copyright Hub project argued that these problems could have been avoided if the project had followed a normal procedure.

[A]s all projects should proceed, it should go to idea, to features to requirements to blueprint. That project didn’t go that way. When I arrived, the Blueprint was already done and so we had to reverse engineer requirements and features from there. And, you know, a lot of early decisions were made in that Blueprint, which perhaps would have been taken differently if requirements had been done first. (Transcript C3)

Nonetheless, as we have examined at length in previous sections, decisions to adopt the LCC's data model were not based purely on the technical need of the Copyright Hub. In fact, this data model had been chosen, at least partly, due to the enormous political support which LCC could bring to the project at the time. By turning the Copyright Hub's narrative into a discourse on technological infrastructure development, the creative industries had effectively made the Copyright Hub a safe harbour, from which they could shelter until the storm of government's interventions had passed.

Chapter 7 – Discussion & Conclusion

The primary goals of this chapter are to discuss the ways in which this study contributes to furthering our understanding of the dynamics of expectations within the context of an infrastructural development initiative for IP trading and management, i.e. the Copyright Hub. The contributions are aimed at filling three gaps in the existing literature on sociology of expectations, as briefly recapitulated below.

First, high expectations have been used extensively in the literature as “an index”¹⁰¹ of technologies’ early stages of development. As a result, this assertion disregards a full spectrum of expectations, or a “typology of promissory behaviour”, which are usually employed by innovation actors to advance their choices of technological variations and trajectories (Pollock and Williams, 2010b). This problem became even more apparent in the case of the Copyright Hub due to its nature of being a social, political and technological project of divergent pressures. Lying at the bottom of the disregard for different types of expectations in the existing literature is the limitations of conventional choices of research designs and analytical approaches, which are usually framed retrospectively around particular innovation projects. This gap thus calls for a more subtle and reflexive methodological approach to studying innovation-in-the-making.

Second, there is a gap in the literature concerning our understanding of expectations’ credibility. Although several attempts had been taken to explain why and how certain expectations seem to be more resonant at a given moment than others through various

¹⁰¹ Cross-referencing page 57.

notions, such as “engineer-sociologists” and “heterogeneous associations” (Callon, 1987), “social dynamics of expectations” (Konrad, 2006), and “arenas of expectations” (Bakker, van Lente and Meeus, 2011, 2012), these studies cannot provide a comprehensible account of the ways in which the assessment of various expectations’ credibility occurred in multiple, co-existing arenas, interact and influence each other. In other words, the existing literature cannot explain how a wide variety of expectations are strategically linked together by an alliance of actors to help bolster the credibility of the newly-formed constellation of expectations, both individually and as a whole. This gap thus presents the need for a new approach, which is capable of examining the interlinkages between multiple, interrelated arenas of expectations – an area of knowledge which is still overlooked by scholars of expectation studies.

Third, there is a dearth of scholarship concerning the critical, yet neglected, notion of “protected space” within the context of technological changes. This notion is presented in contemporary sociological studies of expectations as a black-box, or in Parandian, Rip and Te Kolve’s (2012, p.567) words, “an environment which is relatively shielded from outside scrutiny”. Such conceptualisation overlooks the complexity and contingencies through which a protected space is formed, evolved and dissolved throughout the innovation process. This gap therefore requires re-conceptualising the notion of “protected spaces” and the processes through which these spaces are formed and dissolved.

To address these aforementioned gaps, I draw my inspiration from three theoretical lenses: (1) the Biography of Artifacts and Practices (BOAP) approach; (2) Linked Ecologies perspective; and (3) Things of Boundaries approach to understanding social entities. While a detailed discussion of how and why these lenses are useful for tackling the gaps in our

knowledge can be found in chapter 3¹⁰², it is imperative to reiterate a few key theoretical frameworks and analytical concepts that are critical to the discussion in this chapter.

From the BOAP approach (Hyysalo, Pollock and Williams, 2018), I adopted the view that the shaping of innovation and practices takes place within *ecologies of interconnected actors* and therefore, it is crucial to study not only those actors who directly engage in the technology development, but also those who are indirectly involved in the innovation process. The BOAP approach also advises us to pay close attention to *interstices*, or moments and sites in which various focal actors interact and affect each other, as well as the evolving technology. Considering them all together, those interrelated interstices constitute what BOAP scholars call a *series of configurational movements*, in which technology is shaped gradually and continuously across the spatially and temporally wide-reaching innovation process (ibid. p.12). The notion of “series of configurational movements” highlights the generative nature of partial closures and stabilisations in technology development, as well as the fact that actors, due to their limited capacity, have recourse to series of partial interventions within the reach of their control and relevance in the course of the distributed innovation process. This is thus in sharp contradiction to the immutability implied by ANT’s notion of “obligatory passage points”.

From the Linked Ecologies perspective, I concur with the view that the social world should be regarded as linked ecologies, each of which acts as a flexible surround for others. Lying at the core of this world view is the assertion that the simultaneous existence of numerous adjacent ecologies requires actors to seek alliances, resources and support across ecological boundaries. Therefore, not only do actors compete individually in their own ecologies, but they also vie in the form of alliances across multiple ecologies. Outcomes of individual

¹⁰² Cross-referencing Chapter 3, section I. A., pages 77-97.

contests thus contribute to the overall result of the alliance's struggle for power. According to Abbott (2005), the concept of ecology is composed of three analytical components: (1) *actors*, (2) *locations*, and (3) the relationships between these two. Abbott emphasises that *ligation* - the process of constructing the relationship between actors and locations - constitutes and delimits both actors and locations at the same time. Furthermore, Abbott also insists that the asymmetries in the internal structure (i.e. the stability and degree of separation of actors and locations of an ecology) and temporal structure (i.e. rhythms and cycles of actors, locations and ligation) of different types of ecologies play a critical role in affecting how alliances are formed between the linked ecologies. Regarding the linkage between ecologies, Abbott proposes using the notion of "hinges" to depict strategies that can provide rewards for members of an alliance in multiple ecologies at once. Not only do hinges provide different kinds of rewards to allies in multiple ecologies, they can also be of a fundamentally different type (i.e. a hinge can be a ligation in one ecology and be a location in another ecology).

From the Things of Boundaries approach, Abbott (1995) asserts that social boundaries come first, and social entities only come into existence when social boundaries are tied together by social actors in certain ways. Abbott calls these boundary points "*sites of difference*" and theorise that such differences are things that stem from local cultural negotiations. It is argued that local interactions tossed up stable properties, which gradually define two sides of the boundary point in question. Based on these assertions, Abbott presents a conception of the origin of social entities, which revolves around the process of "*yoking*" various proto-boundaries together. Abbott defines yoking as the "connection of two or more proto-boundaries such that one side of each becomes defined as 'inside' the same entity" (Abbott, 1995, p.871). The concept of "yoking" is thus particularly helpful in reconceptualising the processes through which protected spaces are formed and dissolved.

Having reiterated these concepts, it is now critical to proclaim my chosen approach to carry out the analysis of the case study of the Copyright Hub. Concurring with Mead's (1932, p.1) assertion that "the world is a world of events", I postulated the existence of a number of external events, which exerted significant impacts on the linked ecologies under examination. For instance, in the case study of the Copyright Hub, the financial crisis in 2008 represented such an event, which I initially treated as part of the taken-for-granted socio-political landscape, and therefore, it did not require any further examination. Although one could avoid making this kind of framing by extending the linked ecologies perspective indefinitely to accommodate these events into his analysis, this approach would undoubtedly produce an exceedingly complex account of the case study and hence, sacrificing the comprehensibility for superfluous details. This argument finds parallels in the BOAP's criticism of "the simplistic methodological nostrums" of Actor-Network Theory (ANT) (Pollock and Williams, 2010a, p.548). As exemplified by Latour's (1987) well-known exhortation to "follow the actor", this approach begs the obvious question as to which actors the researcher should follow (see Sorensen and Levold, 1992). The boundless number of actors and paths of research that could have been taken demand researchers to make conscious decisions on not only their research designs, but also the ways they approach the analysis process. Therefore, accepting this kind of framing requires the researcher to make certain assumptions, so that his analysis can be limited to a finite number of linked ecologies. Those linked ecologies, which are deemed crucial to the research, should emerge from the process of data analysis, rather than being pre-determined by the researcher. In the case of the Copyright Hub, for instance, three linked ecologies were identified through the process of data analysis: (1) policy-making; (2) business (whose actors include the creative industries and the technology sector); and (3) IP standard development (with Linked Content Coalition

as the prime actor). The dynamics and interactions between the three linked ecologies are discussed in more detail below.

I. The Curious Cases of “Low” & “Slow” Expectations

The sociology of expectations conventionally asserts that high expectations are “necessary to raising the profile [of technology] and attract allies” (Borup *et al.*, 2006, p.290). Nevertheless, a careful examination of the case study of the Copyright Hub revealed that, apart from high expectations, a number of different “kinds” of expectations were crucial to mobilise resources, as well as forging alliances with actors across the linked ecologies of policy making, business and IP standard development. I identify these different kinds of expectations as the “low” and “slow” expectations, and the curious cases of how these expectations help propel the Copyright Hub, as a socio-technical innovation project, are discussed at length below.

First, it has been shown that technological expectations of the Copyright Hub were set low for the specific purpose of attracting allies and securing support from actors within the business ecology. To make alliances with the creative industries, for example, technological expectations were maintained low throughout the early stages of the project in term of the Copyright Hub’s prospective functions¹⁰³. In particular, the potential benefits, which the Copyright Hub would bring to the creative industries, were portrayed as contributing

¹⁰³ Intriguingly, it was documented in the meeting minute of the Copyright Hub Launch Group (CHLG) in January 2013 that members of the CHLG were concerned about the low expectations of the initiative. It was suggested that the technological expectations might have been set too low to attract the attention of relevant stakeholders. As recorded in the report: “A question was raised about why anyone would want to go to the [Copyright] Hub if they will be sent elsewhere. It was felt by some that the Hub has to do more than merely redirect.” (CHLG, Meeting Minute, Jan 2013). This piece of evidence illustrated not only the existence of low expectations in the early stages of the Copyright Hub project, but also the nuances of expectation work performed by innovation actors throughout the process of negotiating and forging alliances with other actors.

primarily to the public goods (e.g. improving the flow of good quality metadata, encouraging a culture of copyright compliance, copyright education and signposting, a forum for collaboration across sectors of the creative industries, and so on) without attempting to disrupt the structure of existent marketplaces or developing novel services to compete with existing service providers¹⁰⁴. In other words, the creative industries generally had low expectations with regard to the Copyright Hub's technological functionalities. Yet, such low expectations were affirmed as one of the main reasons behind the creative industries' support for the Copyright Hub, since they were precluded from perceiving the initiative as an imminent threat to their business models by attempting to "bring everything under one umbrella, under one roof, everything into one place [... that] will take all the business away"¹⁰⁵.

In conjunction with low expectations, innovation actors also employed another type of expectations that was similar to what Pollock and Williams (2010b) identified as "visions let loose". Pollock and Williams defined these expectation as "provocative signposts drawn up about the state and future development of the industry" and characterised them as "speculative and low in accountability", which typically resulted in "relatively short-lived levels of influence" (ibid. pp.543-544). In the case of the Copyright Hub, *visions let loose* were exemplified by the attempt of the innovation actors to portray the Copyright Hub as a maker of a new market. It was speculated that the new digital infrastructure empowered by the Copyright Hub's technology would help open up a new market of high-volume, low-value transactions typically occurred at the long tail of the copyright licensing value chain. As the argument went, since the new market had not yet been exploited by the creative industries

¹⁰⁴ Cross-referencing Chapter 5, section II.

¹⁰⁵ A quote from the researcher's interview with an executive manager of a British picture library. Cross-referencing Chapter 5, section III., page 236.

owing to the lack of cost-effective mechanisms, the Copyright Hub was supposed to contribute to “increasing the size of the overall pie [of copyright licensing]” and hence, benefiting the creative industries as a whole (Hooper and Lynch, 2012, p.21). Similarly, it was speculated that the Copyright Hub would help alleviate pressure on technology companies, especially Google, to police the Internet for infringing activities by virtue of new legitimate services enabled by the Copyright Hub’s technology¹⁰⁶. Although these speculations were not based upon careful research and robust data (and consequently, the failure of these provocations did not seem to matter since they did not explicitly damage reputations of the announcers), they still played a critical part in catching the attention of the businesses and eventually secured the much needed financial, technical and political backing for the Copyright Hub project¹⁰⁷.

In addition to low expectations and visions let loose, there existed a distinctive type of expectation that was mobilised to help forge the alliances between the ecologies of policy making, business and IP standard development, which I identified as the “slow” expectations. Unlike low expectations and visions let loose, slow expectations could only be detected and understood when one examines the case study from the linked ecologies perspective, which asserts the asymmetries in internal structures and temporal structures of different types of ecologies. It was evident that the ecology of policy making was organised differently from the ecology of IP standard development, particularly in the temporal aspect. While the former was organised in a rhythm of five-year span¹⁰⁸ with a short cycle of actors, locations

¹⁰⁶ Cross-referencing Chapter 5, section III. A.

¹⁰⁷ In an article written for the World Intellectual Property Organisation (WIPO) Magazine in April 2016, Hooper (2016) confirmed that funding for the Copyright Hub’s first phase, i.e. “proof of concept”, came from the British government, the creative industries in the UK, Australia and the US, and the technology company Google.

¹⁰⁸ The coalition government passed the Fixed-term Parliaments Act, which received the Royal Assent on 15th September 2011, guaranteed the fixed-term existence of five years for every parliament. Cross-referencing Chapter 4, section II. B., page 126.

and ligations¹⁰⁹, and a rapid rate of policy rebundling¹¹⁰, the ecology of IP standard development was much more stable in term of rhythms, i.e. a similar set of actors who had relatively stable relationships with and had been working on correlative issues of digital IP management for an extended period of time¹¹¹. Similarly, the ecology of business resembled what Abbott (2005) described as the ecology of professions, whose “jurisdictions” appeared to be well-demarcated and highly stable compared with the rapid rate of rebundling and fairly overlapping nature of political “bundles”¹¹². Therefore, the significant mis-alignments regarding the temporal structures of the three ecologies were confirmed.

In his paper, Abbott (ibid. p.254) contended that “a given ecology has its own characteristic rhythms, [and therefore] connection between two ecologies can depend on the parallels and disparities between those rhythms”. Then, how were temporal mis-alignments exploited to help “hinge” the ecologies of policy making, business and IP standard development in the case of the Copyright Hub? More importantly, how did slow expectations help propel the Copyright Hub as an innovation project? Empirical data revealed that the disparities in temporal structures were used as a determinant in the reciprocity of expectations, which makes the alliances across adjacent ecologies possible. For instance, expectation work in the early stages of the Copyright Hub project placed particular emphasis on the contrast between

¹⁰⁹ Each cycle of the ecology of policy making is characterised by the rise and fall of certain political actors, the focus and shift of focus on certain locations (i.e. political issues that are of gravest concerns), and ligations or the construction of relationships, which constitutes and delimits both the actors and locations in question. The period between 2010 and 2015 witnessed the raise and fall of the coalition government, whose prime focus was on stimulating the British economy. From 2016 onwards, however, the location was shifted completely to the political issue of the United Kingdom’s membership of the European Union, notoriously known as “Brexit”. Such changes in actors and locations required a new ligation process, which in turn affected the ways alliances were forged between linked ecologies.

¹¹⁰ As exemplified by the rapid rebundling of five IP-related policies within the period between 2006 and 2011. Cross-referencing Chapter 5, section III. A., page 226.

¹¹¹ As exemplified by the series of work on the LCC’s data model, which has begun since the mid-1990s. Cross-referencing Chapter 6, section I. A.

¹¹² Cross-referencing Chapter 3, section I. A., on *Linked Ecologies*.

the “headline-grabbing, one-off, high-profile system”, which was typical of the ecology of policy making, and the “unglamorous world of standardisation [... which] simply continues over time, and is never complete”¹¹³, that was emblematic of the ecology of IP standard development. Such expectation work was able to attract and secure the attention of policy makers by highlighting the temporal differences between the two ecologies and suggested that a commitment to the extended process of developing a digital infrastructure for IP management would help alleviate the pressure to constantly intervene in the IP domain by means of legislation¹¹⁴. In other words, the slow expectations of the Copyright Hub project provided policy makers with the benefits of counter-balancing the rapid rate of political rebundling and hence, contributing to stabilising and strengthening the government’s control over the location of policy making¹¹⁵.

On the other hand, the creative industries’ commitment to the Copyright Hub project despite slow progress (i.e. “even if nothing was gonna happen”¹¹⁶) was promised to help nudge policy makers towards maintaining copyright laws and court systems in their favour¹¹⁷. It was particularly due to the mis-alignment in temporalities between the ecologies of business and policy making that changes could be accelerated in the latter ecology by innovation actors managing momentum in the former. In Hooper’s terminology, the slow progress of the Copyright Hub project was desirable for the creative industries to prolong the effect of “[moving] the ball from [the creative industries’] court to the politicians” and hence, increasing pressure on politicians to “deliver more rigorous and equitable enforcement of

¹¹³ Those are extracts from EPC’s expectation work on defining the DCE proposal. Cross-referencing Chapter 5, section I. C., p.168.

¹¹⁴ Cross-referencing the discussion on Chapter 5, section II.

¹¹⁵ Cross-referencing Chapter 5, section III. A.

¹¹⁶ An extract from the interview with Goldman (pseudonym) – the data architect behind the LCC’s data model. Cross referencing Chapter 5, section III. A., page 224.

¹¹⁷ Cross-referencing Chapter 5, section II. B., on *Cementing Alliances: The Usual Suspects and Strange Bedfellows*.

copyright”¹¹⁸. Hooper thus promised, while charting the course for the Copyright Hub project in spring 2013, that the progress of the initiative would be “not going too fast, but also not going too slowly”¹¹⁹. Slow expectations therefore helped attain the creative industries’ support by ensuring them that the Copyright Hub would move at a pace that was closer to the temporal rhythms of their own ecologies, as opposed to the rapid rate of political rebundling. In conjunction with low expectations, slow expectations extended the room for manoeuvre for the creative industries to moderate the problem of “rushed” policies being imposed upon them, while still maintaining momentum and control of the technical project to make sure that the changes, which the Copyright Hub promised to bring to the market, would not become disruptive and harmful to their business models.

Therefore, one key aspect of my theorisation using the linked ecologies perspective is that the exploitation of connections between ecologies is made possible by the mis-aligned temporalities of their expectation work. Discussions of the Copyright Hub were often referred to a direct linkage between the political, technical and commercial needs of a wide range of actors, who routinely assigned a distinctive temporal order to each of these different spheres¹²⁰. By doing so, innovation actors were able to manage momentum in one ecology while accelerating desirable changes in another, as well as moderating promises to meet local exigencies due to the extended room for manoeuvre offered by the low and slow expectations. These accounts call for the conceptualisation of temporal mis-alignment as a determinant in the reciprocity of expectations that is needed to temporarily hinge different ecologies together. It is precisely because the ecologies of policy making, business and IP standard development are organised differently from one another with distinctive rhythms

¹¹⁸ An extract from Hooper’s Charles Clark Memorial Lecture. Cross-referencing Chapter 5, section II. B., p.192.

¹¹⁹ Cross-referencing Chapter 5, section II. B., pp. 192-194.

¹²⁰ Cross-referencing Chapter 5, section III. A., page 225.

that those ecologies (with their own diverging yet intertwined interests) look for one another in search of alliances and support in the innovation space. This finding contributes to further Abbott's (2005, p.254) theorisation of linkages between ecologies, whose case study of 19th-century medical licensing suggested that the disparities in rhythms between the political and professional ecologies resulted in the frequent changes of doctors' allies over the years as "they sought friends in a political ecology largely disinterested in them". Nevertheless, Abbott's institutionalist approach to linked ecologies did not allow him to see that temporal disparities were not only the reason for the frequent changes of allies across linked ecologies in the long run, but also a determinant in the success of strategies hinging multiple ecologies together in the short term using temporally mis-aligned expectation work, as illustrated in the case of the Copyright Hub.

My findings of the role which low expectations play in propelling innovation projects also finds parallels in nascent sociological studies of technological expectations. An example is Gardner, Samuel and Williams' (2015) case study of innovation work in biomedicine. Studying a pioneering clinical team who provide deep brain stimulation to children and young people with movement disorders, these authors discover that clinicians carefully manage the expectations of their prospective patients by constructing visions which are "personalised, modest, and tainted with uncertainty" (ibid. p.998). They conclude that not only hype and optimistic visions possess the capability to provide momentum to biomedical innovation projects, but so do "less optimistic, uncertain, and modest visions of the future", which they call "low expectations" (ibid. p.998). The unique contribution of my study to the "sociology of low expectations" argument is that the ability of low expectations to help resolve immediate problems confronting allied ecologies, such as the ecologies of policy making and business in the case of the Copyright Hub, can somewhat decouple investments from assessments of the ability of the technology to fulfil its promises.

In addition, these findings also respond to Pollock and Williams' (2010b) call for the construction of a *typology of promissory behaviour* that could provide comprehensive and nuanced accounts of different types of expectations employed in a technological innovation context. On the one hand, the slow and low expectations, and the type of expectations that is similar to *visions let loose* identified in the case study of the Copyright Hub reconfirm Pollock and Williams' (ibid. pp.543-544) assertion that there exists "a spectrum of promissory activity" with different levels of performativity and accountability at work in order to propel technological innovation. On the other hand, these findings also enrich Pollock and Williams' (ibid.) conceptualisation empirically by applying it to a new setting, which is no longer confined to the single ecology of business but extended to a linked ecologies context, where the promissory work was employed to help hinge multiple ecologies with distinctive structures and rhythms together. Theoretically, these findings contribute to further Pollock and Williams' argument about the correlation between the degree of performativity of a type of promissory work and its standards of accountability and verification. With the case of the Copyright Hub, I have found that as long as policy makers, businesses and innovation actors are allied and taken on board for an innovation project, the degree of performativity of the expectation work is not necessarily directly proportional to its degree of accountability, i.e. where expectations are low and slow, this enlarges the room for manoeuvre for local players to moderate promises to meet local exigencies.

In short, the curious cases of how low and slow expectations can assist with propelling an innovation project has helped us tackle the first identified gap in the literature regarding the problem of using high expectations as the index for the early stages of technological development. The case of the Copyright Hub has illustrated that, to successfully attract allies and secure resources, innovation actors must employ a wide array of promissory work that appeals to different types of actors in different ecologies. The most interesting theorisation

comes out of this analysis is that temporal disparities are identified as a determinant in the successful establishment of hinges between the adjacent ecologies of policy making, business, and IP standard development in the case of the Copyright Hub.

II. Understanding Expectations' Credibility

The second gap in literature is concerned with the notion of credibility of expectations. Bakker, van Lente and Meeus (2011, p.159) attempt to tackle this issue through the notion of "arenas of expectations", which asserts that expectations voiced by enactors in the arena are tested by selectors, "where they are confronted with experience, knowledge and interests". It is assumed that selectors develop their own criteria for assessments, and further mandate will be given to those expectations that are deemed more credible by the selectors. Bakker, van Lente and Meeus (2012) provide more insights into the processes, by which selectors come to their assessments of expectations' credibility, by identifying a number of criteria employed by selectors to arrive at their decisions. Despite the usefulness of these findings, the "arenas of expectations" approach still suffers from the shortcoming of what Abbott (2005, p.254) calls the "Ecology/Audience" model. This model presupposes a set of fixed surrounds for an ecology, in which external criteria for success are taken-for-granted while overlooking the impacts of the ecological forces on its neighbouring ecologies. Furthermore, as mentioned above¹²¹, the existing literature on arenas of expectations does not allow us to analyse how outcomes of the trials of strength of expectations in multiple arenas interact and influence one other, which leaves a theoretical gap that needs to be fulfilled.

¹²¹ Cross-referencing Chapter 2, section V. B.

To transcend these conceptual limitations, I choose to adopt Abbott's (ibid.) linked ecologies perspective to examining the notion of expectations' credibility in the case of the Copyright Hub. The main benefit of the adoption of the linked ecologies approach is that it helps replace the "audience" concept in the analysis with the notion of "linked ecologies" (Abbott, 2005, p.250). In the linked ecologies argument, there is no audience, or fixed and unproblematic entities that are in the position to externally judge the promissory work of innovation actors. Instead, both sides are ecologies and actors in these ecologies are both seeking for alliances and support across their own ecological boundaries. As a direct consequence, the reasons for some expectations to garner greater legitimacy and become more resonant than others at a given moment are not simply because these expectations can convince selectors of their credibility, but because such expectation work can provide desirable outcomes for all allies in the linked ecologies at once. This point of argument will be illustrated at length below using examples from the case study of the Copyright Hub.

To supplement Abbott's linked ecologies argument, I also adopt the BOAP's notion of "interstices", or moments and sites in which key actors interact and affect each other, as well as the evolving technology (Hyysalo, Pollock and Williams, 2018). Three key interstices identified in the case of the Copyright Hub include: (1) the interstice of policy controversy; (2) the interstice of policy implementation; and (3) the interstice of policy revision. These interstices constitute "a series of configurational movements", which gradually and continuously shape the trajectory of the Copyright Hub and the relationships between actors and locations both within and across multiple linked ecologies. These concepts provide the necessary points of departure for the analysis and discussion of expectations' credibility.

A. An Analysis in Context

Before embarking on analysing the three interstices that shape the trajectory of the Copyright Hub, it is imperative to discuss a few taken-for-granted external events which set the stage for the interactions between the linked ecologies under examination. Understanding these events helps shed light on why certain issues are important concerns for actors in one ecology at a given moment and thus, how they influence the ways alliances between adjacent ecologies are made. Two events of this kind were identified in the case of the Copyright Hub.

The first event was the 2008 global financial crisis. In this context, the UK's economy was spiralling downward and hence, stimulating the economy was the most important concern for actors within the ecology of policy making during the period between 2010 and 2015¹²². This circumstance rendered the coalition government eager to cut public spending and reduce the budget deficit through austerity programme, as well as making allies with actors in the business ecology in order to delegate part of their responsibility for pulling the country out of the recession. In this context, the UK government was heavily criticised by its political opponents for the lack of long-term vision for economic growth. Consequently, it became increasingly important for the government to identify a setting for competition, which allowed them to fend off criticisms and strengthen their control of the policy making process. With this end in view, the UK government turned to IP legislation – the area which had imploded just before the general election by the passing of the controversial Digital Economy Act¹²³ – as a potential venue to earn credit by addressing fiercely contested policies

¹²² See the government's policy paper entitled "2010 to 2015 government policy: UK economic growth" (GOV.UK, 2015).

¹²³ Cross-referencing Chapter 4, section II. C. and section III. A.

introduced by prior administrations. It was within this context that the interstice of policy controversy unfolded.

The second external event that needs to be mentioned is the controversy surrounding aggressive tax avoidance schemes by multinational corporations, which emerged in late 2012¹²⁴. It was revealed that multinational technology companies, particularly Google, had employed “elaborate corporate structure” and “manifestly artificial tax arrangements” to evade their UK tax liabilities¹²⁵. As a result, giant technology companies, and the technology sector in general, were widely criticised by the public and policy makers for their wrongdoings, while the creative industries were, in sharp contrast, praised as the critical contributors to the recovery and growth of the economy. It is imperative to note that this event initiated a series of investigations conducted by the political opposition targeting the technology sector with an intention to undermine the government’s authority due to its close alliance with the technology sector. In the face of strong criticisms, the coalition government was compelled to somewhat cast aside its old alliance with the technology sector to embrace a new one with the creative industries. This event was thus critical to the analysis as it made a significant impact on facilitating and strengthening the establishment of alliances between the creative industries and policy makers.

Having carefully discussed the impacts of these external events on the analysis, the following section is dedicated to examining the three interstices that shape the Copyright Hub project in more details.

¹²⁴ Cross-referencing Chapter 5, section II. C.

¹²⁵ Ibid. p.213.

B. Copyright Hub and the story of Three Interstices

The Interstice of Policy Controversy

The interstice of policy controversy emerged from the struggle of the newly-elected government for the domination of policy-making processes. IP legislation was chosen as a setting for competition due to its high profile and the implosion of controversy which arose right before the general election in 2010.

Under the previous administration, a number of attempts had been made to intervene into the domain of IP legislation. The most notable example of this kind was the 2006 Gowers' Review¹²⁶, which concluded that the existing IP system had been "broadly performing satisfactorily". Within this vision, IP legislation was regarded mainly as an instrument for protecting the rights of rightsholders (mostly the creative industries), while the UK government was obligated to enforce these laws. The controversial Digital Economy Act took a step further and portrayed internet subscribers as being prone to engage in copyright infringing activities, and hence forcing the Internet Service Providers (ISPs) to police their own customers and networks. It was evident that, to gain control of IP legislation, the Labour administration had engaged in a "ligation" process, which defined and delimited not only IP legislation, but also numerous actors (e.g. the state, the technology sector, the UK creative industries, and right users) across the ecologies of business and policy making.

When the new coalition government came into power in 2010, they attempted to engage in this domain by initiating a new ligation process, i.e. the Hargreaves Review, which redefined IP legislation as a regulatory barrier to the proliferation of technical innovation and Internet-based business models in the thriving digital economy. The technology sector was portrayed

¹²⁶ Cross-referencing Chapter 4, section II. C.

as the positive force of innovation and economic growth, while the UK creative industries were censured for their “lobbyist” position on reforming IP legislation, which focused solely on preserving the industries’ diminishing status quo¹²⁷. Such polar contrasts in the two litigation processes inevitably resulted in a high-profile controversy surrounding IP legislation. It is interesting to note that the primary expectation work conducted within the interstice of policy controversy was developed entirely through policy-led processes, i.e. the Hargreaves Review and its predecessors. I call these processes the “expectation mediation processes” - an intermediary which mediates and communicates the expectation work of actors across ecological boundaries. Empirical evidence disclosed that the Hargreaves Review was structured in ways which ensured its findings to be consistent with the government’s outlook. For instance, it had been shown that Hargreaves was appointed through a hasty process and was given very little time to conduct his review, i.e. only six months to examine the entire UK’s IP framework. The problem became even more acute due to Hargreaves’ complete lack of background in issues concerning intellectual property prior to his appointment¹²⁸. Hargreaves therefore had to rely on staff, who were pre-selected from the Intellectual Property Office (IPO), to ensure the quality of the submitted evidence. In addition, the review was supported by an advisory group of experts, who had also been pre-selected without any consultation with Hargreaves¹²⁹. As a result, the Hargreaves Review was subservient to the government’s outlook on IP issues and was much less independent compared to its official status, which appeared in the government’s record as “an independent report”. Consequently, even before the actual study was conducted, outcomes

¹²⁷ Cross-referencing Chapter 5, section I.

¹²⁸ Cross-referencing Chapter 4, section III. A. on Policy 2: Review the UK’s IP framework

¹²⁹ Cross-referencing the first extract from the author’s interview with Hargreaves on page 137.

of the Hargreaves Review had been somewhat pre-determined¹³⁰ and destined to be the opposite of Gowers Review and other reports published under the Labour administration.

Although Hargreaves' conclusions were largely conformed to the coalition government's outlook on IP issues, they deviated in two critical aspects. First, Hargreaves advised against "importing Fair Use wholesale" to both the UK's IP legislation and the EU legal framework since the benefits could not be expeditiously obtained due to "protracted political negotiation, against a highly uncertain legal background"¹³¹. Instead, Hargreaves recommended the UK government take advantage of the European Copyright Directive to introduce additional copyright exceptions at the national level. Second, Hargreaves proposed the construction of the Digital Copyright Exchange (DCE), which was optimistically expected to be straightforwardly self-funded by small user charge by the end of 2012. The DCE was further projected to enable 'a functioning digital market in rights clearance', which would add £2.2 billion per annum to the UK's economy by 2020¹³². These recommendations were firmly in line with what the coalition government was looking for, i.e. a long-term vision that might provide short-term concrete achievements in terms of policy making and economic stimulation. As a result, the government announced their "broad acceptance" of Hargreaves' recommendations and promised "to have measures in place by the end of [the] Parliament" that would allow the IP vision to become materialised¹³³. By doing so, the government assumed control of the policy making processes around intellectual property and declared that no further major review of the IP system would be considered in the existing parliament.

¹³⁰ Cross-referencing Chapter 5, section I. B., page 160.

¹³¹ Cross-referencing Chapter 4, section III. A., page 139.

¹³² Cross-referencing Chapter 4, section III. A., page 140.

¹³³ Ibid.

Before moving on to examine the second interstice of policy implementation, it is crucial to discuss some preliminary findings which emerged from the analysis of this interstice.

First, the interstice of policy controversy could be regarded as a battleground initiated by the coalition government in their struggle with other policy-making actors for the domination of the policy making processes. To succeed in this struggle, the coalition government sought support from across the ecological boundaries of policy making and attempted to form an alliance with the technology sector in the business ecology. The provision of US-styled “fair use” was intended as a “hinge”, which provided dual rewards for members of the alliance in both ecologies at once. For the government, it provided a means by which the newly-elected government could gain credit by redressing failure outcomes of the policy-making processes taken place under the Labour administration, as well as stabilising the rapid rate of policy rebundling as occurred in the past¹³⁴. For the technology sector, it would help tip the balance of the UK’s IP framework toward favouring the emerging Internet-based technology companies and web services, whose business models were largely built on exploitation of copyright-protected content managed by the creative industries.

In order for this hinge to work, a new ligation process was needed to replace the one which had been put forward by the prior administration, and the Hargreaves Review was initiated primarily for this purpose. To phrase this in more general terms, a new ligation process was needed to help redefine and delimit actors (or members of the new alliance) and the tasks (or locations within each member’s respective ecology) which the alliance desired to control. Expectation work was therefore performed through ligation processes, whose outcomes comprised visions, expectations and promises, were eventually circulated to attract the attention of potential allies.

¹³⁴ Cross-referencing Chapter 4, section II. C.

Second, it was crucial to note that the coalition government proactively engaged in pre-determining and influencing the Hargreaves Review so that the IP vision and expectations produced through this “independent” process would conform as much as possible to the government’s outlook. This finding contrasts with the notion of selectors presented in Bakker, van Lente and Meeus’ (2011, p.159) paper, which asserts that “selectors inform (and also constrain) themselves with expectations, they make assessments and pick their winners”. In this Ecology/ Audience model, selectors assume a fixed and passive role in the arena of expectations: i.e. they wait for enactors to feed them on expectations and then react by deciding which technological variations are viable, before providing further mandate that allows enactors to work on improving their technologies. From the linked ecologies perspective, however, both sides of the interaction were ecologies, whose actors proactively sought support from potential allies in neighbouring ecologies. The linked ecologies perspective thus adds a further layer of contingency to the somewhat simplistic Ecology/ Audience model and provides a more comprehensive account of what happened in the field.

Finally, analysing the interstice of policy controversy also drew our attention to a special kind of agent, who acted as a mediator between actors of the ecologies of policy making and business. I propose to call this type of agent “expectation mediators”. Due to the particularities of the relation between policy makers and businesses, especially when the creative industries had been previously condemned for their “lobbyist” position on IP issues¹³⁵, the technology sector and the creative industries could not voice their expectations regarding intellectual property in a direct manner to the government. Instead, the government employed Hargreaves as an expectation mediator, who acted as a conduit for gathering data from the business sector and developing an IP vision, for which the

¹³⁵ Cross-referencing Chapter 5, section I.

government would eventually assess and provide mandate. The role of expectation mediators in influencing the credibility of expectations and shaping the course of innovation will be examined more carefully in the discussion below.

The Interstice of Policy Implementation

The interstice of policy controversy had elevated IP, especially copyright, to the forefront of the battle for dominating the policy making process in the UK. From the government's perspective, copyright was perceived as the "reverse salient"¹³⁶ of the UK's IP system and being able to gain control of this "location" through the DCE initiative would provide an effective means of reinforcing the government's stance on their newly-formed IP vision. From the point of view of the creative industries, however, the DCE proposal represented something of the opposite nature: it provided "a glimmer of hope"¹³⁷ and the necessary leverage to undermine the government's IP vision. The European Publishers Council (EPC), for instance, argued that in a well-functioning technological environment, businesses would need fewer, not more, exceptions. Copyright exceptions therefore should be "strictly limited" and "always be an instrument of last resort"¹³⁸. To clarify expectations surrounding copyright and the potential of a technological solution for streamlining copyright licensing processes, Hooper's feasibility study of the DCE was initiated by the UK government. The commencement of this mediation process thus marked the beginning of the second interstice – the interstice of policy implementation.

The interstice of policy implementation differed from the interstice of policy controversy in two critical aspects. First, the expectation work in this interstice focused solely on

¹³⁶ Borrowing Hughes' (1987, p.67) terminology, which defined reverse salient as "components in the system that have fallen behind or are out of phase with the others".

¹³⁷ Cross-referencing Chapter 5, section III., p.223.

¹³⁸ Cross-referencing Chapter 5, section I. B., p.162.

copyright¹³⁹ and expectations surrounding the roles of digital technologies in streamlining copyright licensing processes, while the interstice of policy controversy was concerned with IP visions in the broadest sense, i.e. the roles of IP legislation in the UK's economy and society. Second, this interstice was mediated by a new expectation mediator – Richard Hooper – whose approach and charisma exerted significant influence upon outcomes of the mediation process. Indeed, Hooper was able to rally broad support around the Copyright Hub initiative from actors across the ecologies of policy-making and business – an outcome which Hargreaves did not achieve with his mediation process¹⁴⁰.

In the interstice of policy implementation, the creative industries actively engaged in a new litigation process, which defined and delimited problems of copyright and copyright licensing, as well as expectations concerning the roles of the DCE in their vision of “a copyright-aware Internet”¹⁴¹. The most notable example of such a litigation process was the European Publishers Council (EPC)'s expectation work on defining the DCE proposal¹⁴². EPC's expectation work was built on the general vision shared by the creative industries, which asserted that the basic principles of copyright laws still functioned adequately in the twenty-first century and there was no evidence of market failure in the domain of copyright licensing¹⁴³. What was needed, argued EPC, was “a global market infrastructure which enables the automation of managing rights on the Internet” and thus, EPC advanced their expectations of the DCE to be developed into “a standardised data infrastructure for the management of digital rights”¹⁴⁴. Such a definition of the DCE not only defined what the initiative should be developed into (i.e. a standardised data infrastructure), but also its

¹³⁹ Apart from copyright, intellectual property is also concerned with patents, trademarks, and industrial designs.

¹⁴⁰ Cross-referencing Chapter 4, section III. A., p.143.

¹⁴¹ Cross-referencing Chapter 5, section I. A., p.156.

¹⁴² Cross-referencing Chapter 5, section I. C.

¹⁴³ Cross-referencing various extracts from the creative industries' statements, pp.160-161.

¹⁴⁴ Cross-referencing Chapter 5, section I. C., p.165.

properties (i.e. standard-based, pro-competition, highly distributed, non-exclusive, voluntary and industry-led) and the roles which different members of the alliance should take in the development process (i.e. the creative industries should lead and be responsible for delivering the desirable outputs, while the government should use its convening power to create a favourable environment for the initiative to grow and flourish).

In addition, EPC warned the government against developing the DCE as either (a) “a service” or “a market place”, which would become redundant owing to successful counterparts which had already existed in sectoral and territorial silos, or (b) a centralised copyright register which would inevitably fail due to lack of participation from the creative sector¹⁴⁵. By relating to their own interpretation of the proposal as well as other competing alternatives, EPC’s expectation work highlighted the fact that the formation of a new alliance between the creative industries and the government would become feasible only when certain expectations regarding the DCE’s properties, types of development, and key stakeholders’ roles associated with the project were accepted by the government.

Nevertheless, the creative industries’ expectation work was not directly communicated to the government, but it had to pass through an intermediary layer, i.e. the expectation mediation process. Hooper’s mediation process was divided into two phases. The first phase was concerned with defining existing problems of copyright licensing and identifying plausible technological solution for these problems. Hooper’s report suggested that the answers to the question concerning the fit for purpose of copyright licensing in the digital age were “much more diverse and nuanced” than what had been previously claimed by Hargreaves¹⁴⁶. It was insisted that copyright licensing in the UK could be further streamlined by reducing the unnecessary complexity regarding the number of actors and processes

¹⁴⁵ Ibid. p.166.

¹⁴⁶ Cross-referencing Chapter 5, section II. A., p.173.

involved, both within and beyond the boundaries of individual creative industries. This argument evidently tapped into the concurrent litigation process occurred at European level, which depicted copyright as neither complicated nor confusing, but an inherently complex system that needed to be simplified¹⁴⁷. By defining copyright as a well-functioning legal framework, yet inherently complex system, the creative industries were expected to be obligated to reduce the complexity of their own licensing systems. At the same time, the need for direct statutory intervention from policy makers in this streamlining process was effectively ruled out. Furthermore, copyright users were also redefined as those who wanted to be compliant but were ignored by the conventional licensing system owing to the lack of a cost-effective mechanism for handling granular requests¹⁴⁸. This new definition was in stark contrast with the traditional image of copyright users, who had been commonly depicted as illegal file-sharers or pirates, and thus alleviating the pressure on policy makers to tighten regulations on copyright protection. Built on this litigation work, the first Hooper's report emphasised that there were no commonly agreed standards across sectors for "expressing, identifying and communicating rights information"¹⁴⁹ and suggested this domain as a potential venue, where a plausible technical solution for the problems of copyright licensing could be found.

In the second report coming out of his mediation process, Hooper made a number of recommendations, which were categorised under four main topics, to address the problems of copyright licensing¹⁵⁰. The first topic on data building blocks highlighted the quintessential role of data in the licensing process and hence, the need for consistently employing

¹⁴⁷ Cross-referencing Chapter 4, section III. B.

¹⁴⁸ Cross-referencing a quote from a veteran publisher on page 146.

¹⁴⁹ Cross-referencing a quote from the report on page 175.

¹⁵⁰ Cross-referencing Chapter 5, section II. A., pp.175-181.

international standards for identifiers whenever they existed. In addition, the Linked Content Coalition (LCC) was explicitly cited as “a very real and necessary building block for the Copyright Hub”¹⁵¹ due to its potential for establishing a common language for cross-sector communication.

The second topic was concerned with the issue of orphan works and mass digitalisation, which Hooper suggested a combination of both legislative and technical measures to tackle this problem. Focusing on the technological side of the solution, Hooper cited ARROW and ARROW Plus – two concurrent projects tackling the same issues at European level – as valuable examples of cross-border solutions, and more importantly, of “the benefits of a public-private partnership in finding a workable solution”¹⁵². Hooper argued that the approach of harnessing the public-private partnership to address copyright issues was “crucial” for taking forward any recommendations from his report.

Third, repertoire imbalance was about the lack of contents in digital formats in comparison with their counterparts in physical forms, which the creative industries continually dismissed as a myth since most popular titles were already made available online. Despite such claims, Hooper insisted that perceptions could drive public opinion, as well as political views, and thus urging the creative industries to assume their responsibility for reducing the imbalance. This topic thus represented vividly the way Hooper use his report to mediate the tense relationship between the creative industries and the government: while the former were asked to provide better services and accesses to their content in order to create positive public opinion, the latter were urged, in return, to use their power to defend legitimate copyright interests against infringement¹⁵³.

¹⁵¹ Cross-referencing a quote on page 176.

¹⁵² Ibid.

¹⁵³ Cross-referencing a quote from Hooper’s report on page 178.

Finally, the fourth topic discussed how a technological solution in the form of a “one stop shop” could help reduce the complexity and expense of organisations and processes involved in copyright licensing. Hooper reiterated the creative industries’ expectations on how the DCE could help in short term by providing “better signposting for users”, and in the longer term by becoming a platform for automated direct licensing service¹⁵⁴. Built on these expectations, Hooper proposed establishing “a not-for-profit, industry-led, industry-funded Copyright Hub with some possible Government pump-priming in the early stages”¹⁵⁵. In Hooper’s proposal, the Copyright Hub would fulfil four main purposes: (1) copyright education and information, (2) registries of rights, (3) a marketplace for copyright licensing, and (4) an authoritative place for dealing with orphan works. These functional requirements were expected to be delivered in consecutive phases, beginning with the launch of the Copyright Hub’s website for copyright education, signposting and navigation.

It was imperative to note that Hooper’s proposal of the Copyright Hub not only echoed expectations voiced by EPC and other stakeholders within the creative sector as detailed above, but it also took into consideration elements of Hargreaves’ recommendations, which had been broadly accepted by the government. For instance, one of the main recommendations from Hargreaves Review was an integrated solution to replace prior policies, which focused solely on enforcing copyright laws. This solution consisted of: (1) modernising copyright law, (2) promoting copyright education, (3) enhancing enforcement, and (4) encouraging an open digital market for licensing. While Hooper’s proposal of the Copyright Hub directly addressed the second and fourth elements of Hargreaves’ integrated solution, it also helped in enhancing copyright enforcement by tackling repertoire imbalance,

¹⁵⁴ Cross-referencing the quotation from page 180.

¹⁵⁵ Cross-referencing Chapter 5, section II. A., p.181.

which had been primarily used by copyright pirates as the main excuse for their infringement activities¹⁵⁶. In addition, Hargreaves also mentioned the need to enable licensing of orphan work¹⁵⁷, which was also addressed in Hooper's report. Therefore, it was reasonable to argue that Hooper's reports served well as a middle ground between expectations voiced by both the creative industries and the government. The publication of Hooper's second report thus marked the end of the second interstice of policy implementation.

Analysing this interstice has brought forward an interesting preliminary finding with regard to the mediation process. It has been found that the mediation process is significantly different from the expectation work performed by enactors as described in the conventional Ecology/ Audience model. For instance, Rip (2006) describes enactors as having the capacity to anticipate, to a certain degree, the selection environment and change their expectations slightly to make them appealing to the selector¹⁵⁸. Nevertheless, such an anticipation process cannot be compared with the degree of efforts performed by the expectation mediator to (a) navigate the maze of conflicting expectations and interests voiced by various actors across multiple linked ecologies, (b) mediate those differences, and (c) produce an integrated solution that takes into account the expectations of all of these actors. In other words, for an expectation mediation process to be successful, a mediator must be able to "mediate" the differences between a wide array of expectations and produces "hinges" or strategies that provides rewards for different allies across multiple linked ecologies at the same time. The main aim of the mediation process thus revolves around the successful establishment of alliances with actors in adjacent ecologies, instead of merely trying to convince an external audience of certain promising options for technical development.

¹⁵⁶ Cross-referencing detailed discussion on repertoire imbalance on page 178.

¹⁵⁷ Cross-referencing page 139.

¹⁵⁸ Cross-referencing the discussion in Chapter 2, section IV. C., page 49.

The Interstice of Policy Revision

After the end of the second interstice of policy implementation, there was a momentary halt in the progression of the Copyright Hub initiative due to lack of activities from both the government and the creative industries. The situation was somewhat similar to what Robinson et al. (2012) described as a “waiting game”, in which one side was waiting for the other to take the first step before they made their move. In this situation, however, the waiting game was not played by actors of the same ecology, but rather by actors of the two separate (yet linked) ecologies of policy making and business. As a result, the dynamics of actors involved in the waiting game in the case of the Copyright Hub were rather peculiar in the sense that policy makers could exert their authority to impose legislation upon the creative industries. Thus, there had “always been the pressure cause behind it”, which coerced the creative industries to work together to break the impasse despite their initial reluctance¹⁵⁹. This observation contradicts Parandian et al. (2012)’s assumption that actions at the collective level, which are necessary to break through waiting games, are difficult to achieve. Indeed, if there were an imminent requirement for actors of the business ecology to make alliance with policy makers, the concerted effort of the industries would not be too difficult to come by.

The beginning of the third interstice of policy revision was marked with a series of activities and interactions initiated by the creative industries to break through the waiting game, followed by reactions from the UK government, continued with actions coming from the business ecology¹⁶⁰. The creative industries and the UK government appeared to engage in what I call a “turn-based strategic game”, in which actors on each side take turn to make

¹⁵⁹ A quote from Goldman (pseudonym) – the data architect of the LCC’s data model – describing the early days of the Copyright Hub project. Cross-referencing Chapter 5, section III. A., page 224.

¹⁶⁰ Cross-referencing Chapter 5, section II. B. on *Breaking through the Copyright Hub’s waiting game*.

their strategic moves based on the previous actions of their counterparts. For instance, the creative industries provided initial funding for the establishment of the Copyright Hub Launch Group (CHLG) and Copyright Licensing Steering Group (CLSG) with the intention to “show [the UK] government that we [the creative industries] could do something for ourselves”¹⁶¹. In turn, the government offered the pump-priming to help kickstart the development of the Copyright Hub’s website in a move, which Ros Lynch – the co-author of the Copyright Hub proposal – described as “a way of encouraging industries to actually put money into it if they can actually see something happening”¹⁶². The turn-based strategic game thus allowed the accumulation of interactions and trusts between actors across the linked ecologies, as well as building up momentum for the Copyright Hub project and providing the necessary environment for further expectation mediation work to be conducted.

Expectation mediation work continued to be the key activities in the third interstice of policy revision. The main objective of this work was to mediate the differences in interests between a wide array of actors involved in the Copyright Hub initiative and projected the Copyright Hub as a “hinge” that could provide multiple rewards to various actors across the linked ecologies of policy making, business, and IP standard development¹⁶³. For example, to help the image sector fend off the looming threat of the Enterprise and Regulatory Reform Act (ERRA)¹⁶⁴, which could turn a substantial number of copyright-protected images into orphan work for exploitation with little or no compensation, the functions of discovering potential orphan work and performing diligent search for their rightsholders were added to the

¹⁶¹ A quote from Sophie (pseudonym) – who had helped secure the first two year of funding for the Copyright Hub project. Cross-referencing Chapter 5, section II. B., page 187.

¹⁶² Cross-referencing Chapter 5, section II. B., page 190.

¹⁶³ Cross-referencing Chapter 5, section III. A.

¹⁶⁴ Ibid. p. 222.

technological expectations of the Copyright Hub as optional features¹⁶⁵. The image sector explicitly used these expectations to condemn the government's act of passing the ERRAs as "put[ting] the cart before the horse"¹⁶⁶ and eventually developed strong opposition that successfully "stymied" the Act (Orlowski, 2013a). Nevertheless, it was also important to keep expectations of the Copyright Hub low so that the initiative would not be perceived by established market players to be a threat to their existing business models. Consequently, in the interstice of policy revision, the technological expectations of the Copyright Hub were focused primarily on simple and innocuous functions, such as copyright education and signposting, while the more controversial expectations, such as orphan work and infrastructural technology, remained vague and optional. In fact, it did not matter to the creative industries whether those optional functions would be eventually implemented or not, as long as their existence as technological expectations helped enlarge the room for manoeuvre and allowed the creative industries to address their immediate local exigencies, i.e. to prevent further IP legislation being imposed upon them.

Similarly, the Copyright Hub was expected to help the government counter-balance the rapid rate of political rebundling and hence, strengthening their control over the policy making process, whilst shutting down the oppositions' criticisms of the government's dearth of long-term vision for economic growth. Commenting on the reason behind the government's support for the Copyright Hub, Ros Lynch conceded: "We [the government] are still continuing to support it, and ministers at any opportunities they get to talk about the Copyright Hub, they also include it in speeches, in conversation that they have with other parties"¹⁶⁷. Therefore, it was apparent that the UK government supported the Copyright Hub

¹⁶⁵ Cross-referencing Chapter 5, section II. C., page 207.

¹⁶⁶ A note published on the site of Stop43 – a campaign group representing a wide range of British photographers and agencies. Cross-referencing Chapter 5, section III. A., page 223.

¹⁶⁷ Cross-referencing Chapter 5, section II. C., on *Fundraising*, p.199.

primarily for the prospect of using it as political ammunition while dealing with other parties, rather than being convinced of the Copyright Hub's performance or the contribution it would bring to the economy in 2020, when the coalition government apparently had long handed over the baton to other political actors.

Finally, the Copyright Hub was able to make alliance with actors from the ecology of IP standard development since it promised to provide them with a home to turn linked data from a largely academic endeavour into real-world applications using the resources and technical expertise made available by the UK government and the creative industries. These strategies appeared to succeed in capturing the attention and facilitating the establishment of new alliances between the creative businesses, policy makers and linked data researchers. In conjunction with the emergence of the controversy surrounding aggressive tax avoidance schemes by multinational corporations in late 2012, which had already diluted and undermined the initial alliance between the government and the technology sector, the alliance between policy makers, the creative industries, and the community of linked data researchers became established by the end of the interstice of policy revision (i.e. late 2013), right before the Copyright Hub project shifted its focus to infrastructural development.

The well-established alliance between these actors not only manifested in the form of funding and political support for the Copyright Hub project, but also in the form of partnerships between the Copyright Hub Ltd., the Digital Catapult, and the Linked Content Coalition (LCC), which created a protected space for the development of the Copyright Hub's technology (discuss in details below). More importantly, this shift in alliance also manifested in the displacement of the overall IP vision in the UK from regarding IP legislation as "an IP system created in the era of paper and pen"¹⁶⁸, which needed to be updated to meet the

¹⁶⁸ An excerpt from David Cameron's speech in Shoreditch. Cross-referencing Chapter 4, section III. B., page 148.

challenges of the digital age, to a well-functioning IP system, whose licensing and management processes only needed to be streamlined to better serve the demand of the long-tailed market. Evidence of the triumph of the pro-IP vision was represented in (a) the policy makers' strong criticisms of the Hargreaves Review for "putting the established system of copyright at risk for no obvious benefit"¹⁶⁹ and consequently, a significant reduction in the scale of changes being made to the UK's IP framework, (b) the explicit endorsement of the Copyright Hub project from the UK government, and (c) the appointment of Ros Lynch – co-author of the Copyright Hub proposal – as the Copyright and IP Enforcement Director at IPO. As a result, it was evident that the interactions and activities of a wide array of actors across the ecologies of policy making, business, and IP standard development had resulted in the revision of the government's IP policy, which led to the pro-IP vision became an accepted social repertoire.

To conclude, the examination of the interstice of policy revision helps reconfirm and provide further insights into the newly-found notions of "expectation mediator" and the "expectation mediation process". The impacts of expectation mediators and their mediation processes on the outcomes of the innovation in question are too significant to be dismissed. It has been shown that innovation actors engage in a "series of configurational movements" or a sequence of interstices for the ultimate purpose of finding support and forming alliance with other actors across the ecological boundaries. The mediation process facilitates this purpose by producing hinges or strategies which provide multiple rewards for different members of the alliance at the same time. These insights call our attention to the reason behind expectation mediators' capability to secure mandate and support from actors across multiple ecological boundaries. Mandate for further technical work is given not simply because

¹⁶⁹ An excerpt from a policy report of the Culture, Media and Sport Committee. Cross-referencing page 216.

selectors are convinced of the expectations voiced by enactors as assumed in the Ecology/ Audience model. Rather, it is given because of the new alliance, which has been formed as a result of the successful mediation process. These actors indeed provide mandate and support for members of their own alliance in exchange for the reward which they may reap from the outcomes of the innovation actors' work.

C. Rethinking Expectations' Credibility

The main aim of this section is to fill the gap in our knowledge of expectations' credibility. In other words, it is my attempt to find answers for the thorny questions of why some expectations gather greater credibility and legitimacy than others and why some ideas seem to be more resonant at a given moment in an innovation's journey.

The rich analyses of the three interstices, as well as the preliminary findings uncovered from them, suggest that the conventional Ecology/ Audience model (under which the Arenas of Expectations approach falls) suffers from a number of theoretical shortcomings which make it unable to offer comprehensive insights into these questions. The linked ecologies perspective is recommended as a fruitful approach to study expectations' credibility due to its ability to transcend the Ecology/ Audience model. First, the linked ecologies perspective helps us replace the notion of "audience" with "linked ecologies". In this view, both sides are ecologies, whose actors proactively seek support and alliances across their ecological boundaries. This conceptualisation adds a further layer of contingency into the simplistic Ecology/ Audience model, which assumes selectors as having a rather fixed and passive role in assessing expectations' credibility. Second, the linked ecologies perspective highlights the role of expectation mediators and the mediation processes. It is asserted that, in order for an expectation mediation process to be successful, a mediator must be able to mediate the differences between a wide range of expectations and produce hinges or strategies that

reward multiple allies across the ecological boundaries at the same time. The main aim of the mediation process is thus to establish alliances with other actors in adjacent ecologies, rather than merely trying to convince an external audience of certain promising technology as assumed in the process of expectation work conducted by enactors. Third and most importantly, these insights suggest that mandate for further technical work is not given simply because the selectors are convinced of the expectations voiced by enactors in the arenas, as presumed in the Ecology/ Audience model. Instead, actors provide mandate and support for their allies in exchange for the rewards, which have been promised to them via established hinges.

The advantage of the linked ecologies approach over the Ecology/ Audience model becomes apparent when I applied it to re-examine Bakker, van Lente, and Meeus' (2011) case study of hydrogen technology. In this case study, the authors provided an observation, which they could not provide an adequate explanation for: i.e. metal hydrides was not vital to the future of hydrogen technology and thus it was considered trivial to the wider hydrogen community, including its selectors. Nevertheless, metal hydrides was still supported by the selectors due to "the very fact that there is an option for on-board storage that holds the promise of solving the storage problem in the future, makes the prospective chain of hydrogen technologies a bit more credible" (ibid. p.160). In other words, metal hydrides was selected not just because it could convince the selector that it was a promising technological option, but primarily because it could provide "a useful promise to silence the critics of hydrogen as fuel of the future" (ibid.). This critical aspect of dual rewards and reasons for the selection of metal hybrids cannot be fully understood without resorting to the mediator and the mediation process, as well as a shift from the Ecology/ Audience model to the linked ecologies perspective in studying expectations' credibility.

Findings in this section also contribute to tackling Bakker, van Lente, and Meeus' (2012) call for further studies on the mutual relationship between the credibility of actors (or a community of actors) and the credibility of their promises and expectations, from which the notion of "dual credibility" is coined. The analyses of the three interstices have highlighted the crucial role which expectation mediators play in influencing the outcomes of an innovation project. In the case of the Copyright Hub, there were two expectation mediators – Hargreaves and Hooper – who appeared to share many common traits¹⁷⁰. Yet, the results of their expectation mediation work could have not been more opposite, although the DCE proposal and the proposal of the Copyright Hub were not too dissimilar from one another¹⁷¹. Then, why would expectations produced by Hooper's mediation process be much more resonant, and in a sense more credible, than Hargreaves'? The reason was that Hooper was able to successfully create multiple hinges from his mediation process that provided rewards for a wide array of actors in the three ecologies of policy making, business and IP standard development, while Hargreaves was not able to produce the same effect with his mediation work. Therefore, it was not so much that the dual credibility of actors and their promises would affect the lobbying capacity as Bakker, van Lente, and Meeus (ibid.) suspected, but what really mattered, in term of the credibility of expectations, was the ability of actors to

¹⁷⁰ i.e. they are both civil servants who were appointed by the government to lead independent reviews into IP domain; both had relatively little knowledge of the domain of IP before they took their positions to lead these reviews.

¹⁷¹ Hargreaves (2011, p.33) stated that "the aim [of the DCE proposal] is to establish a network of interoperable databases to provide a common platform for licensing transactions" and urged the UK government to use its convening power to facilitate, instead of implementing the DCE themselves. On the other hand, Hooper defined the Copyright Hub as an infrastructure which "link via spokes interoperably, scalably and intelligently to the growing national and international network of private and public sector digital copyright exchanges, right registries and other copyright-related databases" (Hooper and Lynch, 2012, p.20). Hooper also insisted that the Copyright Hub would be an industry-led and industry-funded project, with possible pump-priming from the government. Therefore, the DCE proposal and the proposal of the Copyright Hub were not too dissimilar in principles. With regard to technological expectations, although the proposal of the Copyright Hub had provided a bit more detailed on the functions of the Hub as compared to the DCE, these expectations remained significantly vague, which rendered them subject to the same kind of "flexible interpretation" as in the case of the DCE proposal.

forge strong alliances with allies in neighbouring ecologies. Once other actors were already taken onboard, there would be no need for innovation actors to lobby the innovation to their allies, who would provide mandate for the technology for their own benefits.

Hence, in order to answer the question of why some expectations can gather greater legitimacy and become more resonant than others at a given moment, the linked ecologies approach suggests that it is unproductive to theorise credibility as something that is intrinsic to expectations, which can be judged by the audience using external assessment criteria. Instead, the credibility of expectations should be gauged within the context of their own linked ecologies in term of how well these expectations can provide hinges that help forge alliances between various actors across the ecological boundaries. Expectations thus gather greater legitimacy only when they can help innovation actors establish strong alliances with other actors to advance the technology in question. The strength of the expectations' credibility and the strength of the alliance behind it are thus closely correlated. This conceptualisation also suggests that it is unhelpful for one to assess the credibility of expectations individually. In reality, actors employ a full spectrum of expectations to attract the attention and to address the interests of a wide array of potential allies. Consequently, multiple expectations are linked together and constitute what I call a "constellation of expectations". The credibility of an expectation thus must always be evaluated in conjunction with other expectations in the same constellation.

The conceptualisation in this section also make a number of contributions to Konrad's (2006) theory of the social dynamics of expectations. First, Konrad built her theorisation on the notion of "collective expectations", which was regarded as "part of a generalised and taken-for-granted social repertoire" (ibid. p.431). Konrad thus used collective expectations as a theoretical point of departure for her analysis without being able to explain how and why

certain collective expectations become “a depersonalized social structure”. Konrad’s (ibid.) oversimplified assertion that “collective expectations emerge as a result of the exchange of expectations between large number of actors” is apparently inadequate to provide useful insights into this matter. The case study of the Copyright Hub, especially the analyses of the three interstices, have shown us precisely the way in which the pro-IP vision became the taken-for-granted narrative for IP legislation in the UK. This was made possible via a series of interactions and mediation work that allowed the establishment of strong alliances between policy makers, businesses and IP standard researchers, who provided the necessary mandate to uphold the Copyright Hub and its associated IP vision. Thus, a collective expectation only becomes taken-for-granted when the alliance of actors who support it becomes a dominant force across the linked ecologies.

Second, this conceptualisation also helps explain why a taken-for-granted collective expectations can eclipse other alternatives, which was another issue that Konrad could not provide an explanation for. It is precisely because each collective expectation is associated with a particular alliance of actors that the emergence of a new collective expectation will accordingly require its associated alliance to emerge and dominate various locations across the linked ecologies. Alternative visions will thus be overshadowed as long as the existing alliance remains intact and the hinges are still able to provide the necessary rewards to keep the members of the alliance together. This situation only changes when either the alliance is undermined by the impacts of external events¹⁷² or the changes in the internal and

¹⁷² e.g. as in the case of the controversy over tax avoidance schemes committed by multinational technology companies that had weakened the alliance between the coalition government and the technology sector

temporal structures of the linked ecologies render the existing hinges incapable of providing the necessary rewards to members of the alliance¹⁷³.

Finally, Konrad (ibid. p.435) asserts that collective expectations, once accepted, can exert an image pressure on a wide range of actors to meet those expectations to “demonstrate an image of technologically competent”. Thus, image pressure is used to explain why some expectations are able to draw a great number of heterogeneous actors, who might not necessarily share an interest in contributing to those expectations. Evidence from the case study of the Copyright Hub, however, reveals that such pressure does not necessarily come from within an ecology, but instead, it can come from across the ecological boundaries¹⁷⁴. Such cross-boundaries pressure may exert significant impact on actors even if the collective expectation has not yet become taken-for-granted. Moreover, it has been found that actors subscribe to expectations, which they appear to have no interest in, not simply because of the image pressure. Indeed, these actors subscribe to an expectation (or more precisely, a constellation of expectations) because of the rewards, which they are promised via the hinges that hold the alliance together. Hence, findings of the case study of the Copyright Hub also make significant contributions to furthering our understanding of the dynamics of expectations in innovation context.

¹⁷³ For example, in the case of the Copyright Hub, when the coalition government handed over the baton to other political actors in 2015, a new rhythm of actors, locations and their associated litigation began in the ecology of policy making. Stimulating the economy was no longer at the top of the policy making agenda, nor were IP-related issues. As a result, the creative industries were relieved from the political pressure to commit to the Copyright Hub and it was indicated that they no longer wish to keep funding the Hub after 2015. These changes made the hinges, which previously worked for both the UK government and the creative industries, inadequate for providing the necessary rewards that keep the alliance between these actors together.

¹⁷⁴ e.g. the political pressure which made the creative industries come together to support the Copyright Hub was indeed coming from the policy making ecology, rather than being simply a ‘peer’ pressure from within the ecology of business.

III. The Formation and Dissolution of Protected Spaces

The main aim of this section is to address the existing gap in our knowledge of “protected spaces” within the context of technical innovation. It is my attempt to provide new insights into the questions of how protected spaces should be conceptualised, how they are formed and dissolved, and what they leave behind when the protected space is no longer needed.

To recapitulate, the most recent scholarship within the sociological studies of expectations which dealt explicitly with the notion of “protected spaces” was Rip and Schot’s (2002) visualisation of the innovation journey and application/adoption activities of a novel technology. In their model, Rip and Schot hypothesise that an innovation journey goes through three clusters of activities: (1) building a protected space; (2) stepping out into the wider world; and (3) making sector-level changes. With regard to protected spaces, Rip and Schot (*ibid.* p.162) argue that “the net effect of the networking and resource mobilisation is the emergence of a protected space for promising R&D”. Apparently, this oversimplified account of the emergence of a protected space offers us little insights into the mechanism through which the protected space is formed, let alone any understanding of the ways it will eventually be dissolved. Apart from that, Rip and Schot (*ibid.* p.163) hypothesise that work within the protected space “proceeds according to its own dynamics, with only occasional checks with the scenario of usage (if at all)”. It is argued that the dynamics of the protected space are dependent upon “the nature of the protected space, its boundary agreements, the rules and heuristics derived from the promises that were made, together determine choices and directions” (*ibid.*). Despite being informative, such a description does not lend us a systematic approach or an analytical framework to study the dynamics of the protected space. Since Rip and Schot’s work, no further study concerning the notion of “protected spaces” has been conducted. As a result, these issues still await to be tackled.

It is my intention to dedicate this section to address those shortcomings in Rip and Schot's conceptualisation of the protected space. I propose adopting Abbott's (1995) view on the relationship between social boundaries and social entities in order to reconceptualise the mechanism through which the protected space for innovation is formed and dissolved.

In his seminal paper, Abbott proposes viewing the emergence of social entities as the result of the social actors' act of tying various social boundaries together. In this perspective, boundaries come first, then entities. Abbott (ibid. p.863) calls these social boundaries "sites of difference", whose differences are "things that emerge from local cultural negotiation". Abbott describes this process of negotiation as social interactions which occur within a mixture of pre-existing social actors and actions. These pre-existing actors, nevertheless, do not remain unscathed after they enter the negotiation, but instead many actors change or disappear during the process, which results in the emergence of new actors, new relations, and new social entities amongst old parts. Such a process resembles what Abbott (2005, p.248) calls "ligation" or "the process of constructing the relations between actors and locations that in fact *constitutes* and *delimits* both actors and locations". Thus, sites of difference emerge as a result of the ligation process, which place certain actors and locations within a social boundary while ruling others outside of it. Based on these arguments, a conception of the origin of social entities is presented, which revolves around the process of "yoking", i.e. connecting various proto-boundaries together. It is further assumed that, when the social space is relatively unstructured (as in the case of the Copyright Hub), yoking means literal connection of boundaries.

Applying this conceptual lens to studying the formation and dissolution of the protected space proves to be fruitful due to the systematic approach it provides to apprehend the issue. This approach suggests the first step to studying the emergence of the protected space is to

identify the key sites of difference, followed by the examination of the process of yoking in which social actors connecting those sites of difference together into a single social entity. The properties of those sites of difference and the ways they are yoked together are asserted to have significant impacts on the dynamics of the protected space, as well as providing explanation for the eventual dissolution of the protected space.

In the case of the Copyright Hub, the three key sites of difference were identified as: (1) the Copyright Hub Ltd., (2) the Digital Catapult, and (3) the Linked Content Coalition (LCC). These sites emerged as sites of difference through a number of separated, yet somewhat interconnected, litigation processes. For the Copyright Hub Ltd., this site emerged from the local interaction between a wide range of businesses working in the creative industries, as well as between the creative industries and the UK government, which gradually placed the creative industries into the forefront of the battle for streamlining copyright licensing and stimulating the UK's economy, while discouraging the government to use statutory intervention to directly intervene in the market. IP legislation was also defined in this litigation process as a well-functioning system that only needed to be simplified. For the Digital Catapult, this site emerged from the local interactions within the ecology of policy making, which delimited the government to use its funding and convening power to indirectly stimulate the economy through R&D and infrastructural development with the purpose of attracting investments from the private sector. For the LCC, it emerged from the litigation process which depicted copyright laws as a well-functioning legal framework, while insisting on the inherently complex nature of copyright itself. As a result, the creative industries were well placed within the discourse of simplifying and streamlining the (unnecessary) complexity of copyright, while policy makers were effectively ruled out of this process. Having identified the three key sites of difference, it became apparent that the dimensions of difference of these sites were not too dissimilar from one another. As a result, the process of yoking the

three sites together to create a protected space was somewhat smooth and unproblematic¹⁷⁵. For example, the Digital Catapult was described as “a natural home for doing the development for the Copyright Hub”¹⁷⁶, while the LCC and the Copyright Hub were asserted as having “a great deal of synergy at a deep level”¹⁷⁷. Additionally, it is important to observe that the Copyright Hub Ltd., the Digital Catapult, and the LCC were “avatars” to the ecologies of business, policy making, and IP standard development. Since the alliance across the three ecologies had been well-established, these three sites of difference, or avatars, were used as a means through which resources and support for members of the alliances were provided. The successful establishment of the alliance across the linked ecologies was therefore the necessary pre-condition for the emergence of the protected space for further technical development.

Nevertheless, the analysis of the ways properties of the three sites and the ways they were yoked together had an impact on the dynamics of the protected space revealed even more interesting insights. With regard to the Copyright Hub – Digital Catapult partnership, the way these two sites were yoked was rather peculiar in that they assumed a fifty-fifty partnership. In other words, it was supposed to be an equal partnership whereby both partners assumed the same level of responsibility and influence over the development of the project. However, the relationship was significantly skewed towards the Digital Catapult due to the fact that they were the bigger organisation¹⁷⁸. This resulted in the imbalance in authority over the project and consequently, inputs from the Copyright Hub Ltd. to the project were at times being totally ignored by the Digital Catapult. As Boyd – CTO of the Copyright Hub – recalled:

¹⁷⁵ Cross-referencing Chapter 5, section III. B.

¹⁷⁶ A quote from Selena (pseudonym) – the matchmaker of the Copyright Hub – Digital Catapult partnership. Cross-referencing page 201.

¹⁷⁷ A quote from Goldman (pseudonym) – the data architect of the LCC’s data model. Cross-referencing page 238.

¹⁷⁸ Cross-referencing Chapter 5, section II. C., on *Partnership with the Digital Catapult*.

I had felt maybe I hadn't said these things loudly enough, they [the Digital Catapult] couldn't understand. But during the mediation [... the Digital Catapult revealed:] "No, no, we did hear you. We did hear you. We decided that you were wrong!" [...] Their view was they owned the driving seat altogether because they're the bigger organisation. (Transcript H8)

Furthermore, as a publicly-funded organisation, the Digital Catapult was highly susceptible to assessment criteria put forward by its funder – the UK government. The most notable example of this kind of criteria was the number of SMEs the Digital Catapult had to engage with in the early stages of the project. As Young – the former CEO of the Copyright Hub – commented:

The Digital Catapult had to find the way of delivering against the objectives they've been told. There were certain ones they had early on about numbers of SMEs that they were engaging with. It becomes a distorting factor. (Transcript H1)

Since the Digital Catapult was the dominant site within the protected space, the need for the Digital Catapult to meet its objective with regard to SMEs engagement had a significantly distorting impact on shaping the technical development of the Copyright Hub project. As elaborated in Young's recollection:

The distraction was they [the Digital Catapult] had a mundane promise that they would have engaged with several hundred SMEs by certain dates. [...] They're desperate to find a way to sort of making that number add up because that was the deliverable of the day. And that became distorting because they want certain types of people, and not others. So, for example, they thought there were some

picture libraries, who they thought they could count all of their contributed photographers as SMEs they engaged with. (Transcript H1)

Such imbalance in authority and misalignments in the deliverables and perception of success eventually undermined the connection between these two sites of difference.

With regard to the LCC, this site of difference emerged from the long-term research of a community of IP standard developers, who wished to devise a data model that could accommodate all requirements with regard to automating right management on the Internet. As a result, there was always a tendency from the site of the LCC to over-engineer the data model. This aspect was reflected in the way the data model was regarded by its data architect as “DNA passes from one generation to another”¹⁷⁹ and hence, justifying the reason for over-engineering. Nevertheless, the consequence of over-engineering was that it created a data model, which the Digital Catapult’s development team found to be too “verbose”, of “utmost sophistication”, and “conceptual and abstract” that “it’s not necessarily that nice of a model to implement”¹⁸⁰. Such problem became even more acute since it did not fit with the immediate requirement of the Copyright Hub project, which was fairly simple in the early stages in term of technical functionality. This consequently led to various delays and problems during the technical development of the project, which eventually forced the Digital Catapult to switch to the Open Digital Rights Language (ODRL) – an alternative data model for policy expression language that could also be used for rights expression and management. The misalignments between the Digital Catapult, the Copyright Hub Ltd., and the LCC became too great that the connections between the three sites of difference were eventually broken up, resulting in the dissolution of the protected space. It was also not

¹⁷⁹ Cross-referencing Chapter 6, section II., page 240.

¹⁸⁰ Cross-referencing Chapter 6, section III.

surprising for the dissolution of the protected space to occur after the alliance across the ecologies of policy making, business, and IP standard development was already weakened in late 2015 due to the coming into power of a new set of actors, locations, and ligations in the policy making ecology.

To conclude, findings from the case study of the Copyright Hub have illustrated that it is fruitful to perceive the emergence of the protected space as a result of social actors yoking various key sites of difference together. By analysing the properties and the ways these sites were yoked, one can gain significant insights into the dynamics of the protected space, as well as providing explanation for the emergence and dissolution of these spaces. These findings also suggest that protected spaces do not necessarily shield all of its activities from outside interference, nor do they proceed according to their own dynamics with occasional, or even no, checking with the scenario of usage. In reality, sites of difference act as avatars for members of an alliance to provide support and resources across the ecological boundaries, and therefore, these sites are susceptible to any changes made to the alliance. Although this conceptualisation has not been comprehensively developed, I believe the findings in this section have illustrated that this is a promising approach to further our understanding on the crucial, yet still largely neglected, notion of the protected space.

IV. Conclusion

The case study of the Copyright Hub is a case of an innovation-in-the-making occurring at the intersection of the public and private sectors. This case represents a “niche” of innovation, in which complex relationships exist between a wide range of actors across multiple ecologies and where the project is subjected to divergent social, political and technical pressures. In such cases, the innovation, or technology in question, is normally reconceived over the

course of the project. An example of a similar area of innovation, where findings of the case study of the Copyright Hub could be applied to, is the development of novel technologies by the private sector for the National Health Service (NHS). Innovation in this area necessarily requires the participation of a wide range of actors (e.g. policy makers and health regulators, private and public institutions, entrepreneurs and data experts, medical practitioners and patients, etc.), occurring across multiple linked ecologies. As a result, these innovations are subjected to similar patterns and dynamics of expectations, which have been highlighted by the case study of the Copyright Hub. This thesis therefore makes the following three contributions to knowledge, which are not only applicable to studying the Copyright Hub, but they can also be applied to similar cases which fall in this particular niche of innovation.

First, the case study of the Copyright Hub has illustrated that, apart from high expectations, other types of expectations are also employed by innovation actors to secure allies and mobilise resource in the context of technological innovation. In the case study of the Copyright Hub, low and slow expectations were specifically used to help propel the project. In particular, technological expectations of the Copyright Hub were strategically set low to preclude the creative industries from perceiving the initiative as a threat to their existing business model. Consequently, the Copyright Hub was able to secure support and mobilise resources from a great part of the creative industries for being an innocuous project. On the other hand, slow expectations were employed to help forge the alliances between actors across the three ecologies of policy making, business, and IP standard development. By committing to the slow development of an infrastructural project, the government was able to counter-balance the rapid rate of political bundling and hence, strengthening their control of the policy making process. For the creative industries, the slow expectations of the Copyright Hub help prolong and increase pressure on policy makers in order to maintain

legislation and court systems in their favour. Hence, slow expectations were able to act as a hinge, which provided dual rewards for members of the alliance in both ecologies at once.

One key aspect of my theorisation using the linked ecologies perspective is that the exploitation of connections between ecologies is made possible by the mis-aligned temporalities of their expectation work. It is precisely because the ecologies of policy making, business and IP standard development are organised differently from one another with distinctive rhythms that they look for one another in search of alliances and support in the innovation space.

Second, this thesis proposes using the linked ecologies perspective to transcend the conventional Ecology/ Audience model in studying expectations' credibility. By replacing the notion of "audience" with the notion of "linked ecologies", this perspective asserts that both sides are ecologies, whose actors actively seek support and alliances across their ecological boundaries. As a result, mandate for further technical work is not given simply because the selectors are convinced of the expectations voiced by enactors, as presumed in the Ecology/ Audience model. Rather, actors would provide mandate and support for their allies in exchange for rewards, which have been promised to them via established hinges.

Consequently, the linked ecologies approach suggests that it is unproductive to theorise credibility as something that is intrinsic to expectations, which can be judged by the audience using external assessment criteria. Instead, the credibility of expectations should be gauged within the context of their own linked ecologies, in term of how well these expectations can provide hinges that help forge alliances between various actors across the ecological boundaries.

Third, by applying Abbott's approach to the relation between social boundaries and social entities, this thesis proposes a fruitful analytical approach to furthering our understanding of

“protected spaces”. It is asserted that the protected space is formed when social actors tying various sites of difference together to make a single social entity. As a result, by examining the properties of these sites and the ways they are yoked together, one would be able to gauge the dynamics of the protected space, as well as describing and explaining the mechanism through which the protected space is formed and dissolved. It is further suggested that protected spaces do not necessarily shield all of its activities from outside interference, nor do they proceed according to their own dynamics with little checking with the outside world. Instead, sites of difference act as avatars for social actors to provide support and resources to their allies in the technical development process, and therefore, these sites of difference are susceptible to any changes made to the alliance.

With regard to ideas for future work, I was curious as to why there is a dominance of studies on high expectations in the literature of sociology of expectations. One possible answer to this question might lie in the dominant choice of research designs and methodological approaches to studying expectations thus far. A quick review of the literature suggests that sociological studies of expectations are usually conducted in a retrospective manner due to a semi-intuitive argument that things “can only be detected *ex post*” (Ruef and Markard, 2010, p.319). As a result, scholars studying expectations usually rely on people’s recollections of the distant past (for instance, Brown and Michael, 2003) and/or historical review of publicly available data sources (Hedgecoe and Martin, 2003; Nerlich and Halliday, 2007; Selin, 2007; Ruef and Markard, 2010; to mention a few), which include databases, websites, newspapers, reports, scientific publications, professional magazines and so on. The problem of using retrospective memories to study innovation process is that people tend to forget a wide array of organisational, rhetorical and material contingencies, which were once crucial to the shaping of the technology in the past. These contingencies are often discarded as peripheral “noise” from which the “victorious” technology emerges (Deuten and Rip, 2000).

The consequence of such a recollection process is that the presence of multiple types of expectations are erased from the re-constructed narrative, while optimistic expectations are more likely to be remembered and preserved, as evident in (Brown and Michael, 2003). Publicly available data sources are also prone to being biased towards high expectations, since innovation actors tend to make strong claims about the potential of their work while wearing the “entrepreneurial hat” in public. When amongst their peers, however, they often express a more-cautious and less-certain view on the subject (Brown and Michael, 2003, p.13). As a result, using publicly available data sources, especially websites, newspapers and magazines could mislead the researcher into overlooking other equally important types of expectations besides the optimistic ones.

This observation brings up the challenge of devising or adopting a new approach to study technological changes, which enables researchers to capture a wide range of expectations and the ways their complex interactions help shape the innovation’s trajectory. From the methodological point of view, the research should be designed to allow researchers to study innovation and expectations at the moments of their making or immediate past without losing the benefits of hindsight and historical data, as well as permitting the scholar to infiltrate into the inner circle of enactors to elicit their (often hidden and contradicting) views. Although the adoption of the BOAP approach and the linked ecologies perspective in this thesis have provided a number of helpful suggestions as to how such a subtle and reflexive approach to study innovation-in-the-making should be developed, the extensive effort required to develop such a methodological/ theoretical framework apparently lies beyond the scope of this humble thesis.

References

- Abbott, A. (1995) 'Things of Boundaries', *Social Research*, 62(4), pp. 857–882.
- Abbott, A. (2005) 'Linked Ecologies: States and Universities as Environments for Professions', *Sociological Theory*, 23(3), pp. 245–274.
- Aberbach, J. D. and Rockman, B. A. (2002) 'Conducting and coding elite interviews', *PS: Political Science & Politics*, 35(4), pp. 673–676.
- ACAP (2006) *Solutions to address the challenges of communicating digital rights and permissions*. Available at: <http://www.the-acap.org/> (Accessed: 29 October 2015).
- Ahmed, M. (2014) *Google pays £21.6m tax in UK, where revenues are \$5.6bn*, *Financial Times*. Available at: <https://www.ft.com/content/e31971b2-134f-11e4-8244-00144feabdc0> (Accessed: 9 May 2018).
- Ahmed, M., Houlder, V. and Parker, G. (2016) *Google tax: the 6-year audit that ended in a political storm*, *Financial Times*. Available at: <https://www.ft.com/content/f1c5ca30-c677-11e5-b3b1-7b2481276e45> (Accessed: 9 May 2018).
- Allen, P. (2008) 'Recession spreads around the world', *The Guardian*, 13 November. Available at: <http://www.theguardian.com/business/interactive/2008/oct/08/recession.creditcrunch>.
- Anderson, C. (2006) *The Long Tail: Why the Future of Business is Selling Less of More*. Hyperion.
- Antonelli, C. (1989) 'The role of technological expectations in a mixed model of international diffusion of process innovations: The case of open-end spinning rotors',

Research Policy, 18(5), pp. 273–288.

Arthur, C. (2010) 'Opposition to digital economy bill grows', *The Guardian*, 5 February.

Available at: <http://www.theguardian.com/technology/2010/feb/05/digital-economy-bill>.

Bakker, S., van Lente, H. and Meeus, M. (2011) 'Arenas of expectations for hydrogen technologies', *Technological Forecasting & Social Change*, 78(1), pp. 152–162.

Bakker, S., van Lente, H. and Meeus, M. (2012) 'Credible expectations - The US Department of Energy's Hydrogen Program as enactor and selector of hydrogen technologies', *Technological Forecasting & Social Change*, 79(6), pp. 1059–1071.

Balls, E. (2011) *After Cameron & Osborne's reckless gamble, 2011 is a critical year for British economy*. Available at: <http://www.edballs.co.uk/blog/?p=1389> (Accessed: 5 September 2015).

Barford, V. and Holt, G. (2013) *Google, Amazon, Starbucks: The rise of 'tax shaming'*, *BBC*.

Available at: <http://www.bbc.co.uk/news/magazine-20560359> (Accessed: 10 May 2018).

BBC (2009a) *Tax rise as UK debt hits record*. Available at:

http://news.bbc.co.uk/2/hi/uk_news/politics/8011321.stm (Accessed: 2 September 2015).

BBC (2009b) *Timeline: Credit crunch to downturn*. Available at:

<http://news.bbc.co.uk/2/hi/business/7521250.stm#table> (Accessed: 1 September 2015).

BBC (2009c) *UK in recession as economy slides*. Available at:

<http://news.bbc.co.uk/2/hi/business/7846266.stm> (Accessed: 2 September 2015).

BBC (2009d) *World growth 'worst for 60 years'*. Available at:

- <http://news.bbc.co.uk/2/hi/business/7856020.stm> (Accessed: 2 September 2015).
- BBC (2010a) *Cameron reveals Silicon Valley vision for east London*. Available at:
<http://www.bbc.com/news/uk-england-london-11689437> (Accessed: 26 August 2015).
- BBC (2010b) *Election 2010 Timeline: How coalition was agreed*. Available at:
http://news.bbc.co.uk/2/hi/uk_news/politics/election_2010/8677552.stm (Accessed: 3 September 2015).
- BBC (2010c) *Q&A: The Digital Economy bill*. Available at:
<http://news.bbc.co.uk/2/hi/technology/8604602.stm> (Accessed: 11 September 2015).
- BBC (2010d) *UK copyright laws to be reviewed, announces Cameron*. Available at:
<http://www.bbc.com/news/uk-politics-11695416> (Accessed: 27 August 2015).
- BBC (2010e) *UK economy grew 'more than first thought'*. Available at:
<http://www.bbc.com/news/business-11107415> (Accessed: 4 September 2015).
- BBC (2011) *BT and TalkTalk to appeal Digital Economy Act*. Available at:
<http://www.bbc.com/news/technology-15212651> (Accessed: 11 September 2015).
- BBC (2012) *Digital Economy Act's anti-piracy measures are delayed*. Available at:
<http://www.bbc.com/news/technology-17853518> (Accessed: 11 September 2015).
- BBC (2015) *Economy tracker: Unemployment*. Available at:
<http://www.bbc.com/news/10604117> (Accessed: 2 September 2015).
- Bell, D. N. F. and Blanchflower, D. G. (2010) 'UK Employment in the Great Recession',
National Institute Economic Review, 214(1), pp. 3–25. Available at:
<http://ner.sagepub.com/content/214/1/R3.full.pdf+html>.
- Van den Belt, H. and Rip, A. (1987) 'The Nelson-Winter-Dosi model and the synthetic dye

- industry', in Bijker, W. E., Hughes, T. P., and Pinch, T. J. (eds) *The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology*. Cambridge, MA: MIT Press, pp. 135–158. Available at:
<http://doc.utwente.nl/57449/%5Cnhttp://doc.utwente.nl/57449/1/K335.PDF>.
- Berkhout, F. (2006) 'Normative expectations in systems innovation', *Technology Analysis and Strategic Management*, 18(3–4), pp. 299–311.
- Bide, M. (2011) *Building a Creative Content Access Alliance*. Brussels. Available at:
<http://www.linkedcontentcoalition.org/index.php/downloads/category/12-digital-agenda-assembly-sep-2011?download=47:building-a-creative-content-access-alliance-june-2011>.
- Biernacki, P. and Waldorf, D. (1981) 'Snowball sampling: Problems and techniques of chain referral sampling', *Sociological methods & research*, 10(2), pp. 141–163.
- Bijker, W. E. (2009) 'Social construction of technology', in *A Companion to the Philosophy of Technology*, pp. 88–94.
- BIS (2010) *Independent review launched to ensure IP system promotes growth*, GOV.UK. Available at: <https://www.gov.uk/government/news/independent-review-launched-to-ensure-ip-system-promotes-growth> (Accessed: 12 January 2017).
- Blaikie, N. (2009) *Designing Social Research*. 2nd editio. Cambridge, UK: Polity Press.
- BNP Paribas (2007) *BNP Paribas Investment Partners temporarily suspends the calculation of the Net Asset Value of the following funds : Parvest Dynamic ABS, BNP Paribas ABS EURIBOR and BNP Paribas ABS EONIA*. Available at:
<http://www.bnpparibas.com/en/news/press-release/bnp-paribas-investment-partners-temporarily-suspends-calculation-net-asset-value-fo> (Accessed: 1 September 2015).

- Borup, M. *et al.* (2006) 'The Sociology of Expectation in Science and Technology', *Technology Analysis and Strategic Management*, 18(3/4), pp. 285–298.
- Bowker, G. C. and Star, S. L. (2000) 'Invisible Mediators of Action: Classification and the Ubiquity of Standards', *Mind, Culture, and Activity*, 7(1–2), pp. 147–163. Available at: <http://www.tandfonline.com/doi/abs/10.1080/10749039.2000.9677652> (Accessed: 10 June 2014).
- Bradwell, P. (2011) *A welcome response to the Hargreaves Review*. Available at: <https://www.openrightsgroup.org/blog/2011/a-welcome-response-to-the-hargreaves-review> (Accessed: 15 September 2015).
- Brothers, J. P. (2014) 'From the Double Irish to the Bermuda Triangle', *Tax Analysts*, November, pp. 687–695. Available at: <http://www.sven-giegold.de/wp-content/uploads/2015/03/From-Double-Irish-to-Bermuda-Triangle-2014.pdf>.
- Brown, N. and Michael, M. (2003) 'A sociology of Expectations: Retrospecting Prospects and Prospecting Retrospects', *Technology Analysis and Strategic Management*, 15(1), pp. 3–18.
- Brown, N., Rappert, B. and Webster, A. (2000a) *Contested futures: A sociology of prospective techno-science*. 1st Editio. Ashgate Aldershot.
- Brown, N., Rappert, B. and Webster, A. (2000b) 'Introducing Contested Futures: From Looking into the Future to Looking at the Future', in Brown, N., Rappert, B., and Webster, A. (eds) *Contested Futures: A Sociology of Prospective Techno-Science*. Ashgate Aldershot, pp. 3–20.
- Brown, N., Rip, A. and Van Lente, H. (2003) 'Expectations In & About Science and Technology', in *A background paper for the 'expectations' workshop of 13-14 June 2003*,

pp. 1–14.

Bryman, A. (2012) *Bryman (2012) - Social Research Methods*. 4th edn. New York: Oxford University Press.

Burczak, T. A. (2001) 'Response to Butos & Koppl: expectations, exogeneity, and evolution', *Review of Political Economy*, 13(1), pp. 87–90.

Callon, M. (1987) 'Society in the making: The study of technology as a tool for sociological analysis', in Bijker, W. E., Hughes, T. P., and Pinch, T. J. (eds) *The Social Construction of Technological Systems - New Directions in the Sociology and History of Technology*. London: MIT Press, pp. 83–103.

Cameron, D. (2010) *David Cameron's speech in full*, *The Guardian*. Available at: <http://www.theguardian.com/politics/2010/may/11/david-cameron-speech-full-text> (Accessed: 3 September 2015).

Carr, L. T. (1994) 'The strengths and weaknesses of quantitative and qualitative research: what method for nursing?', *Journal of Advanced Nursing*, 20, pp. 716–721.

Carter, S. M. and Little, M. (2007) 'Justifying Knowledge, Justifying Method, Taking Action: Epistemologies, Methodologies, and Methods in Qualitative Research', *Qualitative Health Research*, 17(10), pp. 1316–1328. doi: 10.1177/1049732307306927.

Catapult (2014) *What is a Catapult and how Catapult Centres can help you and your next big idea*. doi: 10.1017/CBO9781107415324.004.

Chan, S. P. and Spence, P. (2014) 'UK exited Great Recession nine months earlier than thought', *The Telegraph*, 3 September. Available at: <http://www.telegraph.co.uk/finance/economics/11071938/UK-exited-Great-Recession-nine-months-earlier-than-thought.html>.

Charmaz, K. (1996) 'The search for Meanings - Grounded Theory', in Smith, J. A., Harre, R., and Van Langenhove, L. (eds) *Rethinking Methods in Psychology*. London: SAGE Publications, pp. 27–49.

CHLG (2012a) *Copyright Hub Launch Group Meeting Minute - 2 Oct 2012*. London.

CHLG (2012b) *Copyright Hub Operating Policies 1.0*. London.

CHLG (2013a) *Copyright Hub Launch Group Meeting Minutes - 14 Feb 2013*. London.

CHLG (2013b) *Copyright Hub Launch Group Meeting Minutes - 15 March 2013*. London.

CHLG (2013c) *Copyright Hub Launch Group Meeting Minutes - 9 May 2013*. London.

Copyright Hub (2013) *The Copyright Hub Launch Group*. Available at:

<http://www.copyrighthub.org/about/the-copyright-hub-launch-group/> (Accessed: 5 September 2017).

Copyright Hub (2014) *The Copyright Hub Blueprint for development*.

Copyright Hub Launch Group (2013) *The Copyright Hub - Streamlining Copyright Licensing for the Digital Age*. London.

Cordis (2001) *INDECS (Interoperability of Data in E-commerce Systems)*. Available at:

<http://cordis.europa.eu/econtent/mmrcs/indecs.htm> (Accessed: 29 October 2015).

Culture Media and Sport Committee (2013) *Supporting the creative economy*. London.

Available at:

<https://publications.parliament.uk/pa/cm201314/cmselect/cmcmumeds/674/674.pdf>.

Davidson, P. (1982) 'Rational Expectations: A Fallacious Foundation for Studying Crucial Decision-Making Processes', *Journal of Post Keynesian Economics*, 5(2), pp. 182–198.

- Davison, R. (2002) 'Cultural complications of ERP', *Communications of the ACM*, 45(7), pp. 109–111.
- DCMS (2011) *Next steps for implementation of the Digital Economy Act*. London. Available at:
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/78090/Next-steps-for-implementation-of-the-Digital-Economy-Act.pdf.
- Department for Culture Media & Sport (2014) *Creative Industries Economic Estimates - January 2014*. London. Available at:
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/271008/Creative_Industries_Economic_Estimates_-_January_2014.pdf.
- Deuten, J. J. and Rip, A. (2000) 'The Narrative Shaping of a Product Creation Process', in Brown, N., Rappert, B., and Webster, A. (eds) *Contested Futures: A Sociology of Prospective Techno-Science*. Ashgate Aldershot.
- DiMaggio, P. J. (1995) 'Comments on "What Theory is Not"', *Administrative Science Quarterly*, 40(3), pp. 391–397.
- DOI (2013) *Factsheet - the indecs framework*. Available at:
http://www.doi.org/factsheets/indecs_factsheet.html (Accessed: 8 July 2015).
- Dosi, G. (1982) 'Technological paradigms and technological trajectories: A suggested interpretation of the determinants and directions of technical change', *Research Policy*, 11(3), pp. 147–162.
- Dosi, G. and Nelson, R. R. (1994) 'An introduction to evolutionary theories in economics', *Journal of Evolutionary Economics*, 4(3), pp. 153–172.
- Edge, D. (2003) 'Celebration and Strategy: The 4S after 25 Years, and STS after 9-11. Draft

- Remarks for the President's Plenary Session at the 45 Meeting, Milwaukee, Wisconsin, USA (7 November 2002)', *Social Studies of Science*, 33(2), pp. 161–169.
- Elliott, L. (2010) 'Alistair Darling: we will cut deeper than Margaret Thatcher', *The Guardian*, 25 March. Available at: <http://www.theguardian.com/politics/2010/mar/25/alistair-darling-cut-deeper-margaret-thatcher>.
- EPC (2010) *'The answer to the machine is in the machine': A Big Idea for the Digital Agenda submitted by the European Publishers Council*. Available at: <http://copyright-debate.co.uk/wp-content/uploads/EPC-A-Big-Idea1.pdf>.
- EPC (2011a) *Creating a Digital Copyright Exchange*.
- EPC (2011b) *Project Plan: Linked Content Coalition*.
- EPC (2011c) *Submission from the European Publishers Council to the Independent Review of Intellectual Property and Growth – The Hargreaves Review*.
- EPC (2011d) *The Linked Content Coalition - A briefing paper*.
- EPC (2011e) *UK Government report on IPR and Digital Rights in line with Publishers' 'BIG IDEA' being launched at the EU's Digital Assembly on 17 June*.
- Fitzgerald, K. (2012) *Copyright in a Digital World: What's next for CLA?* Available at: http://www.cla.co.uk/about/comments/article/?article_id=150&subject=Copyright+in+a+Digital+World:+What's+next+for+CLA%3F (Accessed: 15 September 2015).
- Flanagan, A. (2013) *U.K. Announces First Phase Launch of the Copyright Hub Following Years of Investigation*, *Billboardbizz*. Available at: <http://www.billboard.com/biz/articles/news/digital-and-mobile/1554439/uk-announces-first-phase-launch-of-the-copyright-hub> (Accessed: 9 September 2017).

- Fleck, J. (1993) 'Innofusion: Feedback in the innovation process', in *Systems Science*.
Boston, MA: Springer, pp. 169–174.
- Focal International (2014) *UK's Copyright boss 'moves on'*. Available at:
http://s2s.focalint.tv/Publications/AZ_articles/az2014spring_iss89_uks_copyright_boss_moves_on.pdf (Accessed: 28 February 2018).
- Fortun, M. (2005) 'For an ethics of promising, or: a few kind words about James Watson',
New Genetics and Society, 24(2), pp. 157–174.
- Fuest, C. et al. (2013) *Profit Shifting and "Aggressive" Tax Planning by Multinational Firms: Issues and Options for Reform*. 13-078. Available at: <https://ub-madoc.bib.uni-mannheim.de/34854/1/dp13078.pdf>.
- Gardner, J., Samuel, G. and Williams, C. (2015) 'Sociology of Low Expectations: Recalibration as Innovation Work in Biomedicine', *Science, Technology & Human Values*, 40(6), pp. 998–1021.
- Garud, R. and Ahlstrom, D. (1997) 'Technology assessment: a socio-cognitive perspective',
Journal of Engineering and Technology Management, 14(1), pp. 25–48.
- Geels, F. and Raven, R. (2006) 'Non-linearity and Expectations in Niche-Development Trajectories: Ups and Downs in Dutch Biogas Development (1973–2003)', *Technology Analysis and Strategic Management*, 18(3–4), pp. 375–392.
- Geels, F. W. (2007) 'Feeling of Discontent and the Promise of Middle Range Theory for STS: Examples from Technology Dynamics', *Science, Technology & Human Values*, 32(6), pp. 627–651.
- Geere, D. (2010) *Transcript: David Cameron sets out Britain's hi-tech future*, *Wired.co.uk*.
Available at: <http://www.wired.co.uk/news/archive/2010-11/04/david-cameron-silicon->

roundabout (Accessed: 28 November 2015).

Glaser, B. G. and Strauss, A. L. (1967) *The Discovery of Grounded Theory: Strategies for Qualitative Research*. Chicago: Aldine Publishing Co.

Goffman, E. (1963) *Behaviour in Public Places*. New York: Free Press.

Gov.uk (2013) *Government gives £150,000 funding to kick-start copyright hub, Report*.

Available at: <https://www.gov.uk/government/news/government-gives-150-000-funding-to-kick-start-copyright-hub> (Accessed: 14 June 2015).

Gov.uk (2017) *Innovate UK - About Us*. Available at:

<https://www.gov.uk/government/organisations/innovate-uk/about> (Accessed: 23 September 2017).

GOV.UK (2010a) *Announcement: A blueprint for technology*. Available at:

<https://www.gov.uk/government/news/a-blueprint-for-technology> (Accessed: 26 August 2015).

GOV.UK (2010b) *East End Tech City speech*. Available at:

<https://www.gov.uk/government/speeches/east-end-tech-city-speech> (Accessed: 26 August 2015).

GOV.UK (2010c) *Ian Hargreaves to lead independent review into IP and growth*. Available

at: <https://www.gov.uk/government/news/ian-hargreaves-to-lead-independent-review-into-ip-and-growth> (Accessed: 13 September 2015).

GOV.UK (2010d) *PM announces East London 'tech city'*. Available at:

<https://www.gov.uk/government/news/pm-announces-east-london-tech-city> (Accessed: 26 August 2015).

- GOV.UK (2011a) *Digital opportunity: review of intellectual property and growth*. Available at: <https://www.gov.uk/government/publications/digital-opportunity-review-of-intellectual-property-and-growth> (Accessed: 13 September 2015).
- GOV.UK (2011b) *Hargreaves review of intellectual property and growth: government response*. Available at: <https://www.gov.uk/government/publications/hargreaves-review-of-intellectual-property-and-growth-government-response> (Accessed: 14 September 2015).
- GOV.UK (2011c) *Richard Hooper appointed to lead Digital Copyright Exchange feasibility study*. Available at: <https://www.gov.uk/government/news/richard-hooper-appointed-to-lead-digital-copyright-exchange-feasibility-study> (Accessed: 14 September 2015).
- GOV.UK (2012a) *Hooper Report: Industry should lead on new 'Copyright Hub'*. Available at: <https://www.gov.uk/government/news/hooper-report-industry-should-lead-on-new-copyright-hub> (Accessed: 15 September 2015).
- GOV.UK (2012b) *New government clampdown on tax dodgers, Press Release*. Available at: <https://www.gov.uk/government/news/new-government-clampdown-on-tax-dodgers> (Accessed: 24 April 2018).
- GOV.UK (2014) *Ros Lynch - Copyright and IP Enforcement Director, IPO*. Available at: <https://www.gov.uk/government/people/ros-lynch> (Accessed: 27 February 2018).
- GOV.UK (2015) *2010 to 2015 government policy: UK economic growth*. Available at: <https://www.gov.uk/government/publications/2010-to-2015-government-policy-uk-economic-growth/2010-to-2015-government-policy-uk-economic-growth> (Accessed: 14 December 2018).
- Gowers, A. (2006) *Gowers Review of Intellectual Property*.

- Grusky, D. B., Western, B. and Wimer, C. (eds) (2011) *The Great Recession*. New York: Russell Sage Foundation.
- Guggenheim, M. and Nowotny, H. (2003) 'Joy in repetition makes the future disappear - A Critical Assessment of the Present State of STS', in *Social studies of science and technology: Looking back, ahead*. Dordrecht: Springer, pp. 229–258.
- Haddon, L. (2006) 'The contribution of domestication research to in-home computing and media consumption', *The Information Society: An International Journal*, 22(4), pp. 195–203.
- Harbottle & Lewis (2010) *10 Things to Expect From the UK IP Review*. Available at: <http://www.harbottle.com/10-things-to-expect-from-the-uk-ip-review/> (Accessed: 27 August 2015).
- Harding, S. (1995) 'Strong Objectivity: A Response to the New Objectivity Question', *Synthese*, 104(3), pp. 331–349.
- Hargreaves, I. (2011) *Digital Opportunity - A Review of Intellectual Property and Growth*. London.
- Harrison, M. J. and Kreps, D. M. (1978) 'Speculative Investor Behaviour in a Stock Market with Heterogeneous Expectations', *The Quarterly Journal of Economics*, 92(2), pp. 323–336.
- Hauser, H. (2010) *The Current and Future Role of Technology and Innovation Centres in the UK*. London. Available at: <https://interact.innovateuk.org/documents/1524978/2139688/The+Current+and+Futur+e+Role+of+Technology+and+Innovation+Centres+in+the+UK/e1b5f4ae-fec8-495d-bbd5-28dacdfee186>.

- Hauser, H. (2014) *Review of the Catapult network: Recommendations on the future scope and ambition of the programme*. London. Available at:
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/368416/bis-14-1085-review-of-the-catapult-network.pdf.
- Hedgecoe, A. M. and Martin, P. (2003) 'The Drugs Don't Work: Expectations and the Shaping of Pharmacogenetics', *Social Studies of Science*, 33(3), pp. 327–364.
- HM Government (2010) *Blueprint for Technology*. London. Available at:
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/32432/10-1234-blueprint-for-technology.pdf.
- HM Government (2011) *The Government Response to the Hargreaves Review of Intellectual Property and Growth*. London. Available at:
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/32448/11-1199-government-response-to-hargreaves-review.pdf.
- HM Treasury (2006) *Pre-Budget Report - December 2006*. Available at:
http://news.bbc.co.uk/2/shared/bsp/hi/pdfs/06_12_06_pbr06_completereport_1439.pdf (Accessed: 8 September 2015).
- HM Treasury (2010) *Budget 2010*. London. Available at:
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/248096/0061.pdf.
- Hong, K.-K. and Kim, Y.-G. (2002) 'The critical success factors for ERP implementation: an organizational fit perspective', *Information & Management*, 40(1), pp. 25–40.
- Hooper, R. (2012) *Rights and Wrongs - Is copyright licensing fit for purpose for the digital age?* London.

- Hooper, R. (2013) *Charles Clark Memorial Lecture 2013*. Available at: www.fep-fee.eu/IMG/pdf/charlesclark2013_transcript.pdf (Accessed: 10 September 2017).
- Hooper, R. (2016) 'UK's Copyright Hub: a license to create', *WIPO Magazine*, April. Available at: https://www.wipo.int/wipo_magazine/en/2016/02/article_0007.html.
- Hooper, R. and Lynch, R. (2012) *Copyright works - Streamlining Copyright Licensing for the Digital Age*. London.
- Hooper, R. and Lynch, R. (2013) *Charting a course for the Copyright Hub in the Spring 2013*. London.
- Hörnle, J. (2012) 'Premature or stillborn? – The recent challenge to the Digital Economy Act', *Computer Law & Security Review*, 28(1), pp. 83–89. doi: 10.1016/j.clsr.2011.11.005.
- Hugenholtz, B. P. (ed.) (1996) *The Future of Copyright in the Digital Environment*. Springer Netherlands.
- Hughes, E. C. (1971) *The Sociological Eye. Part III: Work and Self*. Chicago: Aldine.
- Hughes, T. P. (1987) 'The Evolution of Large Technological Systems', in Bijker, W. E., Hughes, T. P., and Pinch, T. (eds) *The Social Construction of Technological Systems - New Directions in the Sociology and History of Technology*. Anniversar. Cambridge, MA: MIT Press, pp. 45–76.
- Hyysalo, S., Pollock, N. and Williams, R. (2018) 'Method Matters in the Social Study of Technology: Investigating the Biographies of Artifacts and Practices', *Science & Technology Studies*.
- ICOM (2014) *Technology Strategy Board renamed Innovate UK - 01/09/14*. Available at: <http://icom.org.uk/article/168> (Accessed: 29 November 2015).

- Intellectual Property Office (2012) *Copyright licensing is not yet fully fit for purpose for the digital age - the UK could do better still*. Available at: <http://webarchive.nationalarchives.gov.uk/20140603093549/http://www.ipo.gov.uk/about/press/press-release/press-release-2012/press-release-20120327.htm> (Accessed: 15 September 2015).
- Intellectual Property Office of Singapore (2017) *Update to the Intellectual Property Hub Master Plan*.
- IP Steering Committee (2013) *INTELLECTUAL PROPERTY (IP) HUB MASTERPLAN - Developing Singapore as a Global IP Hub in Asia*. Singapore.
- Johnson, R. B., Onwuegbuzie, A. J. and Turner, L. A. (2007) 'Toward a Definition of Mixed Methods Research', *Journal of Mixed Methods Research*, 1(2), pp. 112–133.
- Kantor, B. (1979) 'Rational Expectations and Economic Thought', *Journal of Economic Literature*, 17(4), pp. 1422–1441.
- Kemp, R., Schot, J. W. and Hoogma, R. (1998) 'Regime Shifts to Sustainability Through Processes of Niche Formation: The Approach of Strategic Niche Management', *Technology Analysis and Strategic Management*, 10(2), pp. 175–198.
- Konrad, K. (2006) 'The Social Dynamics of Expectations: The Interaction of Collective and Actor-Specific Expectations on Electronic Commerce and Interactive Television', *Technology Analysis and Strategic Management*, 18(3/4), pp. 429–444.
- Lambert, R. (2011) *Sir Richard Lambert gives final major speech as CBI Director-General, CBI*. Available at: <http://www.cbi.org.uk/media-centre/press-releases/2011/01/sir-richard-lambert-gives-final-major-speech-as-cbi-director-general/> (Accessed: 5 September 2015).

- Latour, B. (1987) *Science in Action*. Cambridge, MA: Harvard University Press.
- Law, J. (1999) 'After ANT: complexity, naming and topology', *The Sociological Review*, 47(1), pp. 1–14.
- LCC (2015a) *Background*. Available at:
<http://www.linkedcontentcoalition.org/index.php/about-us/background> (Accessed: 8 July 2015).
- LCC (2015b) *Linked Content Coalition*. Available at: <http://www.linkedcontentcoalition.org/> (Accessed: 29 October 2015).
- LCC (2016) *Timeline, LCC*. Available at:
<http://www.linkedcontentcoalition.org/index.php/timeline#> (Accessed: 10 December 2016).
- Lee, D. (2013) *Photographers' anger at law change over 'orphan works'*, *BBC Technology*. Available at: <https://www.bbc.co.uk/news/technology-22337406> (Accessed: 12 December 2018).
- Legislation.gov.uk (2010) *Digital Economy Act 2010*. Available at:
<http://www.legislation.gov.uk/ukpga/2010/24/contents> (Accessed: 11 September 2015).
- Legislation.gov.uk (2011) *Fixed-term Parliaments Act 2011*. Available at:
<http://www.legislation.gov.uk/ukpga/2011/14/contents/enacted> (Accessed: 3 September 2015).
- Linden, A. and Fenn, J. (2003) 'Understanding Gartner's hype cycles', *Strategic Analysis Report R-20-1971*, p. 12.

- Linked Content Coalition (2010) *The answer to the machine is in the machine*. Available at: <http://www.linkedcontentcoalition.org/index.php/news-press/press-room/64-the-answer-to-the-machine-is-in-the-machine> (Accessed: 4 December 2016).
- Lucas Jr., R. E. and Sargent, T. J. (1984) *Rational Expectations and Econometric Practice*. Minneapolis: University of Minnesota Press.
- MacKenzie, D. (1990) *Inventing Accuracy: A Historical Sociology of Nuclear Missile Guidance*. Cambridge, MA: MIT Press.
- MacKenzie, D. (1998) 'The Certainty Trough', in Williams, R., Faulkner, W., and Fleck, J. (eds) *Exploring Expertise*. London: Palgrave Macmillan, pp. 325–329.
- MacKenzie, D. and Wajcman, J. (1999) *The social shaping of technology*. 2nd Editio. Edited by D. MacKenzie and J. Wajcman. Buckinghamq: Open University Press.
- Mead, G. H. (1932) *The Philosophy of the Present*. London: The Open Court Company.
- Merton, R. K. (1968) *Social Theory and Social Structure*. 1968 Enlar. New York: Simon & Schuster.
- Mokyr, J. (1990) *The Lever of Riches: Technological Creativity and Economic Progress*. New York: Oxford University Press.
- Molina, A. H. (1995) 'Sociotechnical Constituencies as Process of Alignment: The Rise of a Large-Scale European Information Technology Initiative', *Technology in Society*, 17(4), pp. 385–412.
- Monteiro, E. *et al.* (2013) 'From Artefacts to Infrastructures', *Computer Supported Cooperative Work*, 22(4–6), pp. 575–607.
- Morse, J. M. (1991) 'Approaches to Qualitative-Quantitative Methodological Triangulation',

- Nursing Research*, 40(1), pp. 120–123.
- Mulkay, M. (1993) 'Rhetorics of Hope and Fear in the Great Embryo Debate', *Social Studies of Science*, 23(4), pp. 721–742.
- Music Ally (2011) *UK govt to respond to Hargreaves review today, but music biz gets reaction in early*. Available at: <http://musically.com/2011/08/03/uk-govt-to-respond-to-hargreaves-review-today-but-music-biz-gets-reaction-in-early/> (Accessed: 15 September 2015).
- Muth, J. F. (1961) 'Rational Expectations and the Theory of Price Movements', *Econometrica*, 29(3), pp. 315–335.
- Nelson, R. R. and Winter, S. G. (1977) 'In search of useful theory of innovation', *Research Policy*, 6, pp. 36–76.
- Nerlich, B. and Halliday, C. (2007) 'Avian flu: the creation of expectations in the interplay between science and the media', *Sociology of Health & Illness*, 29(1), pp. 46–65.
- News Corporation (2011) *Business, Innovation and Skills Committee inquiry: Hargreaves Review of Intellectual Property*.
- Orlowski, A. (2013a) *Instagram Act: UK.gov's latest copyright landgrab stymied - for now*, *The Register*. Available at: https://www.theregister.co.uk/2013/11/20/instagram_act_latest_uk_gov_landgrab_stymied/ (Accessed: 17 April 2018).
- Orlowski, A. (2013b) *UK.Gov passes Instagram Act: All your pics belong to everyone now*, *Everyone = Silicon Valley tech companies*, *The Register*. Available at: https://www.theregister.co.uk/2013/04/29/err_act_landgrab/ (Accessed: 21 April 2018).

- Orlowski, A. (2014) *UK 'copyright czar' Edmund Quilty quits as Blighty's Director of Copyright Enforcement. IPO Tour of Destruction 2008-2014, The Register*. Available at: https://www.theregister.co.uk/2014/01/09/quilty_quits_at_last/ (Accessed: 27 February 2018).
- Osborne, G. (2010) 'Budget 2010: Full text of George Osborne's statement', *The Telegraph*, 22 June. Available at: <http://www.telegraph.co.uk/finance/budget/7846849/Budget-2010-Full-text-of-George-Osbornes-statement.html>.
- Out-Law (2006) *Gowers reckons intellectual property is doing OK*. Available at: <http://www.out-law.com/page-7558> (Accessed: 7 September 2015).
- Parandian, A., Rip, A. and Te Kulve, H. (2012) 'Dual dynamics of promises, and waiting games around emerging nanotechnologies', *Technology Analysis and Strategic Management*, 24(6), pp. 565–582.
- Park, R. E., Burgess, E. W. and Mackenzie, R. D. (1925) *The City*. Chicago: University of Chicago Press.
- Parliament.uk (2010) *Digital Economy Act 2010*. Available at: <http://services.parliament.uk/bills/2009-10/digitaleconomyhl.html> (Accessed: 11 September 2015).
- Parliament.uk (2012a) *Conclusions and recommendations, Public Accounts Committee*. Available at: <https://publications.parliament.uk/pa/cm201213/cmselect/cmpubacc/716/71604.htm> (Accessed: 25 April 2018).
- Parliament.uk (2012b) *Public Accounts Committee - Nineteenth Report. HM Revenue and Customs: Annual Report and Accounts, Public Accounts Committee*. Available at:

<https://publications.parliament.uk/pa/cm201213/cmselect/cmpubacc/716/71602.htm>

(Accessed: 24 April 2018).

Parliament.uk (2012c) *Summary, Public Accounts Committee*. Available at:

<https://publications.parliament.uk/pa/cm201213/cmselect/cmpubacc/716/71603.htm>

(Accessed: 27 April 2018).

Parliament.uk (2012d) *Tax avoidance by multinational companies, Public Accounts*

Committee. Available at:

<https://publications.parliament.uk/pa/cm201213/cmselect/cmpubacc/716/71605.htm>

(Accessed: 25 April 2018).

Parliament.uk (2013a) *Digital Economy Act 2010: Copyright*. Available at:

<http://researchbriefings.parliament.uk/ResearchBriefing/Summary/SN05515> (Accessed:

11 September 2015).

Parliament.uk (2013b) *Enterprise and Regulatory Reform Bill*. London. Available at:

http://www.legislation.gov.uk/ukpga/2013/24/pdfs/ukpga_20130024_en.pdf.

Parliament.uk (2013c) *Tax avoidance - Google, Public Accounts Committee*. Available at:

<https://publications.parliament.uk/pa/cm201314/cmselect/cmpubacc/112/112.pdf>

(Accessed: 27 April 2018).

Pollock, N. and Williams, R. (2009a) *Software and Organisations: The biography of the enterprise-wide system or how SAP conquered the world*. Oxon: Routledge.

Pollock, N. and Williams, R. (2009b) 'The sociology of a market analysis tool: How industry analysts sort vendors and organize markets', *Information and Organization*, 19(2), pp. 129–151.

Pollock, N. and Williams, R. (2010a) 'E-Infrastructures: How do we know and understand

- them? Strategic ethnography and the biography of artefacts', *Computer Supported Cooperative Work*, 19(6), pp. 521–556.
- Pollock, N. and Williams, R. (2010b) 'The business of expectations: How promissory organisations shape technology and innovation', *Social Studies of Science*, 40(4), pp. 525–548.
- PRS for Music (2012) 'PRS for Music welcomes moves to develop Copyright Hub', *M Magazine*, November. Available at: <http://www.m-magazine.co.uk/news/prs-for-music-welcomes-moves-to-develop-copyright-hub/>.
- Publishers' Association (2012) *The Publishers Association Sees Strength of Hooper Approach to Streamlining Licensing*. Available at: http://www.publishersarchive.org.uk/index.php?option=com_docman&task=doc_download&gid=777&Itemid=. (Accessed: 15 September 2015).
- Publishing Scotland (2012) *Creative industries welcome Government support for the Copyright Hub*. Available at: <http://www.publishingscotland.org/news/creative-industries-welcome-government-support-for-the-copyright-hub/> (Accessed: 6 September 2017).
- Pugh, D. (2012) *Richard Hooper's final report on the Digital Copyright Exchange*. Available at: <http://blog.nla.co.uk/nla-blog/2012/8/2/richard-hoopers-final-report-on-the-digital-copyright-exchan.html> (Accessed: 15 September 2015).
- Ribes, D. and Finholt, T. a. (2009) 'The Long Now of Technology Infrastructure : Articulating Tensions in Development', *Journal of the Association for Information Systems*, 10(5), pp. 375–398.
- Rip, A. (2006) 'Folk Theories of Nanotechnologists', *Science as Culture*, 15(4), pp. 349–365.

- Rip, A. and Schot, J. W. (2002) 'Identifying loci for influencing the dynamics of technological development', in Sorensen, K. H. and Williams, R. (eds) *Shaping Technology, Guiding Policy: Concepts, Spaces and Tools*. Edward Elgar Publishing, pp. 156–172.
- Ritzer, G., Dean, P. and Jurgenson, N. (2012) 'The Coming of Age of the Prosumer', *American Behavioral Scientist*, 56(4), pp. 379–398. doi: 10.1177/0002764211429368.
- Ritzer, G. and Jurgenson, N. (2010) 'Production, Consumption, Prosumption: The nature of capitalism in the age of the digital "prosumer"', *Journal of Consumer Culture*, 10(1), pp. 13–36. doi: 10.1177/1469540509354673.
- Robinson, D. K., Le Masson, P. and Weil, B. (2012) 'Waiting Games: innovation impasses in situations of high uncertainty', *Technology Analysis and Strategic Management*, 24(6), pp. 543–548. doi: 10.1080/09537325.2012.693661.
- Roubini, N. (2009) 'A Global Breakdown Of The Recession In 2009', *Forbes*, 15 January. Available at: http://www.forbes.com/2009/01/14/global-recession-2009-oped-cx_nr_0115roubini.html.
- Ruef, A. and Markard, J. (2010) 'What happens after a hype? How changing expectations affected innovation activities in the case of stationary fuel cells', *Technology Analysis and Strategic Management*, 22(3), pp. 317–338.
- Russell, S. and Williams, R. (2002) 'Social Shaping of Technology: Frameworks, Findings and Implications for Policy with Glossary of Social Shaping Concepts', in Sorensen, K. H. and Williams, R. (eds) *Shaping Technology, Guiding Policy: Concepts, Spaces and Tools*. Edward Elgar Publishing Ltd, pp. 37–132.
- Sargent, T. J. and Wallace, N. (1976) 'Rational Expectations and the Theory of Economic Policy', *Journal of Monetary Economics*, 2(2), pp. 169–183.

- Saunders, W. L. (1992) 'The Constructivist Perspective: Implications and Teaching Strategies for Science', *School of Science and Mathematics*, 92(3), pp. 136–141.
- Schot, J. W. (1998) 'The usefulness of evolutionary models for explaining innovation. The case of the Netherlands in the nineteenth century', *History and Technology, an International Journal*, 14(3), pp. 173–200.
- Schot, J. W. and Geels, F. W. (2008) 'Strategic niche management and sustainable innovation journeys: theory, findings, research agenda, and policy', *Technology Analysis and Strategic Management*, 20(5), pp. 537–554.
- Schot, J. W., Hoogma, R. and Elzen, B. (1994) 'Strategies for shifting technological systems', *Futures*, 26(10), pp. 1060–1076.
- Selin, C. (2007) 'Expectations and the Emergence of Nanotechnology', *Science, Technology & Human Values*, 32(2), pp. 196–220.
- Shapin, S. (1998) 'Placing the view from nowhere: Historical and sociological problems in the location of science', *Transactions of the Institute of British Geographers NS*, 23(1), pp. 5–12.
- Sherwin, A. (2011) *David Cameron's 'Google-model' vision for copyright under fire*. Available at: <http://www.theguardian.com/media/2011/mar/14/cameron-copyright-review-google-model-small-outfits-wary> (Accessed: 27 August 2015).
- Silverstone, R. and Haddon, L. (1996) 'Design and the domestication of information and communication technologies: technical change and everyday life', in Mansell, R. and Silverstone, R. (eds) *Communication by Design: The Politics of Information and Communication Technologies*. Oxford: Oxford University Press, pp. 44–74.
- Soh, C., Kien, S. S. and Tay-Yap, J. (2000) 'Enterprise resource planning: cultural fits and

- misfits: is ERP a universal solution?', *Communications of the ACM*, 43(4), pp. 47–51.
- Sorensen, K. H. (1996) *Learning Technology, Constructing Culture - Socio-technical change as Social Learning*. Edinburgh.
- Sorensen, K. H. and Levold, N. (1992) 'Tacit Networks, Heterogeneous Engineers, and Embodied Technology', *Science Technology and Human Values*, 17(1), pp. 13–35.
- Sorkin, A. R. (2008) 'Lehman Files for Bankruptcy; Merrill Is Sold', *The New York Times*, 15 September, p. A1. Available at:
http://www.nytimes.com/2008/09/15/business/15lehman.html?pagewanted=all&_r=0.
- Spencer, L., Ritchie, J. and O'Connor, W. (2003) 'Analysis: Practices, principles and processes', in Ritchie, J. and Lewis, J. (eds) *Qualitative research practice: A guide for social scientist students and researchers*. First. London: SAGE Publications.
- Stanford University Libraries (2010) *What is Fair Use?, Copyright & Fair Use*. Available at:
<http://fairuse.stanford.edu/overview/fair-use/what-is-fair-use/> (Accessed: 27 November 2015).
- Star, S. L. (2002) *Got Infrastructure ? How Standards , Categories and Other Aspects of Infrastructure Influence Communication*.
- Star, S. L. (2010) 'This is Not a Boundary Object: Reflections on the Origin of a Concept', *Science, Technology & Human Values*, 35(5), pp. 601–617.
- Star, S. L. and Griesemer, J. R. (1989) 'Institutional Ecology, "Translations" and Boundary Objects: Amateurs and Professionals in Berkeley's Museum of Vertebrate, Zoology 1907-39', *Social Studies of Science*, 19(3), pp. 387–420.
- Star, S. L. and Ruhleder, K. (1996) 'Steps Toward an Ecology of Infrastructure: Design and

- Access for Large Information Spaces', *Information Systems Research*, 7(1), pp. 111–134.
- Steinert, M. and Leifer, L. (2010) 'Scrutinizing Gartner's hype cycle approach', in *Technology Management for Global Economic Growth (PICMET), 2010 Proceedings of PICMET 10*. Phuket: IEEE, pp. 1–13.
- Stewart, J. and Williams, R. (2005) 'The wrong trousers ? Beyond the design fallacy : social learning and the user', in Howcroft, D. and Trauth, E. M. (eds) *Handbook of Critical Information Systems Research*. Edward Elgar Publishing Ltd, pp. 195–222.
- Sweney, M. (2011) 'Hargreaves report: Labour urges swifter action', *The Guardian*, 18 May. Available at: <http://www.theguardian.com/law/2011/may/18/ian-hargreaves-report-reaction>.
- TaylorWessing (2010) *David Cameron faces European constraints in introducing a US fair use copyright exception*. Available at: <http://www.taylorwessing.com/news-insights/details/david-cameron-faces-european-constraints-in-introducing-a-us-fair-use-copyright-exception-2010-11-10.html> (Accessed: 27 August 2015).
- TaylorWessing (2011) *The Digital Economy Act's burden on Internet Service Providers*. Available at: http://united-kingdom.taylorwessing.com/download/article_isp.html#.VfKgZPQwDwY (Accessed: 11 September 2015).
- Technology Strategy Board (2011a) *Technology and innovation centres: a prospectus - Maximising the commercial impact of UK R&D*. London.
- Technology Strategy Board (2011b) *Technology and innovation centres - Update December 2011*. London.
- Technology Strategy Board (2012) *Catapult update: Shaping the network of centres*.

Available at: <https://www.catapult.org.uk/documents/10582/221199/pdf/969a8985-6f77-4fb8-85a8-e4a63a1675d0>.

The Copyright Licensing Steering Group (2013) *Streamlining Copyright Licensing for the Digital Age - A report by the Creative Industries*. London.

Thomas, G. (2011) *AOP Response to the Hargreaves Review, The Association of Photographers*. Available at: <http://www.the-aop.org/information/consultations/aop-response-to-the-hargreaves-review-on-ip-report> (Accessed: 15 September 2015).

Thorne, D. (2013) *The Double Irish and Dutch Sandwich tax strategies: Could a general antiavoidance rule counteract the problems caused by utilisation of these structures?* Law 516. Victoria. Available at: <http://researcharchive.vuw.ac.nz/xmlui/bitstream/handle/10063/3252/thesis.pdf?sequence=2>.

Tutton, R. (2011) 'Promising pessimism: Reading the futures to be avoided in biotech', *Social Studies of Science*, 41(3), pp. 411–429.

UK Music (2012) *UK Music welcomes Richard Hooper's Report into Copyright*. Available at: <http://www.prsformusic.com/aboutus/press/latestpressreleases/pages/ukmusicwelcomerichardhoopersreportintocopyright.aspx> (Accessed: 15 September 2015).

UK Music (2013) *About us*. Available at: <http://www.ukmusic.org/about-us> (Accessed: 15 September 2017).

UKCES (2014) *The Labour Market Story : The UK Following Recession*. London. Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/344439/The_Labour_Market_Story-_The_UK_Following_Recession.pdf.

van Lente, H. (1993) *Promising technology: The Dynamics of Expectations in Technological*

Development. University of Twente.

van Lente, H. (2012) 'Navigating foresight in a sea of expectations: lessons from the sociology of expectations', *Technology Analysis and Strategic Management*, 24(8), pp. 769–782.

van Lente, H. and Bakker, S. (2010) 'Competing expectations: the case of hydrogen storage technologies', *Technology Analysis and Strategic Management*, 22(6), pp. 693–709.

van Lente, H. and Rip, A. (1998a) 'Expectations in technological developments: An example of prospective structures to be filled in by agency', in *De Gruyter studies in organization*, pp. 203–230.

van Lente, H. and Rip, A. (1998b) 'The Rise of Membrane Technology: From Rhetorics to Social Reality', *Social Studies of Science*, 28(2), pp. 221–254.

van Lente, H., Spitters, C. and Peine, A. (2013) 'Comparing technological hype cycles: Towards a theory', *Technological Forecasting & Social Change*, 80(8), pp. 1615–1628.

Veryzer Jr., R. W. (1998) 'Discontinuous Innovation and the New Product Development Process', *Journal of Product Innovation Management*, 15(4), pp. 304–321. Available at: http://lib.cufe.edu.cn/upload_files/other/4_20140605103112_Discontinuous Innovation and the New Product Development Process.pdf.

Wearden, G. (2011a) 'GDP figures expected to show growth slowed at end of 2010', *The Guardian*, 25 January. Available at: <http://www.theguardian.com/business/2011/jan/25/gdp-economy-slow-end-of-2010>.

Wearden, G. (2011b) 'Shock as UK economy shrank by 0.5% at end of 2010', *The Guardian*, 25 January. Available at: <http://www.theguardian.com/business/2011/jan/25/uk-economy-shrunk-point-five-per-cent>.

- Weick, K. E. (1999) 'Conclusion: Theory Construction as Disciplined Reflexivity: Tradeoffs in the 90s', *The Academy of Management Review*, 24(4), pp. 797–806.
- Williams, R. and Edge, D. (1996) 'The social shaping of technology', *Research Policy*, 25(6), pp. 865–899. doi: 10.1016/0048-7333(96)00885-2.
- Woolgar, S. (1990) 'Configuring the User: The Case of Usability Trials', *The Sociological Review*, 38(1), pp. 58–99.
- Wyatt, S. M. E. (2000) 'Talking about the future: Metaphors of the Internet', in Brown, N., Rappert, B., and Webster, A. (eds) *Contested Futures: A Sociology of Prospective Techno-Science*. Ashgate Aldershot, pp. 109–127.
- Young, D. (2013) *UK copyright owners no longer control the right to copy their work*, *Copyright Blog*. Available at: <https://copyrightblog.co.uk/2013/04/29/d-err/> (Accessed: 20 April 2018).
- Young, R. a. and Collin, A. (2004) 'Introduction: Constructivism and social constructionism in the career field', *Journal of Vocational Behavior*, 64(3), pp. 373–388. Available at: <http://linkinghub.elsevier.com/retrieve/pii/S0001879104000065> (Accessed: 20 February 2014).

Appendix A – Self-audit checklist for level 1 Ethical Review

University of Edinburgh

School of Social and Political Studies

RESEARCH AND RESEARCH ETHICS COMMITTEE

Self-Audit Checklist for Level 1 Ethical Review

*The audit is to be conducted by the **Principal Investigator**, except in the following cases:*

- ***Postdoctoral research fellowships** – the applicant in collaboration with the proposed mentor.*
- ***Postgraduate research (PhD and Masters by Research)** – the student together with the supervisor. Note: All research postgraduates should conduct ethical self-audit of their proposed research as part of the proposal process. The audit should be integrated with the student’s Review Board.*
- ***Taught Masters Dissertation work and Undergraduate dissertation/project work** – in many cases this would not require ethical audit, but if it does (for example, if it involves original fieldwork), the student conducts the audit together with the dissertation/project supervisor, who keeps it on file.*

Potential risks to participants and researchers

1	Is it likely that the research will induce any psychological stress or discomfort?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
2	Does the research require any physically invasive or potentially physically harmful procedures?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
3	Does the research involve sensitive topics, such as participants' sexual behaviour or illegal activities, their abuse or exploitation, or their mental health?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
4	Is it likely that this research will lead to the disclosure of information about child abuse or neglect, or other information that would require the researchers to breach confidentiality conditions agreed with participants?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
5	Is it likely that participation in this research could adversely affect participants?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
6	Is it likely that the research findings could be used in a way that would adversely affect participants or particular groups of people?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
7	Will the true purpose of the research be concealed from the participants?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>

8	Is the research likely to involve any psychological or physical risks to the researcher, and/or research assistants, including those recruited locally?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>

Participants

9	Are any of the participants likely to:		
	be under 18 years of age?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
	be physically or mentally ill?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
	have a disability?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
	be members of a vulnerable or stigmatized minority?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
	be in a dependent relationship with the researchers?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
	have difficulty in reading and/or comprehending any printed material distributed as part of the research process?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
	be vulnerable in other ways?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
10	Will it be difficult to ascertain whether participants are vulnerable in any of the ways listed above (e.g. where participants are recruited via the internet)?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>

11	Will participants receive any financial or other material benefits because of participation, beyond standard practice for research in your field?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
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Before completing the next sections, please refer to the University Data Protection Policy to ensure that the relevant conditions relating to the processing of personal data under Schedule 2 and 3 are satisfied. Details are Available at: www.recordsmanagement.ed.ac.uk

Confidentiality and handling of data

12	Will the research require the collection of personal information about individuals (including via other organisations such as schools or employers) without their direct consent?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
13	Will individual responses be attributed or will participants be identifiable, without the direct consent of participants?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
14	Will data files/audio/video tapes, etc. be retained after the completion of the study (or beyond a reasonable time period for publication of the results of the study)?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>

15	Will the data be made available for secondary use, without obtaining the consent of participants?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
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Informed consent

16	Will it be difficult to obtain direct consent from participants?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
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Conflict of interest

The University has a ‘Policy on the Conflict of Interest’, which states that a conflict of interest would arise in cases where an employee of the University might be “compromising research objectivity or independence in return for financial or non-financial benefit for him/herself or for a relative or friend.”

See:

http://www.docs.csg.ed.ac.uk/HumanResources/Policy/Conflict_of_Interest.pdf

Conflict of interest may also include cases where the source of funding raises ethical issues, either because of concerns about the moral standing or activities of the funder, or concerns about the funder’s motivation for commissioning the research and the uses to which the research might be put.

The University policy also states that the responsibility for avoiding a conflict of interest, in the first instance, lies with the individual, but that potential conflicts of interest should always be disclosed, normally to the line manager or Head of Department. Failure to disclose a conflict of interest or to cease involvement until

the conflict has been resolved may result in disciplinary action and in serious cases could result in dismissal.

17	Does your research involve a conflict of interest as outlined above?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
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Appendix B – An Overview of the conducted Interviews

Organisations/ Sectors	Affiliations	Positions	Roles in the Copyright Hub (CH) project	No. of Interviews	Date of Interviews
Copyright Hub Ltd.	Copyright Hub Ltd.	Chairman	Proposing the development of the CH. Bridging the UK government, the creative industries and the CH project. Securing funding for the CH project.	1	13/01/2015
		CEO	Overseeing the technical implementation of the CH project. Having business background, but lack of technical background	5	15/01/2015 09/03/2015 15/06/2015 20/10/2015 20/06/2016

		CTO/ Partnerships Director	Managing partnerships of the CH project.	3	15/01/2015
			Providing technical inputs into the project, thanks to her technical background.		22/10/2015
					23/06/2016
Digital Catapult – The Technical Partner of the Copyright Hub Ltd.	Managerial level of the Digital Catapult	CEO	Overseeing the establishment and operation of the Digital Catapult in the first five years.	1	17/06/2015
		Legal Director	Managing legal affairs of the Digital Catapult	2	17/04/2015
					21/06/2016
		Partnerships Director	Managing partnerships of the Digital Catapult	1	14/01/2015
	The Development Team for the Copyright Hub project	Software Developer	Developing codes for the Copyright Hub’s project	3	11/03/2015
					20/10/2015
					20/06/2016

	Technical Architect/ Lead	Leading the development team for the	3	12/03/2015	
	Software Engineer	CH project		20/10/2015	
				21/06/2016	
	Lead Business Analyst/	Analysing business requirements for the	2	13/01/2015	
	Principal Product Owner	CH project		11/03/2015	
	Technical Architect	Overseeing the technical architecture of	1	13/03/2015	
		the CH project in early days			
Policy Makers	Intellectual Property	Copyright and IP	Co-author with Richard Hooper on the	1	12/03/2015
	Office	Enforcement Director	proposal for the establishment of the		
			CH.		
	Bircham Dyson Bell	Head of Intellectual Property	Serving on the board of both the CH and	1	13/05/2015
	LLP		the Digital Catapult in the early days.		
			Matchmaking the CH and Digital		
			Catapult together.		

	Cardiff University	Professor of Digital Economy	A scholar who conducted the review of the UK's IP framework on behalf of the government in 2010.	1	14/05/2015
	House of Lords	Spokesman for the Digital Economy in the House of Lords	An early supporter of the CH project	1	21/10/2015
Publishing	Publishers Licensing Society	Chairman of Publishers Licensing Society	One of the founders of the Linked Content Coalition	2	13/01/2015
		Founder of Linked Content Coalition	Making critical contribution to the CH project (i.e. consulting the CH chairman, serving as chair of the governance working group, etc.)		11/03/2015
	Publishers Licensing Society	CEO	Rallying the four creative sectors behind the CH project and securing funding the first two years of the CH project.	1	14/04/2015

	European Publishers Council	Executive Director	A founder of the Linked Content Coalition and early supporter of the CH project	1	13/04/2015
	International DOI Foundation	Managing Agent	A veteran expert in the field of standardisation for IP	1	13/04/2015
	Copyright Clearance Centre	Executive Director, International Relationships	An early supporter of the CH project. His organisation was referred to as a good example for the CH.	1	16/04/2015
	Copyright Licensing Agency	Director of Education and Public Sector	A member of the CH's working group on education licensing	1	11/05/2015
	EDItEUR	Principal Consultant	A retired expert in the field of publishing	1	12/05/2015
Audiovisual	MovieLab	Chief Scientist	A consultant to the CH project	1	13/05/2015
	BBC	Controller of Archive Development	A supporter of the CH project	1	18/06/2015
	British Film Institute	Advisor	An interested observer of the CH project	1	19/06/2015

	BAFTA, University College London	R&D Business Manager for BAFTA Partner Liaison Manager for UCL	An interested observer of the CH project	1	16/10/2015
Music	International Federation of the Phonographic Industry (IFPI)	CTO	An interested observer of the CH project	1	23/10/2015
	Soundmouse	Director	An interested observer of the CH project	1	17/06/2015
	PRS for Music	Head of Public Affairs	An interested observer of the CH project	1	19/10/2015
	PRS for Music	Data and R&D Director	An interested observer of the CH project	1	17/06/2015
	County Analytics	Principal at County Analytics Former CTO of RIAA and IFPI	An interested observer of the CH project	1	19/06/2015
Image	Getty Images	Vice President, Corporate Counsel Legal	An interested observer of the CH project	1	23/10/2015

	Mary Evans Picture Library	Managing Director	Contributing content for the development of the CH's use cases	1	13/03/2015
Consultancy	i-Publishing	Director	Contributing content for the development of the CH's use cases	1	22/06/2016
	Rightscom	Technical consultant on data model for Digital Catapult and the Hub	The author of the data model, which was used by both the Linked Content Coalition and the CH project.	2	16/01/2015 21/06/2016
	Cultural and Heritage sector	Consultant for cultural and heritage sector	An interested observer of the CH project	1	22/06/2016

Appendix C – An Interview Schedule

The following schedule is prepared in order to provide a general guideline for the interview and to help remind the interviewer of essential themes for discussion. Therefore, the wording and orders of these questions are, by no means, fixed and rigid. Instead, points of interest, which emerge during the interview, are encouraged to be pursued by both the interviewee and interviewer to gain the most insights from the discussion.

A personal journey

1. What is the recent focus of your work at the Copyright Hub?

Membership and Organisational Structure

2. [Show the first diagram] I would love to have your comments on this diagram.
3. I'm interested in knowing more about Partner Board and its relationship with the Executive Board. Can I attend the next Partner Board meeting? (Richard Hooper has agreed to this).
4. Can you tell me about the current state of the three working groups?
5. Do you plan on having any other working groups in the later stages of the project?
6. Can you tell me a bit more about the Hub's partnerships with Digital Catapult?
7. Who play the important role in bridging the gap between two organisations?
8. What about Linked Content Coalition?
9. Are there any other important partners of the Hub or parallel projects which I should know about?

10. It is claimed that the establishment of the Copyright Hub is for the benefits of all: licensors, licensees, and many intermediaries in between. How are these voices represented in the Hub Ecosystem?

From Executive Board

11. You have been in the business for a very long time. In your opinion, what tipped the socio-political argument toward favouring the Hub's solution to copyright over conventional argument of changing the law?
12. How the Hub has evolved from Hargreaves' DCE, to the Copyright Hub on Hooper's report, and the Copyright Hub now? What are the differences?

From Governance Working Group (WG)

13. It is important to make the Hub Ecosystem a trusted environment and be worthy of that trust. How can this be achieved?
14. In the briefing paper of the Governance WG, it is mentioned that the Copyright Hub's operations will be "not for profit", "not financed by direct participation in revenue streams from licensing" and has "its own position to the market will be as 'light touch' as possible". So, how will the Copyright Hub operate in reality?
15. Can you tell me more about the Hub's current funding scheme? What is the European funding for the Copyright Hub?
16. In the briefing, it is said that:

- a. The Hub's ambition is remaking the mechanism of copyright licensing in the age of Internet.
- b. It's done by making the basic functions of copyright licensing work in the same way as the Internet.
- c. It is also acknowledged that technology is only a tool. At the heart of the Hub's vision is the political, economic and social argument of the benefits of copyright to civil society as a whole.

Note:

This argument seems to suggest that if key stakeholders are convinced of the benefits of copyright and the right type of foundation technologies are developed, the remaking of copyright licensing can be achieved. However, the report of Education Workstream under CHLG showed that, at least in the educational sector, both the licensors (i.e. collecting agencies and CMOs) and licensees (i.e. educational organisations) have "considerable distance before ecommerce become the norm" and "most schools are not prepared to make online payment". Another recent study of the French recorded music industry seems to suggest that institutional maintenance is working against the digital revolution.

There seems to be more obstacles to the Hub's success than just convincing key stakeholders of values of copyright and developing the right technologies. What do you think?

17. It is also mentioned that the Hub cannot undertake this task by itself but need "the alignment of many competing political, economic and social interests". Is there any detailed strategy for completing this task?

From Technical Working Group

18. In the Blueprint document (p.18), openness is particularly emphasised and it is said that "the technical underpinnings of the Copyright Hub will be 'open'... in the form of Open Source Software or as Open Standards". Who made this decision? Through what process? Why?

19. Can you tell me the process of choosing and developing reference applications/ use cases of the Copyright Hub?
20. How are these reference models tested? By whom? Using what criteria? How can the successes of these models be evaluated?
21. Can you show me the demonstrator?
22. What do you think will be the most challenging obstacles for the Hub to overcome in order to succeed?
23. What is the plan for the next few months?

Appendix D –

An example of the Research Diary

This appendix displays the research diary, which the researcher meticulously kept throughout his fieldwork. The example presented here is composed of fieldnotes of the first fieldwork trip to London between 12th and 16th January 2015. These pages showcase:

- A general interview schedule, which the researcher prepared in advance to help guide interviewing activities during the trip.
- The ways the researcher arranged his work and interviews throughout the week.
- The kind of note the researcher took during his interviews with research participants.
- The kind of note the researcher wrote after an interview had been completed.
- Examples of preliminary analysis and findings the researcher recorded in the diary at the end of the fieldwork trip.

On the train, Edinburgh - London
Monday, 12th Jan 2015

First trip - Day 1

Below is the general interview schedule I prepare for this trip, with input comes mainly from the Hub's Blueprint and the Governance's briefing

A personal journey

1. What first brought the Hub to your attention and why are you interested?
2. Can you tell me a bit more about your involvement with the Hub? (e.g. your position, responsibilities)

Membership and Organisational Structure

3. What is the organisational structure of the Hub Ecosystem?
4. How does this Ecosystem interact with the outside world?
5. Can you tell me more about the Hub's partnerships with Digital Catapult and Linked Content Coalition?

6. Are there any other important partners or parallel projects to the Hub, which I should know about?

7. It's claimed that the Hub benefits all: licensors, licensees, and intermediaries in between. How are these stake holders represented in the Hub Ecosystem?

8. Who are users of the Hub Foundation Platform? How are they involved in the platform development?

9. How are members of [name of the group] chosen? Who decided? Based on what criteria?

10. Do you think there are stakeholders who should have been chosen but were excluded?

Rashomon Effect

From Executive Board

11. What kind of policy support does the Hub receive from the UK government?

12. The Blueprint makes obvious. In your opinion, what tipped the socio-political argument toward favouring the Hub's solution to copyright over law changing?

13. The Blueprint makes obvious the tension between the Internet's characteristics (e.g. distributed, borderless, automated, far-reaching) and the need for trusted V.S. environment, security, fraudulence prevention, which are both needed by the Hub.

How can this tension be resolved?

From the Governance WG

14. Will the Hub play any role as digital curator or gatekeeper in its ecosystem? Are any of these roles embedded in the Hub Foundation Platform?

15. The briefing said that, the Hub's operations will be
- not-for-profit
 - not financed by direct participation in revenue stream
 - has its own position as "light touch" as possible to the market.

So, how does the Hub operate in reality?

What is its business model?

What is its position in the copyright licensing market?

16. In the briefing, it is said that:

- the Hub's ambition is "re-making the mechanisms of copyright licensing in the age of Internet."

- It's done by making the basic function of copyright licensing work in the same way as the Internet.
- It's acknowledged that technology is only a tool. At the heart of the Hub's vision is the political economic and social argument of the benefits of copyright to civil society as a whole.

Assumption: Two obstacles to the Hub's success:

- convincing stakeholders of benefits of copyright
- developing the right technology.

However, evidence seems to suggest a different story.

- Education watchdog confirmed that in this sector, "there is considerable distance before e-commerce became the norm" and "most schools are not prepared to make online payment".
- recent study in French recorded music industry seems to suggest that institutional maintenance is working against digital revolution.

What is your opinion on this matter? There seem to be more obstacles to the Hub than just the aforementioned two.

17. It is said that the Hub cannot undertake this task by itself but need "the alignment of many

competing political, economic and social ~~and~~ interests"
what is your strategy to achieve this?

From Technical WG

18. The Blueprint emphasises "openness" in developing the Hub's technologies - in form of Open Source Software or Open Standards.

How was this decision made? By whom?
What are the implications for technology development at Catapult?

19. The Blueprint said that:
"the technological platform should be developed in ways that are agnostic as to business models".
How does this principle work in reality?

20. There is contradiction in the Blueprint

(p.17) "the technology should be developed in ways that are essentially independent of the ways in which those policies are designed and implemented."

(p.22) "Technically, the Hub should be able to

determine a set of rules for participation in its ecosystem and enforce those rules through technologies.

21. Can you tell me more about 'R&P2' technology (i.e. Rights Resolution & Permission Protocol)
What technical standards are in place to ensure interoperability

22. Can you tell me the process of choosing and developing reference models / use cases for the Hub?

23. How are these reference models tested? By whom? Using what criteria?

From Education WG

24. Education is the only sector-based that still exist in the Hub Ecosystem. What is the reason?

25. From educational perspective, what goals does the Hub try to achieve?

26. To do so, what kind of relationship needs to be established between the Hub and other stakeholders?

Communication

27. How does communication take place in this heterogeneous environment?

28. Are there any conflicts of interests and how are they dealt with?
29. How does the Hub ensure interoperability between different organisations and legacy systems involved?

— End of Interview —

About the CREATE Project

A summary

Digital technologies have changed the nature of IP trading, in which IP can no longer be negotiated on a bilateral basis. Instead, it is increasingly managed and exchanged through various kind of intermediaries. A range of private and public initiatives has recently emerged, which is expected to constitute a new infrastructure for IP.

The study consists of two main parts

- (1) study of the Copyright Hub - longitudinal
- (2) set of shorter studies of other initiatives developed across different sectors and regions.

For examples:

- (a) Copyright Clearance Centre (CCC) - global right broker based in the U.S.
- (b) recently emerging IP infrastructures from the creative industries, such as Getty Images, Spotify, and INGrooves.
- (c) Key players on the market, such as CMOs, BBC
- (d) initiatives developed in other countries (e.g. Hub's connection with Korea, Singapore IP Hub)

A Request

- (1) Dominic to become a member of the Advisory Board. → check with Richard Hooper.
- (2) Ask Dominic to help with introducing to those identified stake holders, especially
 - (1) CCC; (2) major CMOs; (3) Getty Images
 - (4) EU policy makers.

Emphasising on going beyond the Hub and UK.

Scheduling this week

- IP Professor from Stanford (Paul ^{Goldstein} ~~Transtam~~).
- Richard Lambrew → PhD doing work with Haquever
- ✓ Mark Bide → been in the business for many years (tomorrow - 2.30pm)
- Richard Godfrey Rust → Working on metadata
- Bartolomeo → CREATE fellow working at Digital Catapult
- ✓ Chris Thompson - (Wed 3.30 pm)
Digital Catapult - Partnership Director
- ✓ An interview with Dominic Young
(Thurs at 4 pm)
- ✓ Caroline Boyd -
- ✓ Ian Maddison (Tomorrow - 11 am)
Photographic agency + TV channels since 2010
→ all plus copyright owners angle

Interview that I've got for this week so far:

- Tuesday, 13th Jan 2015
(@ 11 am): Ian Maddison at Digital Catapult Centre
Ian owns a photographic agency and a TV channel focusing on red carpet events. He brings the copyright owner angle to the project and works as a business analyst.
- (@ 2.30 pm) Mark Bide at Publisher Licensing Society
Mark is one who has been working and publishing articles about this industry for many years; and he has contributed a great deal to the construction of the Hub. His name can be found on many documents of the Hub.
- Wednesday, 14th Jan 2015
(@ 3.30 pm) Chris Thompson at Digital Catapult
Chris is Director Partnership of Digital Catapult and managing the connection between Catapult and the Hub.
- Thursday, 15th Jan 2015
(@ 10 am) Dominic Young & Caroline Boyd
the core executive team at the Hub.
- Friday, 16th Jan 2015
(@ 3 pm) Godfrey Rust, work on LCC & RDI project

In Merrick's flat, London
Thursday, 15th Jan 2015

First trip - Day 2

Some note about Ian Maddison

- Ian is titled Principal Product Owner and lead Business Analyst at Digital Catalyst
- Seems to be a tech savvy person → can ask technical questions
- He is an alumni at University of Brighton

A. Interview with Ian at Man at Digital Catalyst

B. A surprise interview with Richard Hopper before and after his meeting at the Hub

C. A great interview with Mark Bide at PLS

- Mark worked on .pdf (before it was named pdf) to make it the standard for journal publishing
- 1995: involved in PLS and now its chairman
- Met Godfrey Rust in EU-funded INDECS project
Godfrey is lead technical consultant
Mark is lead in cross over business & technologies
- Mark designed Linked Content Coalition
- Met Richard Hopper early on in the process of writing about the Hub → advisor to Hopper.
- PLS also helps fund the Hub in early phases

- 2 roles at the Hub now:

- + provide input into technology at cross-over level
- + run governance working group.

- Mark emphasises that: 'people care nothing about copyright, IP, privacy, etc. of others but themselves'
→ this not gonna work.
→ Internet runs this way for 20 years but it does not mean that it should continue run this way
→ the need to buy mutual trust in copyright
→ creative industries must get to-gether as a whole to win this fight (over piracy, over right - adjust blame, and the threat of exemption)

- LCC project has turned into an organisation
Mark set up LCC as an international organisation in the UK, trying to bring coalition of standards organisations across media.

- Godfrey Rust know more about RDI project

- The focus of the Hub should be on individual creators, whom are not served at all by CMOs.

- The chance for linked data to transform from obscure academia ideas to practical technology.

- Changing the master narrative.
 - + in EU: giant tech companies do not pay tax why support them and hamper the creative sector which contribute to GDP
 - + in UK: single-handedly change due to the effort of Richard Hopper. (well connected in gov circle)

- Difference between each leadership
 - + Hargreaves' idea of DCE is a gov organisation
 - + Hopper's Hub is a business-led initiative
- Should ask Dominic & Chris about Europe funding

A. Interview with Ian Maddison

- Ian is product owner of the Hub.
 - he owns the backlog of user stories.
 - Caroline is his equivalence on the Hub side

- The team and structure as follow.

Hub

Digital Catapult

Dominic - CEO

Caroline - Product owner

bridge

Ian - Product owner

Architect team

led by James → Development team

- Godfrey Rust represents LCC.

- 2 aspects which the Hub can help with the "long-tail"
 - + of uses: individual uses, small value, high volume (s.b. one to use a song in her wedding)
 - + B-2-B: help licensing materials that are hardly ever used before.

- Getty Images has their own legacy system, which is quite efficient and they might not need it technically (however, Mark insisted that political need is as important as technical need)

- Role of Catapult is to anchor British jobs.

- The Hub only job is to provide raw data (that has been format by the Hub's standards) third-party will provide offer and other services Rights.com will be hired to map data.

- The hardest bit is to understand the Blue print 6 weeks of intensive work, after that, it takes very short time to create an Excel file represents how it works.

B. Richard Hooper

- Hub secures its third year of funding
- Hooper is gonna hold a trust funding to help fund the Hub in upcoming year.
- Hooper defines the Hub as 3 things:
 - (1) a forum - for collaboration across sectors
 - (2) a website - for education
 - (3) as technology - being forward by Dominic
- The relationship with Digital Catapult is pure collaboration for mutual interests. No contract binding.
- Hooper insisted that his single most contribution to the copyright industries is that the idea of changing technology to resolve copyright problems.
- I think I need to revisit those leaders of each generation of the Hub again and ask explicitly about what they bring to the life of the Hub and how the Hub evolve from the previous leadership.

At the heart of the Copyright Hub
Wednesday, 14th Jan 2015

First trip - Day 3

In preparation to interview Chris Thompson
- Director of Partnership, Digital Catapult.

Apart from the wonderful treat by Ian at Pullman, it was a rather disappointing day. The interview with Chris didn't go well and it ended rather unpleasantly. There is a clear sign of mistrust and carefulness in each of his answers. As one of the most important people working on the project, I should have extracted more information from him but I just couldn't work with people who don't trust me, I guess. Anyway, last week of his position at the current place in history of the Hub, I don't imagine having to interview him ever again. Well, that reminds me of how lucky I am to meet people at the Copyright Hub. They are really laid back, supportive and easy going. There is a hostile world out there and I should not forget about that. On a side note, it's fun to know more about Dominic. He is a very lovely person. His quest for a perfect pen made me smile. Really a wonderful person to work with.

In Muntzell's flat, London
Thursday, 15th Jan 2015

First Trip - Day 4

Today, I have two interviews with two most important persons at the Hub: (1) Dominic as the captain who runs the Hub on daily basis and (2) Caroline - CTO of the Hub, who bridges the Hub and Digital Catapult. It must be interesting to talk to them again this time with more careful preparation.

After the interviews:

As expected, Dominic and Caroline were really supportive and open in sharing their insights of the Hub. Two issues arise: (1) how the data is kept, concerning the issue of anonymity and confidentiality of the responses, especially in this small circle where everyone knows each other very well and it must be difficult to keep the data anonymous; (2) the issue of giving back to the project. I am very happy that by asking questions, I had helped remind people at the Hub some important issues. This time is about the issue of testing the use cases. Caroline told me that there is no formal procedure for testing at the moment and she'll look into it.

In Muntzell's flat, London
Saturday, 17th Jan 2015

First Trip - Day 5 & 6

This trip was coming to an end with a very pleasant note of the meeting with Godfrey Rust. He forgot that I'm coming at first and went out for a run but it doesn't matter. The meeting takes place in his home at South Ealing - a very pleasant & quiet area of London. His eldest son is pretty much like me:

PhD in New York, just got married, visa issue, etc. Godfrey himself is a very attractive person - a poet, musician who manages music at church, a runner, a data architect, a senior director and consultant to many projects. The interview started with no formality as he just chatted away and was very happy to share his knowledge. Therefore, the very first bit of the story was not recorded as I wasn't prepared yet. He told me about the personal level of the story, the background which will not be revealed if no one asks. How Richard Hooper came to the project, listened and understood it, Mark Bide & Godfrey were there to consult him, Dominic was working with Mark before and came to the project with his vision, how Caroline Boyd came along and surprisingly came to be the most important linking in connecting everyone.

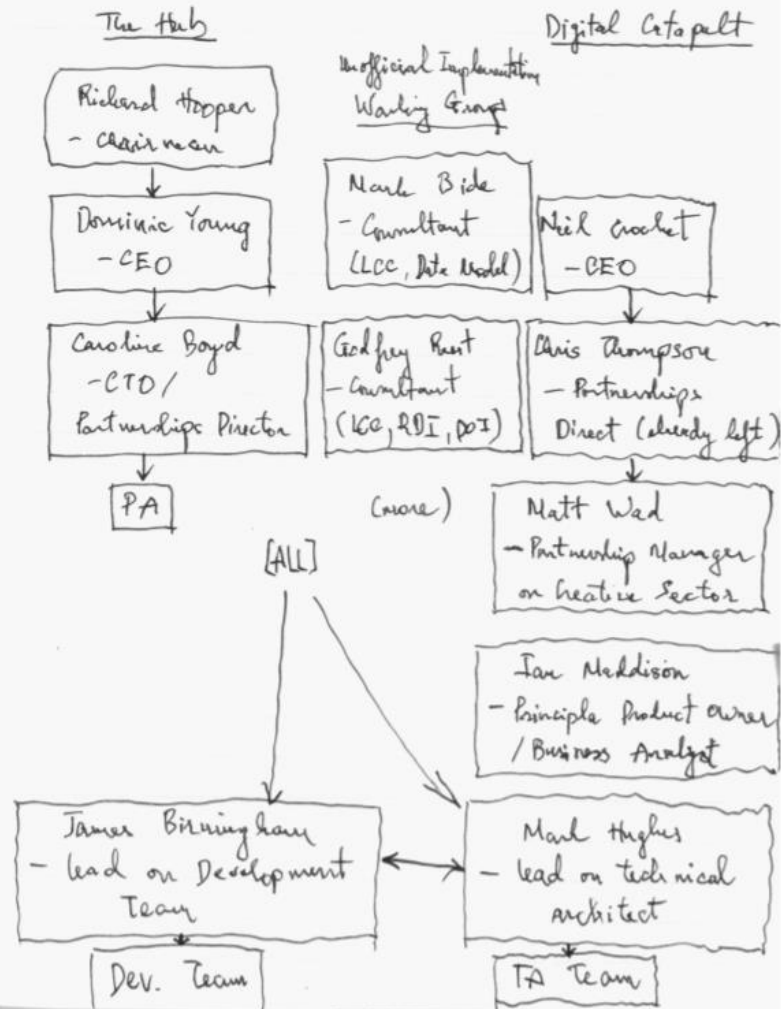
He also talked a lot about those organisations that he worked for, those projects he consulted, the data model developed at LCC and how it is realised in RDI project. He also talked about DOI and a guy named Raymond who is so brilliant that I should really meet. He remarked that everything came together for the Hub to exist

- Without Hooper - no Hub
- Without Catapult - no Hub
- Without LCC & RDI - Hub might run but will be in trouble later on.

The Data Model is a very interesting subject. People don't understand it well and it creates problems for developers working on the project. There are also tensions between Catapult's commitment - went to Open Source & the problem it might bring to certain service providers on the market.

Finally, and very importantly, Godfrey talked about CCLI - the old manager licensing of music in churches in global scale. In his opinion, CCLI is the small-scale of the copyright Hub - the one that's been up and running for a few years now. A perfect case for comparison. He can help me with getting contact with these people. The talks last for 2.30 hours - a new record of mine

Some Key People working at the Hub Project



About 15 years ago

INDECS

Mark Bide worked with Godfrey Rust

AKAPT

Mark Bide worked with Dominic

Linked Content
Location

Start as a project

Mark Bide set it up as
a standards body

provide
standards &
data model

standard organisation

provide standards

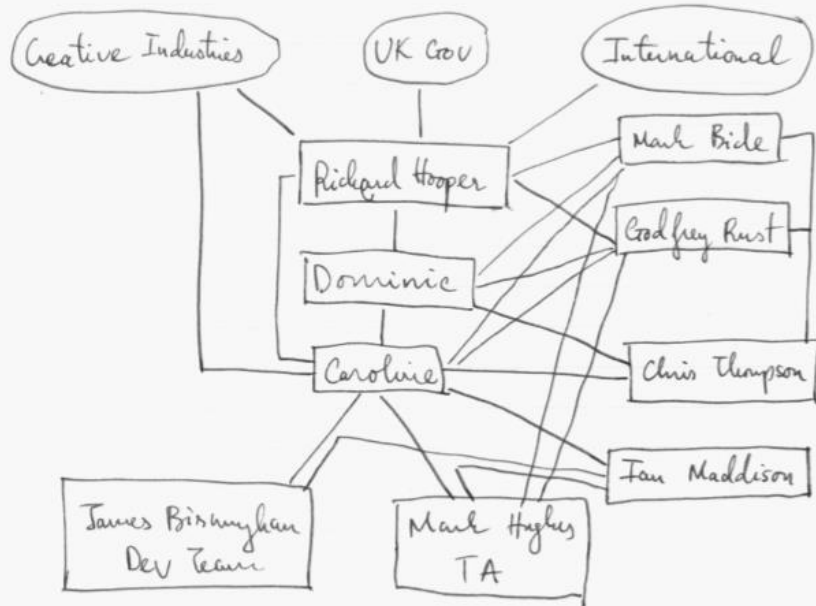
RDI Project

provide mapping & other service
(Innovative technology but tested for years)

The Hub

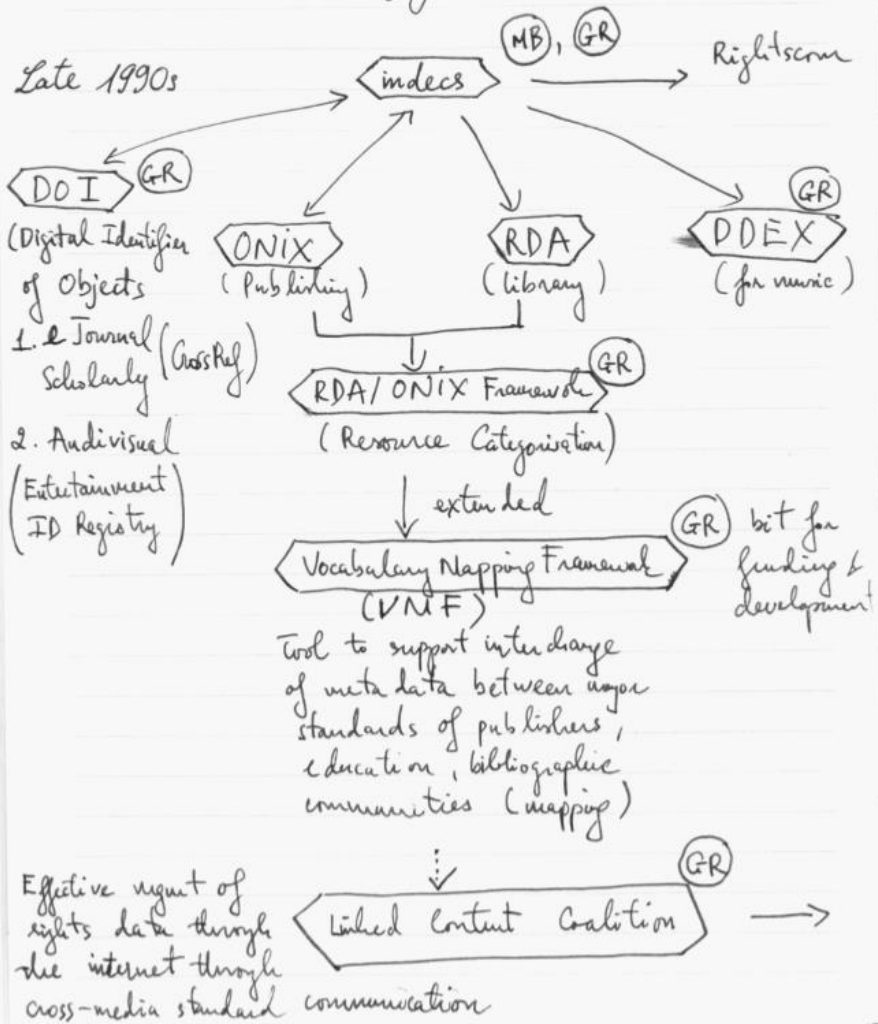
- Caroline came as the third in command, who has strong technical background, but also understand business and data model. She works as a key link to communicate with people
- Mark Hughes as key link in Digital Catapult who gets the data model.

How people communicate



This model seems to appoint where it becomes incomprehensible which is rather counter-productive. I have an idea to improve this, by putting people with most connection in the circle (see next page). Anyway, it does not seem to improve a lot. I need to think more about this. Or whether or not it is a diagram that should be drawn at first place. My brain needs some rest now. The train back to Edinburgh is so quiet today...

The Genealogy of Initiatives



LCC First stage: Define LCC Framework

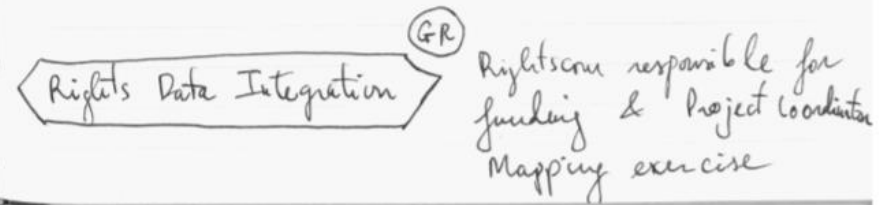
- things occupied the Internet & their relationships
- How to identify things
- How right data passes through network
- How users access data



LCC Second stage → Create the consortium of standards (2014)

⇒ support interoperability

- 16 EU orgs in content supply chain
- Manage & trade right data in all types of content, all types of media, all type of business models
- Once-time mapping



Appendix E-

Scribble of off-the-record conversations

This appendix showcases a few examples of off-the-record conversations which the researcher logged during his fieldwork. The scribble contains exchanges between the researcher and (1) an executive officer of the Mary Evans Picture Library, (2) a director and co-founder of Soundmouse, and (3) a senior manager from BBC. These examples were selected to highlight the ways insights obtained from the latter two exchanges help triangulate and put into perspective the data collected in the first interview.

« This memo is written in a cold park after the interview with Paul Brown at Mary Evans »

I want to do things like this 8 years ago but I couldn't because I couldn't justify the cost. Now I can do it with the Hub & Catapult without worrying about the return of investment.

It only works because the Hub and Catapult have a huge amount of funding. I would not dream of doing half of what they do, due to lack of money there are two different worlds. Our world operate on a marginal budget of a few hundred thousand pound a year, all of which come from our revenue. While the Catapult have a huge amount of money to spend, they have access to all resources that they need, their offices, everyone is well paid. They are two different worlds but they are connected. So if they are using that money to offer us something in return, we gladly accept it. I think the Hub & Catapult only works within that particular policy-taken, political / legislative framework.

I don't think that on our case, even if succeed, will bring any significant changes to our industries at the moment. Our return-of investment on revenue will not just double because of the success of the use

case on the Hub. Having said that, I mean the current situation won't change immediately does not mean that we shouldn't do something. There might be radical change in the future and sometimes it's necessary to take many steps before we reach that stage. The future might not be that people will find and pay for license for using one image on Facebook or whatever reason. But instead, I believe the process of being able to find rights info about any images in an automated way is a way forward. If it works for us (Mary Evans), it will work for other picture library, and for individual users. They will start to respect copyright and try to protect it because they also see that ~~they have copyrights~~ they are copyright owners. The picture of their dogs might have millions view. Pay-per-click is very minimal, a fraction of a penny per click but every one on the Internet will benefit from it. And with millions of click it might be worth it. In order to reach the future we have to start from somewhere. And the Hub is where we start and that's why I'm interested.

(I'm still amazed at the richness of the conversation after the recording was turned off. I must learn/train my brain to memorise it more precisely)

- Quality of meta data → help recognise content automatically
- Authenticating meta data - conflict resolution.

Use fingerprint recognition programme

Watermark

- Music, professional world → Soundmouse
- supply where there's a need.

threatening organisation - The Hub

technical issues dissident voices
unhappy people

Some notes after meeting Charles Hodgkinson Soundmouse

- Where to find unhappy people?

A: You have to remember the narrative bias in what people told you. You're introduced by Richard and Dominic and no one wants to appear negative. They wouldn't say these sorts of things to you anyway.

From the outset, they will also appear positive.

Mark: I think people used to be very critical and feel threatened about what was proposed for the Hub before. The Hub obviously has changed from the original proposal. Before, it proposed to offer aggregated search and that made people uncomfortable. But now it's gone. I think it's a very smart move. Now, the Hub is seen as a registries and people are more comfortable with that.

Think of the example of the Global Repertoire Database. If you ask them, they all say that they are supportive. But when it came to actually push the project forward, no one did anything and that's why the project failed. This is a very good example of a project, with a simple idea of creating a centralised database, shown to be promising and supportive by many, eventually failed due to competing political exigencies.

The next page, I will redraw the diagram of Soundmouse that Charles drew to me. It's a pity that I couldn't take a photo of it before it's gone.

Hierarchical Conservative Preserve the status quo

iPlayer = being resisted by all departments
(80 meetings)

Library (more than 1 identical) ← Public
Vs
Archives (the only one) → Private

Broadcasting + scarcity + temporal
Internet } long-tail abundance permanent

Sound waves
Mentioned Paul Brown - BAPLA as dissident voice

BBC Collections - high ratio 100 hrs : 1 hr on screen

D M I

Putting Quality First — License Fee Settlement

Future Media → Intentional bad appointment

Interview Note with Agek from BBC.

He give a wonderful story of conservatism, power resistance to change and preserving the status quo. This is illustrated through the story of BBC and its strategy for future media. On the outset it said that BBC want to embrace digitalisation but in fact, they just want to destroy it. By pulling the plug (25% cut instead of 20% in other department) by appointing (intentionally) the wrong person for the position of leading digital technologies for BBC. Instead of finding some one from digital culture and train them BBC values, they all chose people from the all age and try to train them in digital way of thinking. In fact, they never learn to see with digital eyes but only resort to the old way of solving problem: turn the world back to the age of scarcity and temporality. It's amazing to see how they deliberately destroying it.

Another issue is about the spectrum of stakeholders involved in the hub project: there are typically:



Hub advocate are those who enthusiastically agree the idea and willing to go forward, despite date say otherwise.

Neutral are those who do not yet form a final attitude toward the Hub and they are being there with watchful eyes

Hub enemies are those involved in the project, at first because they want to be there to be seen to be there, and secondly, because they want to stink the project in the back and kill it off.

There are always proportions of these involved. But more importantly, Azah remarked that we should try to look at the trend: whether more becoming advocate or more turn to enemies. At the first meetings, Azah recalled, most of the people are negative and they just want to be there to kill it off. Now, it seems that more people are seeing the benefits and want to support it. But you can never tell and they will not tell you about these things. What can you do. It's just your speculation. Azah recalled in the end that I should talk to Paul Brown (BAPLA) about how the Hub could make it more out of business and see his reaction. Paul didn't say anything to me though.

Plan for tomorrow

Friday, 19th June 2015

- 9 am - Skype with Neil Watson
- 13:30 pm - meet with Paul Jessop
The Royal Institution on Albemarle St.

→ Euston $\xrightarrow{\text{Victoria}}$ Green Park (14')

"The Royal Institution of Great Britain!"

- 5 pm - Clapham Junction - exit at St John's Hill.

Green Park $\xrightarrow{\text{Victoria}}$ Stockwell $\xrightarrow{\text{Northern Common}}$ Clapham

Appendix F – An
example of line-by-line
coding

An example of
line-by-line
coding

Interview with M.B.
B3 (13 Jan 2015)

- (0:20) Working in Publishing Industry since 1971
- (1:28) Set up his own consultant company in 1992
- (2:05) witness 2 technical upheavals in publishing
+ Back office digitalisation from
Metal - Film setting - Computerisation (80
- (4:00) + The importance of standards (90s)
- (5:22) Work with Adobe and .Pdf
→ standard for e-distribution of journal
- (6:40) Understand that technologies are critical
to the future of publishing.
- (7:25) Involved in a number of standard
-related project (e.g. DOI)
- (8:20) Realise that copyright stays at the heart
of the problem
- (9:05) Since 1995, involved with PLS
- (9:08) About INDECS project at the end of 1990s
European-funded project about how to model
rights & licensing in data. First time working

with Godfrey.

- (10:25) Godfrey were more technical savvy
Mark worked at cross level over business
and technologies.
- (10:43) First time, fully understood Charles Ansh's
statement over technology in late 1990s.
- (11:14) Godfrey & Mark joined Rights.com. Focusing
on user technologies & management of IP:
how copyright works in digital age?
- (12:05) Newspaper project proposed by Dominic
ACAP launched in 2007.
- (12:38) Automated Content Access Protocol (ACAP)
A better way to communicate rights and
licensing. Work closely with Dominic
- (13:17) Partly a technical project
Mostly a political project
- (13:31) The technical bits still exist and
was taken by IPTC, still there

- (13:51) ACAP ran out of steam, it was followed
by linked Content Coalition
- (14:15) LCC was started by Angela Mills Wade
of European Publishing Council
- (14:20) Mark designed LCC & worked on the issue
of governing
- (15:00) Met Hooper early on the start of Hub
- (15:40) Became unofficial advisor to Hooper
- (15:46) Sarah Faulder - CEO of PLS -
became involved closely with the setting
up and funding for the Hub.
- (17:25) Mark became chairman of PLS & CLA.
- (17:43) Dominic set up the Hub & asked
Mark to contribute in 2 roles:
 - + Provide inputs in technologies at
cross-over level between business
and governance level.
 - + Running Governance working group

- (18:35) Why this project important?
+ Copyright is critical to society
"Nobody cares about copyright, but their own"
The need to rebuild this civil society.
+ About future of creativity and how we harness technologies to support it.
- (21:30) Get the creative industries to win this fight
- (22:37) About LCC, project turned into standard organisation.
- (24:49) Vested interests prevent organisation to get together.
- (25:05) Hope that LCC will become a catalyst which bring things together across all media.
- (27:50) LCC & Hub are in the process of breaking down barriers between industries
- (28:20) Hub successfully brings stake holders together in a "patchy" way at the moment.
- (28:55) Photography is the most difficult part
- (29:20) Music has entrenched systems
→ they see no technical need for the Hub
- (29:51) Political need for copyright industries to work together, although there is no technical or commercial need. The political need is just as important.
- (30:05) RDI project took on LCC framework, piloting technologies in reality rather than in theory.
- (31:44) Difficult to engage with creators & users. There are two creators on Hub Board.
- (33:00) Focus on creators, rather than intermediaries
- (34:30) Small creators will engage with intermediaries anyway. Large right holders may engage to the market directly.
- (35:15) Users are much harder to identify. Alan represents education users
We are all users

- (36:36) A story about a young lawyer who makes stop-motion animation. He wants to include music in his work but in response to his request for license, no licensing agency cares to respond.
- (37:33) As an industry, if we leave those who want to comply to be unserved, we earn ourselves the blame & the threat of exception.
- (38:45) Getting licensing from these societies as an individual is impossible. We've got to stop that!
- (41:17) Linked Data has been largely academic interests and thus very obscure. Development in Digital Catapult will hopefully make big step to Linked Data.
- (43:03) Linked Data's problem of being tied to Open Data Ideology, mostly for political reasons from academia (e.g. Tim Berners-Lee)
- (46:15) The role of Governance w/group is to make recommendations. These have impacts on

final decisions are:

- (i) Hub Board
- (ii) Hub Management + Catapult Mgmt
- (iii) Catapult Board

- (47:15) By the end of quarter, the Governance group will have a general framework ready.
- (48:40) The change in master narrative behind Copyright is due to various constraints:
+ In EU, LCC has made a good impact. EU is very strong in publishing & music, representing large GDP for EU, even more for the UK. Why gives that up for the giant tech companies? They are all American and they don't pay taxes!
- (51:00)
- (52:21) + In the UK, Richard Hooper is the man who singlehandedly change the narrative. He's very well connected in the government circle.
- (53:00) Hargreaves sees DCE as governmental institute Hooper sees it as business-led initiatives
- (54:00) Creative Industries were put under threat

(55:15) Successful change in narrative was partly on social ground & partly from commercial ground.

(55:45) Giant tech companies as opposing voices

(56:30) Microsoft was helpful on ACAP project

(58:10) Change doesn't come as Big Bag. It's a process that works for everyone's advantages.

(58:40) Architecture got to be right from the beginning!

Interview with G. R B7 (16 Jan 2015)

(0:17) Hooper does many things, but 2 stand out

(0:33) (i) Understand what Hargreaves has not: IT & Data are at the heart of solution

(0:53) (ii) Hooper is a very enthusiastic person, both politically and personally.

(1:07) Creative industries were brought together by pressure.

(1:20) People unwillingly come to the table, realising they had to be there, or at least be seen to be there.

(1:40) Hooper turned this negative attitude into positive: industries see potential interests

(2:53) The second important element is the establishment of Digital Catapult at the right moment when the Hub is finding its ground. Catapult provides people with the right skills to move project forward.

Appendix G – An example of focused coding



Angela Mills
Wade

ACAP | LCC | RDI
+ influence + engineers
Personal contacts

§6 vs. Intangible | + engineers
VK copyright reform as mirror
LCC as the only game
Hub as former
EU IP reduction

Mark Bide

- Streaming platform acts as promotion, no more
- Problem of royalties is not scale, it's sustainability.
- Web casting rate set by government

Old - physical selling

Wave 1 - Pirate download

Wave 2 - iTunes

Wave 3 - Digital Streaming

⇒ Unustainable business model

Use story about roles of individuals to discard the previous emphasised roles of actors. Instead, we look at a mix of players interacting to create the ecosystem. Ecosystem engineers is thus understood in terms of a group of organisations.

So we have socio-technical scenario as something which binds the ecosystem engineers together. The difficult thing is how to tell the relationships between these key people in an elegant way. It's all about people, after all.

Appendix H – An example of How Ideas were Developed through a Conference Paper

This appendix illustrates the process through which the researcher developed further ideas for his thesis from the collected data and preliminary analysis through presentations, conference papers, and drafts of journal papers. The example shown here presents the thinking process behind a conference paper, which was submitted to the 4th Innovation in Information Infrastructure (III) workshop. In this paper, the researcher regarded the Copyright Hub initiative as an attempt to develop a new e-Infrastructure, whose properties are distinctively different from traditional computerised systems (i.e. large-scale, a wide array of (unexpected) users and uses, longevity). Consequently, the analytical vocabularies provided by Actor-Network Theory (e.g. heterogeneity, heterogeneous engineering, etc.) were inadequate to help study the Copyright Hub, and hence, the need for adopting the Biography of Artefacts (BoA) approach. It is shown here that the idea of engaging the Copyright Hub case study from the linked ecologies perspective was tested and began to take shape.

An Example of
Developing Ideas
for conferences

31st May 2015

paper for the Innovation in Information Infrastructures
& 4th III Workshop in Warwick.

- Focus on innovation in digital information infrastructures
- Encourage conceptualizations of processes of dynamic innovations in digital infrastructures.
- Encourage conceptualizations of information infrastructures as political, sociotechnical networks that require collective action and governance.

Over-all { Special theme: Digital Information Infrastructures (DII)
Normal theme: normal Information Infrastructures

Sub- { Design, Development & Implementation of DII ✓

Governance & Control of DII (Future)

Standards ✓

Methodological challenges in studying information infra ✓

- Short paper: 3-4 pages

- Deadline: 30 June

* Framework

Design, Dev, Implementation of the Copyright Hub

\ Focus /

Linked Data Model (Standards)

- - - - -
- Development of new approach to study DII
- + Challenges in studying on-going DII
- + Advantages in doing so
- + The difference in such approach

through the discussion of 2 articles | Background theories

- Heterogeneous engineering
- A network analysis approach

Found Robin & Neil's paper on theoretical & methodological problems of studying e-Infrastructures

This could be an interesting missing link that I can fulfill.

e-Infrastructures = cyberinfrastructure = digital infrastructures

Biography of Artefacts (BoA) - a life-long research journey. This could be what I'll do in the next 20 years: looking into digital infrastructures, using BoA perspective.

Waves of paper

1st Impact study

- From practitioners and trade journals to potential adopters
- Main narrative:
 - + before and after
 - + narrative of improvement
 - + what is this tech & how can it benefit business
- Critiques:
 - + uncritically reproduce supplier's claim
- In opening stage of wide spread adoption of tech

2nd Adoption Study

- From experienced journalists and commentators to general internet audience with a more sceptical voice.

- Main narrative
 - + validate technology to organisational adopters
- Critiques:
 - + lack of analytical distance or critical concern
 - + engineering / managerialist view of tech as instrumentally transforming work.
- In early time of tech adoption.

3rd Implementation Studies

- Medium-term start shortly after the introduction of a new technology.
- Temporal framing:
 - + Upstream → pre project (decision to adopt was taken for granted)
 - + Downstream → limited duration (a few months to a couple of years)
- Translation terrain (Williams et al. 2005)
 - Arrow (1962) → "learning by doing"
 - Fleck (1988) → "innovation"
 - Appropriation (MacLay & Gillespie 1992)
 - Domestication (Sorensen 1996)
 - Social learning (Williams 2005)

- Biography of Artefacts (BoA) perspective

- + move beyond short-term, single site
- + address the evolution of workplace through multiple cycles of design and implementation
- longer term history, broader context
- think of complex organisational technologies as a 'community'.

- Strategic ethnography

- + choice of research setting and scope of studies is informed by:
 - provisional theoretical/empirical understanding of the locales.
- + we encourage:
 - multi-sited ethnography
 - complex, robust understanding of complex objects
 - engage with multiple locales and moments of innovation

⇒ No small feat. An effective account is at least a team project and seen as the outcome of research programme amongst a community of enquiry.

e-I share some common features with computerised systems, but also have their own distinct characteristics

- (1) large-scale
 - Number of users
 - Range of users / uses
 - (2) longevity
- } → requires extended period of investment for dev & enhancement

"Efforts to grow infrastructures are thus deeply paradoxical ... e-Is design strives to cater for all purposes including those not yet envisaged - but given the unpredictability of these activities and goals, these anticipatory effort necessarily failed. today's imagined, future-proof systems rapidly become tomorrow's legacy system -" p.538

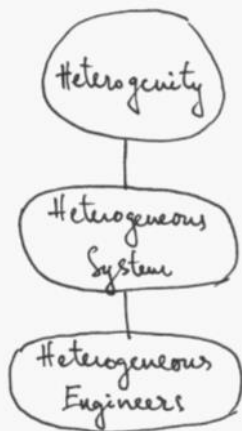
- Is there a way to capture both the short-term resistance & long-term alignment process?

⇒ Analysis of tensions and contradictions

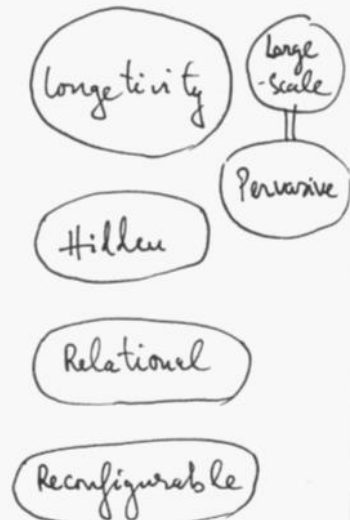
⇒ draw attentions to difficult trade-off that must be made

⇒ BoA is drawn from social learning framework

Similar

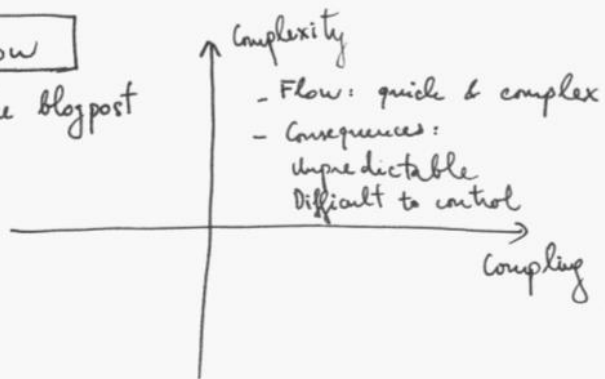


Different



Perrow

for the blogpost



① We need vocabularies to thinking & describing heterogen

② We need non-disciplinary way of thinking about those systems / flows

③ We need a new approach to address the e-I

My paper will be about a development of a new approach to studying e-Infrastructures.

It's very helpful to think in terms of heterogeneity and heterogeneous engineer, but this is not enough. This provides the vocabulary needed but not the whole approach.

→ Say what make e-I different from previous techs
Villicams proposal for BoA makes sense but it does not provide a way to approach it.
Propose a new approach through the case of Copyright Hub.

Think of the Copyright Hub as a organisational e-Infrastructures for inter-organisational exchange.

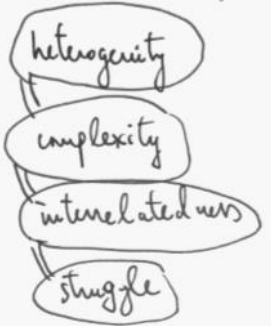
Ideas Different theories
John Law ①

Approach to study technological development & stabilisation

heterogeneity of elements
complexity & contingencies of their interaction

emphasis on conflict

network elements are difficult to tame and hold in place. but does not explain why



Robin Williams

Approach that pays both attention to stability & dynamism

Dynamism

longevity

Relational

Reconfigurable

Theorising infrastructures

Developing methodological approach to study

John Law ②

Concern with the ways roles are defined & fulfilled

Socio technical scenarios

global networks and their characteristics

negotiation space

local network

privacy

Ecologies

John Law ③

Detailed about his proposed approach with global / local / and obligatory point of passage.

What can borrow

growing e-Is

gateway

ecologies

configurational politics

integrate short term tactics with long term goal "the long now"

- ①[†] Digital technologies seen as enabling factor.
"The answer to the machine is in the machine"
- ②^G (limit window time to do this before market force.
Heroic quest to turn UK into world's leading
- ③^a Gov should not itself create this (p.32)
- ④^{*} Def: network of interoperable databases
- ⑤[†] Participation should be voluntary but there are costs of exclusion.
- ⑥^{*} Propose to appoint highly respected figure for the pos by end of 2012.
- ⑦^{*} Straight forward funding through user charge
- ⑧^G Once established should need light regulatory supervision.
- ⑨ DCE could give UK £2.2 billion by 2020

Ecosystem as backwater for e-infrastructure dev
"before it emerges into other ecologies."

The strategies for an ecosystem engineer to maintain an ecosystem include: (1) making alliance with adjacent ecologies where resources can be borrowed, and (2) internal construction of its own ecosystem

Hargreaves Review → Government

Hooper Report → Industries

1st report - How Hooper bait the creative industry

Struggle with defining exactly what I mean when I say ecosystem!

↳ Root of Ecosystem Def.
in Ecology

test et
New loosely defined
meaning of ecosystem
here

Law & Callon

Heterogeneity

Multiple-path way

conflicts

Capture

short-term incremental change
and long-term transformation

Critiques

vocabulary not rigorous

global / local
division

→ Linked Ecologies
"Hinges"

Pollock & Williams

dynamism & stability

contingencies & reconfig
open new path ways

conflicts

Ecology

① entire assemblages of
organisms (biotic
community)

② living in a space

③ Environment

Functioning as a loose
unit

Central idea:
organisms constantly
engage in relationships
with other elements
constituting their
environment

E-Infrastructures

the entire assemblage
of a heterogeneous
community consisting
of human, organisations
Socio-technical
infrastructures and
artefacts

What is social technical
scenarios?

What are hinges?