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The Digital Public Domain: Relevance and Regulation

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Abstract

After clarifying the notion and different areas of the (digital) „public domain“ the paper engages in discussing literature on its relevance for society in general and economic innovation in particular. The effectiveness of the utilization of these abstract potentials however depends on the respective public domain regulation. In this context, the paper distinguishes different regulatory modes and arenas in both copyright and patent law, thereby focusing private regulatory initiatives such as Creative Commons or Biological Open Source (BiOS). In the last section, the paper presents open research questions and makes some preliminary suggestions for potential research strategies.

Keywords

Public Domain, Commons, Regulation, Innovation, Patents, Copyright

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1. Introduction

In her 1990 article "The Public Domain", Jessica Litman stated that "[a]lthough the public domain is implicit in all commentary on intellectual property, it rarely takes center stage." Over the two decades that followed, however, both practitioners and researchers have shown increased interest in questions related to the public domain, i.e. those (parts of) immaterial goods that are not protected by intellectual property rights. The main reasons for this interest are technological changes, which offer the potential of improved or completely new forms of utilizing public domain rights and works, and – often related – regulatory changes, which partially offset these potentials (Frow 1994; Bach 2004). Technologically, these changes are predominantly connected to digitization and the Internet, while regulatory changes have extended and created new intellectual property rights, not least to account for these technological developments (see, for example, Litman 2001; Samuelson 2003; Tian 2009).

In praxis, non-profit initiatives such as the European library network Europeana (Purday 2010) and corporate users of public domain material (e.g. Google; see Samuelson 2010) alike struggle with finding their way through this thicket of new technology and regulatory uncertainty. In research, more fundamental questions regarding appropriate governance of the public domain as well as its importance for the economy and the society at large are re-investigated in this context.

Dedicated to giving a brief overview about the state of the current scholarly debate on relevance and regulation of the digital public domain, this paper is structured as follows: after having tried to conceptually clarify the notion of public domain and related concepts such as "commons" in section two, the next two sections discuss the relevance of the public domain for society in general and the economic sphere in particular. Section five then deals with the regulatory foundations of the public domain and the question, whether a public domain can be (re-)constructed via private regulatory means, followed by some concluding remarks and an outlook on future research perspectives in section six.

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2. Clarification: What is (in) the "Public Domain"?

When trying to conceptually clarify the notion of "public domain", the majority of sources to draw upon are situated in the realm of U.S. legal discourse. Searching for "public domain" and "intellectual property" in several scientific databases delivers mostly articles that can be categorized as belonging to the fields of U.S. law or law & economics. The reason for the U.S. focus might be the fact that many European countries including Germany neither legally nor notionally have an exact equivalent to the concept of the public domain.[1] Thus, in the majority of scholarly works discussed in this paper, the public domain is conceptualized as being both created and bordered by intellectual property regulation. This is in stark contrast to the more metaphorical notion of a digital public domain, which recently emerged in the context the EU funded COMMUNIA Thematic Network on the Public Domain[2] and defines the public domain in a "manifesto"[3] positively as "a protective mechanism" for the wealth of information.

In scholarly discourse, however, two approaches for defining the public domain prevail that both closely tie the phenomenon to intellectual property rights by some form of "negative definition". For one, a narrow view put forward for example by Pamela Samuelson (2003: 149; see also Landes and Posner 2003), defines the public domain "as a sphere in which contents are free from intellectual property rights." This means that for each copyrightable work or, in the field of patent law, for each invention it can be decided whether it is (not) in the public domain, which effectively represents the totality of such public domain works and knowledge.

For another, a relatively broad perspective sees the public domain as "the range of uses of information that any person is privileged to make absent individualized facts that make a particular use by a particular person unprivileged." (Benkler 1999: 362; for similar definitions see Boyle 2008; Chander and Sunder 2004; Hayden 2010; Horowitz 2009; Litman 1990). Such a

[1] The German counterpart to the public domain ("Gemeinfreiheit"), for example, does neither exhibit the spatial metaphor in terms of wording nor has it the same legal meaning, which is partly due to the inclusion of moral rights in the European droit d'auteur copyright system.
[2] See http://www.communia-project.eu/about [accessed November 13, 2011]
[3] See http://www.publicdomainmanifesto.org [accessed November 15, 2011]

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"crumbs theory" definition (Horowitz 2009)[4] is broader insofar as it comprises not only works free from intellectual property rights but also certain uses of otherwise protected works. In the U.S. legal system examples for such privileged forms of use are mostly all those covered by the fair use doctrine; in Europe this would be uses allowed by limitations and exceptions to copyright.

When, in what follows, I am applying the broader definition of public domain, I am not only doing so because it is consistent with "[t]he recent trend" (Horowitz 2009: 1490). Rather it is because even scholars favouring a more narrow definition such as Samuelson (2003: 149) acknowledge that there "are several categories of content that are so widely usable that, for practical purposes, they seem to be part of the public domain" and consequently also discuss these categories under the heading of public domain.

One such phenomenon or metaphor often associated with the public domain is the "commons". Partly, the terms "commons" and "public domain" are used interchangeably (see, for example, Bollier 2004; Boyle 2008; Litman 1990; Salzberger 2006). Others such as Chander and Sunder (2004: 1338) in their piece "The Romance of the Public Domain" operationalize the concept of "public domain" by using different qualifications of commons:

"While the 'public domain' often refers to resources to which there are rights of access shared among *all* people and 'commons' often refers to resources shared among a defined group, it seems preferable to adopt a more precise terminology to make this distinction. Universally-available resources can be labelled 'global commons,' while 'group-held resources' can be described as 'limited commons property'."

An even more fine-grained discussion of the notional inconsistencies in current usage of the terms "commons" and "public domain" is provided by Boyle (2003: 29-32). The attempt to systematize different areas and types of public domain phenomena presented in Table 1 is in turn inspired by, but not identical to, Samuelson's (2003) attempt of "Mapping the Digital Public Domain".

[4] According to Horowitz (2009: 1491, with reference to Chander and Sunder (2004)), this metaphor "refers to the crumbs left over after the intellectual property system has claimed all of the proprietary uses of information goods."

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Public Domain Phenomenon	Regulatory Framework	Example(s)
Core public domain works and inventions	Copyright, Patent and trademark law	- Ideas, concepts, theories - Rights expired - Information not qualifying
Privileged uses	Limitations and exceptions to copyright/Fair Use	- Parody - Quotation
Compulsory licenses and liability rules*	Patent and copyright law	- pharmaceutical patents in case of a national state of emergency
Open content licensing	Private copyright or patent licensing standards	- Creative Commons - GNU General Public License
Content that is widely usable without restriction	Terms of service, customary practice	- freely available website contents

* since compulsory licenses and liability rules usually require financial compensiation, it is contested whether they should be subsumed under the heading of public domain

Table 1: Overview of different public domain phenomena

Core public domain works and inventions can basically be sorted into two categories. The first category comprises works and inventions not covered by intellectual property rights in the first place. In the field of copyright these are works not passing the relatively low originality threshold (Craig 2005; Litman 1990) or – at least in the U.S. – mere (collections of) facts.[5] In the field of patent law, the threshold for protection is much higher in that inventions have to be registered and thereby fulfil the criteria of utility, novelty, and nonobviousness – all compared to prior art (Merges 2004; Horowitz 2009). Second, works and inventions become part of the core public domain as soon as the respective copyright or patent terms expire. For both patent and copyright law, the WTO's Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPs Agreement) introduced minimum protection terms, which amount to 20 years for patents and 50 years after the death of the author for copyrightable works.[6]

The second major part of the public domain are privileged uses of otherwise protected works. Privileged uses allow certain types of usage without consent or remuneration for the rights holder. Examples for widely granted privileged uses are educational use, copying for private use, and use in quotations. Often these privileged uses are designed in form of a legal defense, not as an actionable right. In international law, the boundaries of potential privileged uses are

[5] In Europe, collections of facts in form of computer database are protected by Directive No. 96/9/EC of 11 March 1996 on the legal protection of databases (see also section 4 below). For a critical assessment of this directive in comparison to the legal situation in the U.S. see Boyle (2008).

[6] Individual countries may however grant even longer protection terms, as has happened, for example, in the European Union with 70 years after the death of the author. Also for works of corporate ownership these terms might differ. In the U.S., for example, works of corporate ownership are protected for 120 years after creation or 95 years after publication, whichever endpoint is earlier.

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drawn in form of the so-called "Three-Step Test", which is embodied in the Berne Convention for the Protection of Literary and Artistic Works, the TRIPs agreement and the WIPO Copyright treaty. The Three-Step Test confines limitations and exceptions to copyright to 'certain special cases' which do not conflict with a 'normal exploitation of the work' and do not 'unreasonably prejudice the legitimate interests of the author' (Article 13 of TRIPs).[7] While in the EU the Three-Step Test has been implemented in form of an exhaustive list of limitations and exceptions granting specific privileged uses (Senftleben 2004), the U.S. mainly relies on the more general Fair Use doctrine (e.g. Fisher III 1988) with some minor additional and more specific exceptions (see Samuelson 2003).

A third area of the public domain are compulsory licenses and liability rules, which enable everyone to use certain works or inventions, subject to appropriate compensation paid ex post (Benkler 1990; Calabresi and Melamed 1972; Goldstein 1970; Chander and Sunder 2004). While technically also a form of privileged use since no consent of the rights holder is necessary, the licensing fee makes it questionable whether it should be subsumed under the heading of public domain, which is often assumed to require "free access" (Samuelson 2003). Salzberger (2006: 44), however, argues that using liability rules "means enhancement of the public domain, because those who want to use the entitlements protected by them cannot be prohibited; they just have to pay for the use." Also Drahos and Braithwaite (2002) seem to take a similar perspective when they point to the importance of compulsory licenses in patent law for developing countries, particularly in the field of pharmaceuticals.

The fourth and most recent extension of the public domain is provided by private regulatory means in form of standardized open content licensing. In essence, open content licenses "use property rights to preserve and maintain a commons in an existing intellectual resource" (Samuelson 2003: 168). Prominent examples are the GNU General Public License in the field of open source software (Merges 2004; Benkler 2006; Dobusch 2008) and Creative Commons for all kinds of copyrightable works (Dusollier 2006; Elkin-Koren

[7] The interpretation of these clauses is, however, contested as evidenced by the "Declaration of the Three-Step Test" provided by the Max Planck Institute for Intellectual Property and Competition Law and signed by a significant number copyright scholars (cf. http://www.ip.mpg.de/ww/en/pub/news/declaration_on_the_three_step_/declaration.cfm [accessed August 8, 2011].

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2005, 2006; Dobusch and Quack 2010a); in the field of patent law, open licensing models inspired by these examples are also on the rise (see Cukier 2003; Feldman 2004; Dusollier 2007; Hope 2008). While some view open content licensing "as market responses to the inefficient expansion of property rights" (Salzberger 2006: 35; see also Merges 2004), others such as Benkler (2006) describe the resulting commons as something beyond both markets and the state.

The fifth and last part in this survey of the public domain are works that are widely usable without restriction but do nevertheless not fall in either of the categories presented so far. Samuelson (2003: 149) mentions as the most important example for such public domain by customary practice "content that is technically protected by copyright law but is widely available to the public, as when it is posted on publicly accessible web sites available to all comers without fee or apparent restrictions on use." One such example for using copyrighted content as if it was in the public domain is the common practice of embedding videos hosted on online video platforms (e.g. YouTube or Vimeo) into personal web pages (e.g. blogs), which is even encouraged with code-templates provided by these platforms.[8] Compared to the four other areas of the public domain described above, this area is most precarious since the status as de-facto public domain can be revoked any time by the rights holders.

All these five analytically distinct public domain phenomena might however be difficult die identify and differentiate empirically – not only for researchers but also for practitioners. An empirical assessment of the relevance of the public domain must therefore also take into account actual practices of contribution to as well as usage and appropriation of these different public domain phenomena.

Theretically, two major lines of argument dominate the debate on relevance that mirror the justification for intellectual property rights in the first place. From a society-oriented perspective mostly grounded in natural-law considerations, the public domain is considered to be a fundamental precondition for authorship, freedom of speech and, thus, democratic dialogue;

[8] In the case of YouTube, the embedding practice is legalized in its Terms of Service, which state that by uploading content „[y]ou grant each user of the Service a non-exclusive license to access your Content through the Service, and to use, reproduce, distribute, display and perform such Content as permitted through the functionality of the Service and under these Terms of Service" (see http://www.youtube.com/static?gl=americas&template=terms).

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the following section of this chapter will briefly sketch this rationale, thereby focusing copyright. From a mostly utilitarian standpoint, which will be discussed in the subsequent section of this chapter, a strong public domain is considered to be necessary for enabling both competition and innovation in the economic realm. In this context both copyright and patent law play an equally important role.

3. Societal Relevance of the Public Domain

Any distinction between societal and economic relevance of the public domain is only analytical in nature. The importance of the public domain for freedom of speech, for example, is affected by the distribution of wealth and income, concentration of information markets and the state of technological developments. Nevertheless, the following discussion of the societal relevance of the public domain seeks to investigate why the public domain is important even when economic aspects are decentred. In a first step, the inherent relevance of the public domain for our conception of copyright and authorship will be discussed, thereby also addressing its natural rights foundations. This is followed by an assessment of the role the public domain plays for free speech and democratic dialogue.

3.1 Inherent relevance: public domain as a precondition for copyright and authorship

Given the negative or "crumbs theory" definition of the public domain provided above, it might sound odd to claim that the public domain is nevertheless not just relevant but even constitutive not only for copyright law (Rose 2003)[9]but even its underlying conception of authorship. But it is exactly such a constitutive role that Jessica Litman attributes to the public domain in her seminal paper on the issue (1990: 36-37):

> *"All works of authorship, even the most creative, include some elements adapted from raw material that the author first encountered in someone else's works. [...] We could not draw the boundaries of an*

[9] According to Rose (2003: 76), this is true even historically: "[c]opyright and the public domain were born together."

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> *author's property in the contents of her work until we had dissected her authorship process to pare the preexisting elements from her astigmatic recasting of them. I argued earlier that such a dissection would be impossible in practical terms. If it were possible, I am confident that authors would not welcome it. Absent such dissection, however, we risk granting broad and overlapping property rights in the subject matter of copyright. [...] To avoid choosing between the two, we rely on the public domain. Because we have a public domain, we can permit authors to avoid the harsh light of a genuine search for provenance, and thus maintain the illusion that their works are indeed their own creations."*

Consequently, Litman (1990: 3) argues that "[t]he public domain should be understood not as the realm of material that is undeserving of protection, but as a device that permits the rest of the system to work by leaving the raw material of authorship available for authors to use." In other words: even if one accepts the romantic notion of the author genius inherent in copyright (critically however: Fenzel 2007), authorship as conceptualized in current copyright law would be impossible without the public domain.

In addition, Litman also criticizes the simplified equation of authorship with authors often to be found in utilitarian assessments of copyright and the public domain. Instead, she claims that "[n]urturing authorship is not necessarily the same thing as nurturing authors," advocating that "we must guard against protecting authors at the expense of the enterprise of authorship" (Litman 1990: 4). Others follow a similar line of reasoning as Litman, however not discussing the public domain at large but rather selective areas such as fair use.

In a way similar fundamental to the perspective of Litman, Breaky (2001) investigates the natural rights foundations of the public domain. He states

> *"that a robust public domain can be secured by considerations that apply to the nature of natural rights as such. Such taproot commitments include consistency in application, non-interference, fairness, non-worsening, universalisability, prior consent, self-governance, and the establishment of zones of autonomy." (Breaky 2010: 201, emphasis in original)*

These potential natural law justifications for the public domain are, however, widespread neither in the copyright nor in the droit d'auteur traditions. While

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in the former they are not helpful in predominantly utilitarian debates about copyright, in the latter, powerful defendants of the public domain have only very recently emerged.[10] Author's rights, on the contrary, always had strong and prominent advocates, starting with Fichte (1793), Kant (1795), and Hugo (1878).

All these arguments about the inherent value or even necessity of the public domain are, however, subject to gradual and often unnoticed changes over time. Actually, we can observe a *shifting baseline effect* (Sáenz-Arroyo et al. 2005; Ortmann 2010)[11] with regard to what is considered to be the "natural level" of intellectual property protection and the "natural size" of the public domain respectively. Lange's (1981) classic article "Recognizing the Public Domain" might serve as an illustrative example. More than a decade before intellectual property laws were extended in an unprecedented manner in the course of the TRIPS agreement, Lange had already described the situation as follows:

> *"I will argue that the growth of intellectual property in recent years has been uncontrolled to the point of recklessness." (p. 147)*
>
> *"The [copyright] law seemed suddenly to metastasize" (p. 153)*
>
> *"The field of intellectual property can begin to resemble a game of conceptual Pac Man in which everything in sight is being gobbled up" (p. 156)*

Today, a large proportion of researchers, practitioners and regulators cannot even envision how the much less restrictive intellectual property regimes of the past have worked. In the field of copyright in particular, the perception of what is a "natural" level of protection has changed.

Finally, the necessity for a public domain is acknowledged in principle also beyond the sphere of legal reasoning. Greco and Floridi (2004: 73, 80), for example, discuss the issue of the digital public domain as an "ethical and social dilemma" and arrive at the conclusion that "a specific ethics for the Infosphere" is needed. Another example that not explicitly focuses on the public domain is

[10] See, for example, the "Declaration on a Balanced Interpretation of the 'Three-Step Test' in Copyright Law", propesed by Geiger et al. (2010) and signed by several renowned copyright scholars in Europe.

[11] Shifting baselines are described by Sáenz-Arroyo (2005: 1957) as "inter-generational changes in perception of the state of the environment. As one generation replaces another, people's perceptions of what is natural change even to the extent that they no longer believe historical anecdotes of past abundance or size of species." Ortmann (2010) argues that this concept can be applied to a wider range of social phenomena.

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Boon's (2010) "Praise of Copying", which makes the case for a strong public domain by investigating the historical, cultural and philosophical underpinnings of copying as a practice.

3.2 Relevance for free speech and democratic dialogue

While being inherently relevant, i.e. constitutive, for copyright in the sense of Litman (1990) described above, the classic function ascribed to the public domain is that of a safeguard for the basic human right of free speech (Denicola 1979; Goldstein 1970; Nimmer 1970). Nimmer (1970), for example, argued that the distinction between ideas and expression[12] – the former being part of the public domain, the latter being subject to copyright protection – is necessary and sufficient to preserve the right to free speech in most cases.

In his more recent assessment of the matter, Benkler (1999) builds upon those works in describing "the public domain as a constitutionally necessary element of our information law, rather than a vestige of an imperfect, but fast-improving information market." Property rules may lead to concentrated information markets (see also Elkin-Koren 1996) and give individuals a veto power with the consequence "that someone cannot speak his mind, and cannot do so because someone else tells him that he must not" (Benkler 1999: 23). Benkler (1999: 40 ff.) argues that enclosure of the public domain "affects different organizations engaged in information production differently" in that it raises the costs of information inputs.[13] As a consequence, this will "lead organizations that do not vertically integrate new production with management of owned information inventories to become, or merge with, vertically integrated organizations." Such a concentration process would then endanger the public domain as being necessary for "credible public debate" and thus instrumental for assuring "robust democratic discourse" (Benkler 1999: 23).

In addition to these general arguments, scholars such as Elkin-Koren (1995; 1996) specifically emphasize the importance of the *digital* public domain for social dialogue and democracy. Arguing that "[c]opyright law has an inherent

[12] Haque (2008) lists this distinction, together with other limitations of intellectual property rights, as "monopoly-defeating mechanisms".
[13] In his paper, Benkler (1999) distinguishes between several generic actor types, ranging from information inventory owners (e.g. Disney and Time Warner) over sellers of information outputs (e.g. authors) to nonmarket actors (e.g. universities).

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centralizing effect", Elkin-Koren (1996: 268) warns that "employing copyright principles in cyberspace, without any adaptation to the change of circumstances, may increase the social cost involved." The main argument put forward is that another classic distinction in the realm of copyright, namely that between reproduction and use, gets inextricably blurred on the Internet. While reading a book or listening to music originally did not require making a copy of that work, the situation is completely different when dealing with digital works such as e-books or MP3 music. Loading a book in the e-book-reader or storing a piece of music in the cloud always requires reproducing it. As a result, public domain rights are becoming even more important in the digital realm to preserve basic forms of using and interacting with content.

Related to the blurring distinction of use and reproduction is the question, "to what extent copyright owners of digitized works should be able to control the preparation of enhancements and modifications of their works" (Elkin-Koren 1996: 278). Not only have creating and distributing manipulated works become easier, cheaper and thus much more widespread in the course of digitization (Lessig 2004), but also have new and so-called transformative usage practices emerged (see Elkin-Koren 2009; Lessig 2008), which in turn are only legally possible due to public domain privileges.[14]

Taken together, Elkin-Koren (1996) considers an extended public domain as necessary for actually realizing the potential of digital technologies for enhancing wide participation of individuals in social dialogue (see also Benkler 2003). And as will be shown in the subsequent sections, several of the points made Elkin-Koren, Benkler and others with respect to the societal relevance of the public domain are important for discussing its economic relevance, as well.

4. Economic Relevance of the Public Domain

When assessing the economic relevance of the public domain, economists struggle with the fact that their most basic theoretical categories – market and property – cannot be applied in the usual, straight-forward manner:

[14] Actually, there is an ongoing debate to what extent such transformative usage practices are covered by copyright limitations such as fair use (see, Yar 2005, Dobusch and Quack 2011).

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> *"[E]conomists generally favour free markets over government regulation, but in the context of intellectual property it is not clear whether creating intellectual property rights by law is a manifestation of the free market or a case of government intervention." (Salzberger 2006: 28)*[15]

Taking this qualification into account, it is remarkable that still most attempts of investigating the economic impact of intellectual property rights in general and the public domain in particular turn to the repertoire of neoclassical economic theory, where "[c]ollective action problems, interest groups and rent seeking are absent from the analysis" (Salzberger 2006: 35). In assessing the economic relevance of the public domain it is therefore insightful to also look at works from economic sociology and heterodox economic traditions, which stress the social embeddedness of markets.

4.1 Relevance for enabling competition

It was already Schumpeter (1912/2006), in spite of being mostly credited for his appraisal of recombinant innovation, who recognized the importance of "mere" copying or imitating for economic development and growth. According to Schumpeter, the successfully innovative entrepreneur provides the blueprint for followers, whose competition secures that the entrepreneur either strives for further innovation or is at least stripped of any supernormal monopoly profits.[16]

Since intellectual property rights, in effect, give the rights holder a monopoly right to exploit an invention or an immaterial work, there is some "apparent tension between antitrust, or competition, policy and [intellectual property rights}" (Greenhalgh and Rogers 2010: 123; see also Stadler 2007). In this

[15] This points to the fundamental limitations of narrow economic perspectives that take free markets simply as the given primer for any investigation, most prominently put forward by Oliver Williamson stating that "in the beginning there were markets" (1975: 20). Leaving aside the question, whether this market primacy assumption is generally wrong (see Polanyi 1944), the extant literature is unanimous in acknowledging the socially constructed nature of any market for immaterial goods.

[16] In the German original, the respective passage reads as follows: "Aber er [der Unternehmer, Anm. L.D.] hat auch für andre gesiegt, für andre die Bahn gebrochen und eine Vorlage geschaffen, die sie kopieren können. Sie können und werden ihm folgen, zunächst einzelne, dann ganze Haufen. Wieder tritt jener Reorganisationsprozeß ein, dessen Resultat die Vernichtung des Kostenüberschusses sein muß, wenn die neue Betriebsform dem statischen Kreislauf eingegliedert ist. Aber vorher wurden eben Gewinne gemacht." (Schumpeter 1912/2006: 285)

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context, the public domain is considered indispensible for preserving competition. Again, the distinction between ideas and expressions mentioned above (Nimmer 1970; Benkler 1999) is critical: only because mere ideas cannot be propertized and stay in the public domain, competition between different forms of expressing (the same) idea is possible. Also other boundaries of intellectual property rights such as restricted protection terms or fair use exemptions contribute to preserving competition in the respective markets (see Hargreaves 2011; for the example of news: Balganesh 2011). (Re-)Drawing the boundaries of the public domain is therefore always consequential for the degree and type of competition in markets for immaterial goods.

Economic sociologists Drahos and Braithwaite (2002), for example, support claims by legal scholars such as Wu (2004; 2010) or Benkler (1999) that strong intellectual property rights might restrict competition by allowing patent- and copyright-based cartelization:

> *"Patent-sharing agreements did exactly the same things that good old-fashioned cartel agreements did. They divided up territories, set prices and controlled production." (Drahos and Braithwaite 2002: 53).*

Coming from a perspective informed by the heterodox school of Austrian Economics, Boldrin and Levine (2008; 2009) arrive at similar conclusions, describing intellectual property rights as competition-strangling monopolies. While rights holders benefit from the exclusion of competition, they argue, intellectual property rights to not lead to greater progress of science and the useful arts (see also Gilbert 2011). In their policy suggestions, however, Boldrin and Levine substantially depart from the intellectual property reform agenda put forward by Drahos and Braithwaite in proposing to abolish copyright and patent law entirely (critically: McManis 2009).[17] The more modest policy suggestion of Drahos and Braithwaite (2002: 206) recommends to install a "competition regulator [...] as a check and balance on the decisions of intellectual property regulators and NGOs, the whistle blowers who alert competition regulators to matters of concern."

[17] According to Boldrin and Levine (2008: 6) abolishing copyright and patent law is possible since "there are many other ways in which innovators are rewarded, even substantially, and most of them are better for society than the monopoly power that patents and copyright currently bestow."

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Empirically, the competition enabling effects of the public domain have recently been investigated in the realm of biotechnology and biomedical research, where corporations and non-profit research institutions donate an increasing amount of patentable knowledge directly to the public domain (e.g. Barnes et al. 2009; Chang and Zhu 2010; Eisenberg 1996; critically: Adelman 2005). Barnes et al. (2009: 703) thereby consider the public domain to be a "pre-competitive landscape" of freely available data that provides the basis for competition in drug development (see also Merges' (2004) notion of property-preempting investments discussed below).

In the field of copyright, addressing an argument related but not identical to the claim that the public domain enables competition, Heald (2007; 2008) compares the exploitation of public domain and protected works in the realm of fiction best sellers and musical works respectively. For one, Heald (2007) shows that famous public domain novels were as available as their copyrighted counterparts. For another, he cannot find evidence for overplaying musical compositions that are in the public domain (Heald 2008). These findings convincingly disperse concerns (e.g. Landes and Posner 2003; Liebowitz and Margolis 2005) that public domain works may be under- or over-exploited. Or, in Heald's (2008: 17) own words: "Given the lack of empirical support, the persistence of claims that value is dissipated when works fall into the public domain seems curious."

4.2 Relevance for economic innovation processes

Even more common than acknowledging the importance of the public domain for economic competition, however, is to emphasize its role in economic innovation processes (Boyle 2008; Lessig 2001; Salzberger 2006; critically: Hayden 2010).[18] Starting point for this line of reasoning is regularly (e.g. Benkler 1999; Horowitz 2009; Kubiszewski et al. 2010; Lessig 2001) Arrow's (1962: 618) classic observation that "[i]nformation is not only the product of inventive activity, it is also an input." The public domain is thus considered to

[18] Hayden (2010: 87), however, generally rebuts the claim that the public domain is important for innovative processes but rather worries about potentially adverse effects from "making the idea of improvement – innovation, creativity – the price of admission not just to intellectual property claims, but to participation in newly 'democratic' public and common spaces of knowledge production."

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constitute zero-priced and non-rival raw-material for inventive activities – especially for the Schumpeterian (1934) notion of recombinant innovation and growth (Weitzmann 1998). According to Gilbert (2011: 423), this is important, since

> *"[m]uch of innovation and creative expression is cumulative – they build on the innovations and creations made by others. Even if patents and copyrights stimulate some innovation, the cost to subsequent innovators and creators may exceed these benefits."*

Again, the example of biotechnology described above is very instructive with regard to the cumulative nature of innovation processes. Asking whether "patents [can] deter innovation?", Heller and Eisenberg (1998) describe how intellectual property rights in biomedical research might create an "anticommons" of reciprocally blocking patents, which hinders innovative dynamics:

> *"Each upstream patent allows its owner to set up another tollbooth on the road to product development, adding to the cost and slowing the pace of downstream biomedical innovation"*

Consequently, authors such as Hess and Ostrom (2006) see the need for creating a "microbiological commons" that provides a broad range of actors with the information inputs necessary for (more high-level) innovation (see also Cook-Deegan 2007; Outterson 2005; Roy et al. 2010; critical: Caulfield et al. 2006). Even Adelman (2005), who is more sceptical towards the overall benefits of a commons-approach in biomedical research, acknowledges that "patents on common-method tools pose potentially significant risks to biomedical innovation". Similar doubts with regard to the innovation-enhancing role of patents have also been reported for the case of software patents (see, for example, Bessen and Hunt 2007).

In the realm of copyright, Lessig (2001: 12) argued more broadly that "[f]ree resources have always been central to innovation, creativity and democracy." And since"[t]he digital world is closer to ideas than things" (Lessig 2001: 116), he advocates for extending the public domain via shortening copyright protection terms and broadening copyright exceptions as digitization is becoming universal. Business scholars Gosh and Soete (2006: 931) second

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Lessig in describing access as “the most important enabling feature” for various new examples of collaborative innovation. The German historian Eckhard Höffner (2010) shows that even historically the public domain and not strong enforcement of copyrights were responsible for Germany’s industrial rise in the 19th century. He finds that, compared to England, where the Statute of Anne had introduced the first modern copyright in 1710, 19th century Germany produced more books, written by more authors, distributed to more readers. In 1843, because of weak copyright enforcement due to Germany’s small-statism, over 14.000 different titles – a majority being non-fiction books – were printed in Germany compared to only about 1.000 titles printed in England. According to Höffner, this much broader availability of specialist and technical literature was then responsible for Germany’s industrial catching-up in the 19th century.

Similarly, economists Boldrin and Levine (2008; 2009: 1000) present data evidencing that “the number of composers per million [...] declined considerably faster in the UK after the introduction of copyright than in Germany of Austria.” Consequently, they argue that “strengthening of intellectual monopoly increases patenting and copyright claims, but patents and copyright do not increase actual innovation” (Boldrin and Levine 2009: 995). These and similar claims (e.g. Benkler 2006; Boyle 2008; Coriat and Weinstein 2009) are, however, contested by several other scholars, who defend the idea of incentivizing creators by intellectual property protection as indispensible for innovation processes (Lemley 2009; McManis 2009).

Focusing not on copyright in general but rather on how its limitations and exceptions are regulated, a recent report by Hargreaves (2011: 43) concludes with respect to the European approach of exception that “[i]nnovation may be blocked and growth hampered when unduly rigid applications of copyright law enables rights holders to block potentially important new technologies.” The U.S. system of Fair Use, on the contrary, is considered to be more flexible and thus better suited to adapt to innovative processes (Hargreaves 2011: 42).

Overall, however, as far as empirical studies are concerned, the evidence is still inconclusive (e.g. Barnett 2009; Jaffe 2000; Landes and Posner 2003) with the majority of studies focusing on patents. Barnett (2009: 386f.), for example, concludes that “the too much property thesis has yet to be supported or denied by definitive evidence” and describes “our current understanding of the net social value of the intellectual property system” as indeterminate.

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In spite of the overall inconclusiveness of extant empirical research on the relationship between intellectual property rights and innovation, two insights can nevertheless be derived by looking at the totality of the studies available (including the one by Barnett 2009): firstly, in the abstract, some form of public domain is beneficial for innovative processes and, secondly, the concrete contribution of the public domain to innovative processes depends on its governance mechanisms (see also Hess and Ostrom 2003). In a formal paper, Shavell and Ypersele (2001: 525), for example, compare the current intellectual property system with a reward system, in which "innovators are paid for innovations directly by the government [...] and innovations pass immediately into the public domain". Their conclusion, namely that an optional reward system – under which innovators choose between rewards and intellectual property rights – is superior to intellectual property rights, points to the importance of regulation for actualizing the innovative potentials of the public domain.

5. Regulating the Public Domain

Turning to the regulatory aspect of the public domain puts emphasis "not on whether there is control, but on the type of control exercised" (Boyle 2003: 29). In the broad definition of public domain applied in this paper, public domain regulation includes but is not limited to intellectual property regulation; rather, contractual or technological standardization by private actors also needs to be taken into account. To structure the discussion of regulatory aspects, I distinguish between regulatory dimensions on the one, and regulatory modes and arenas on the other hand.

5.1 Regulatory dimensions

Of course, any identification of dimensions of public domain regulation is to some degree arbitrary. The reason for choosing the three dimensions discussed below – temporal, territorial and scope – is merely that they have been at the heart of both scholarly and regulatory debate over the last two decades.

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- Temporal dimension: Historically, the length of intellectual property protection terms was most important for the size of the public domain. Having been repeatedly – and with increased frequency – extended in the past, the length of intellectual property protection terms has and still is subject of intense lobbying efforts and scholarly controversy. For example in the U.S., the recent Copyright Term Extension Act (CTEA) was also referred to as "Mickey Mouse Protection Act" (pointing to heavy lobbying by the Walt Disney Company) and inspired the foundation of the private regulatory alternative Creative Commons (see Dobusch and Quack 2010a). While positions taken range from abolishing intellectual property rights (e.g. Boldrin and Levine 2008) over shortening of protection terms (e.g. Boyle 2003; Kretschmer 2003; Lessig 2001; Pollock 2007; Samuelson 2007) to the possibility of indefinite renewability at least in the field of copyright (e.g. Landes and Posner 2003; Zemer 2005), the overall tendency in scholarly debate is to view further – and particularly retroactive – extensions sceptically; this is mostly true even for Landes and Posner (2003), who advocate indefinite renewability only in combination with re-introducing mandatory registration for copyright protection, and Zemer (2005: 145), who demands "an open-ended list of fair dealing exceptions" in exchange for renewability. Paradoxically, the recent history of protection term extensions, especially in copyright, has increased the practical importance of this dimension for public domain regulation. The number of so-called "orphan works", whose rights holders cannot be identified at reasonable costs, obviously increases with protection terms (Lüder 2010; Patry and Posner 2004; Varian 2006). This is in turn a major obstacle for attempts to digitize and provide access to content by initiatives such as Google Books or Europeana (see Purday 2010; Samuelson 2010) – even though vast majority of such material is commercially unavailable and "[f]or most works, the owners expect to make all the money they are going to recoup from the work with five or ten years of exclusive rights" (Boyle 2008: 9).
- Territorial dimension: It is no coincidence that the Berne Convention for the Protection of Literary and Artistic Works, first signed in 1886, was among the earliest international treaties at all. Due to the "a-

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territorial character of the intellectual community" (Salzberger 2006: 51) and the immaterial character of intellectual goods, the territorial aspect was always of great importance for intellectual property regulation and thus also the public domain; digitization and the Internet have only universalized this aspect up to a point, where online interaction with digital content routinely means crossing territorial and thus jurisdictional borders (Leong and Saw 2007). The related surge of international legislation in the realm of intellectual property rights (see the next section below), can also be conceptualized as an "international enclosure movement" that "fences off areas that provide attractive policy options for less developed countries (Yu 2007: 3).19

- Scope: From a public domain perspective, tapping new fields of application with intellectual property rights regularly means diminishing the public domain. A recent example for such a new field of application has been the EU Directive No. 96/9/EC of 11 March 1996 on the legal protection of databases protection for databases (see Baron 2001; Maurer et al. 2002; Boyle 2008). But also seemingly minor changes, such as the introduction of anti-circumvention provisions protecting technological protection measures (see Bach 2004; Ginsberg 2007; Lipton 2005; Samuelson 2003), may have a substantial impact on the scope of the public domain because of their interaction with private regulatory measures. To counterbalance this expansionary tendencies of intellectual property regulation, scholars such as Alexander Peukert (2011) see the need for establishing a "A European Public Domain Supervisor" that would act as a special guardian for the public domain.

All three of these regulatory dimensions may in turn be addressed in different arenas with different, public and private, regulatory means, which will be discussed in the next subsection below.

5.2 Regulatory modes and arenas

As defining the boundaries and rules of the public domain, scholars often distinguish two different, albeit reciprocally related, modes of regulation. For

[19] Yu, however, does not consider these policy spaces to be part of the public domain but rather considers them to be orthogonal to it.

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one, international treaties as well as their implementation in form of (supra-)national legislation is the traditional focus of scholarly debate about how to regulate the public domain. Beginning in the early 1980s, as meticulously documented by Drahos and Braithwaite (2002), the international political arena and its different forums in the WTO, the WIPO and the UN have increasingly become the most consequential space for crafting legal rules affecting the public domain – offering forum-shopping opportunities for powerful actors (see, for example, Heller 2004; Okediji 2009; Sell 2003). Currently, the most important transnational negotiations affecting the public domain occur in the realm of the plurilateral Anti-Counterfeiting Trade Agreement (ACTA), creating even another separate governing body.[20]

The national implementation processes of the international treaties of the 1990s, most remarkably the already mentioned TRIPs Agreement and the WIPO Copyright Treaty, still continue more than a decade after they have came into force (Dinwoodie and Dreyfuss 2004). Ginsberg (2000: 290) goes so far as to characterize today's international copyright law as resembling "a giant squid, whose many national law tentacles emanate from but depend on a large common body of international norms."

For another, private regulatory initiatives on the basis of technological and legal standardization have received increasing scholarly attention over the last decade. While regulating the public domain in the last two decades of 20th century was dominated by public law making in international and national political arenas, the "new dynamism in the public domain" (Merges 2004: 183) observable in the early 21st century was due to private regulatory efforts (see also Dusollier 2007; Dobusch and Quack 2010a, 2010b; Elkin-Koren 2005; Reichman and Uhlir 2003). And as argued by several scholars, these efforts were to a large degree a countermovement inspired by the "enclosure of the public domain" (Benkler 1999) in the political realm during the previous years:[21]

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[20] See, for example, http://trade.ec.europa.eu/doclib/docs/2008/october/tradoc_140836.11.08.pdf [accessed November 15, 2011]

[21] Of course, there were and still are several private regulatory initiatives in line with this legal enclosure of the public domain – the most important being technological protection measures commonly referred to as Digital Rights Management (DRM). Since the focus of this paper is on the public domain – and not on its enclosure – I do not engage in detail with these initiatives (for more on this issue see, for example, Bach 2004; Bollier 2004; Dobusch and Quack 2010b; Ginsberg 2007; Haque 2008; Lessig 2004).

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> *"The phenomena of open source, creative commons, and other forms of enhancing the public domain can be seen as market responses to the inefficient expansion of property rights by central agencies" (Salzberger 2006: 35).*

Merges (2004: 186) calls such attempts of non-state actors to enhance the public domain "Property Preempting Investments" and points to the fact that "as the value of property increases, the value of pre-empting property rights increases as well." In the field of patent law, property pre-empting investments mostly take the form of publicly accessible databases such as the "Merck Gene Index" (provided by Merck and Washington University in St. Louis); as soon as the data are posted and freely available to all, patenting them is impossible (see also Barnes et al. 2009). The rationale for corporations like Merck to heavily invest in public domain data is, according to Merges (2004: 188 f.), that it "sees gene sequences as inputs rather then end products" and constitutes a "response to the threat that one of its key inputs would be encumbered with excessive licensing fees and transaction costs" (for a general version of this argument see Pisano and Teece 2007). One consequence of such a strategy is regulatory in nature, since "as the general infrastructure increases, the knowledge in this scientific arena increases, thus raising the standards for patentability" (Eisenberg 1996).

In the field of copyright law, property pre-empting investments developed by private actors take the rather different form of open content licensing such as Creative Commons (Bollier 2008; Bourcier and Dulong de Rosney 2002; Dusollier 2006, Elkin-Koren 2006; Lessig 2003). The expansion of the public domain by open content licensing is however less complete than in the case of donating patentable knowledge. By granting some rights and reserving others, Creative Commons and other open content licenses constitute "in effect a partial dedication to the public domain, rather than a complete one" (Merges 2004: 199).

The example of open content licensing in the copyright realm has in turn inspired similar initiatives in the field of patents, as well (Cukier 2003; Feldman 2004; Dusollier 2007; Hope 2008). While mere public domain databases do not restrict patenting of derivative technologies, some open source biotechnology projects such as the Biological Innovation for Open Society (BiOS, see Dusollier

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2007) license their patent portfolios widely under certain conditions set to "use the power of the patent system to ensure that the core technology of the project and any innovations remain openly available" (Feldman 2004: 118).

These "market" or, more appropriately,[22] private regulatory responses are nevertheless not independent from extant intellectual property regulation (Reichman and Uhlir 2003). Quite on the contrary, specifically open content licenses are completely dependent on the exclusive intellectual property rights held by its adopters, even though they are used to waive at least parts of these rights (Elkin-Koren 2005).[23] Consequently, this paradox attempt of creating a 'private public domain' via standardized copyright licensing has attracted substantial criticism – also from scholars principally sympathetic with the endeavour; the following four concerns are somewhat exemplary for this line of sympathetic criticism:

- Proliferation of several different and incompatible license standards increases transaction costs and reduces the possibilities to pool and remix works in such a private public domain. Specifically Creative Commons with its modular license structure is prone to creating a fragmented public domain (Elkin-Koren 2006; 2006). Berry and Moss (2005) go so far as to speak of a "commons without commonality".
- Legal provisions such as an indispensible possibility to terminate licenses ex post, which are meant to prevent powerful transferees from forcing authors into unremunerative bargains, could result in legal uncertainty for derivative works in an open content ecosystem (Armstrong 2010).
- On a more fundamental level, Elkin-Koren (2005: 398) fears that licenses such as Creative Commons "turn songs and stories into commodities. The commodity metaphor creates an abstract 'fence' around (abstract) informational goods" (see also Dusollier 2006). As a consequence, Creative Commons contributes to the commodity or product logic of intellectual goods even in non-market areas such as

[22] While being compatible with – and partially even targeted at – the creation of markets for or around digital goods, important fields of application such as Wikipedia effectively transcend market logics (see Benkler 2006).

[23] Elkin-Koren (2005: 390) goes even so far to state that this "communicates a strong proprietary message: authors should be free to govern their own works."

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amateur art and education, "thereby strengthening the hold of copyright in our everyday life" (Elkin-Koren 2005: 400).

- In the field of patent law, open source licensing of patents might constitute patent misuse, "defined as an impermissible attempt to expand the time or scope of the patent beyond the patent grant" (Feldman 2004: 118).

These inherent limitations of private regulatory approaches for creating and maintaining a digital public domain are further complicated by practical problems of any standardization effort such as network effects of adoption (e.g. Farrell and Saloner 1986; Shapiro and Varian 1999) or (lack of) support by third parties (e.g. Brunsson and Ahrne 2000; Kerwer 2005) such as collecting societies in the field of copyright.[24]

6. Conclusions and Avenues for Future Research

Implicitly, the public domain is always an issue when we speak of intellectual property rights. And different to Litman's observation in 1990 that the public domain only "rarely takes center stage", the variety and sheer number of studies cited in this paper shows that the public domain is increasingly in the spotlight. Ironically, it seems to be the unprecedented expansion of intellectual property rights over the 1980s and 1990s that has renewed scholarly as well as practical interest in the public domain.

In spite of the recently growing attention, in all of the fields tackled in this paper there are still more questions posed than answered (for an overview see Table 2). A general explanation for this is probably the overall scarcity of empirical studies. This is even true for the most basic issue of mapping the public domain. While there is not – and most likely will not be – one commonly shared definition of the public domain, the different notions of the term are conceptually sufficiently clear to allow for meaningful debate and theory development (for an overview see Boyle 2003; Horowitz 2009). Empirically, however, a systematic 'map' of the public domain is still missing. We do not

[24] For more on the issue of collecting societies and Creative Commons see Dobusch (2010) and http://governancexborders.com/2010/06/27/declaring-war-on-free-culture-collecting-society-confronts-creative-commons/.

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know yet, what public domain phenomena have the strongest practical relevance for actors in different fields.

Similarly, most of the arguments stressing the importance of the public domain for democratic discourse in general and for freedom of speech in particular are conceptual in nature, empirical evidence is often anecdotal or focuses on the (alleged) failure of information markets due to centralizing consequences of (stronger) intellectual property rights (e.g. Benkler 1999). Empirically, however, these tendencies may be outweighed or even overcompensated by new technological possibilities of digitization and Internet as well as private regulatory initiatives such as open content licensing. Future research should therefore investigate the actual consequences of tendencies to enclose and to expand the public domain by both public and private regulatory means. Developing a set of empirical measures and key figures for assessing and comparing the state of the public domain with regard to free speech on the aggregate would be first step into that direction.

With regard to the economic relevance of the public domain, the situation is a little bit different, since there is already a substantial body of empirical evidence. There is, however a bias towards studies in the realm of patent law and many of the findings are contradictory (Barnett 2009). One possible avenue for addressing such contradictory evidence is to look more closely at (inter-)organizational innovation processes. Probably in-depth case studies applying a practice perspective that is susceptible to how public domain material and rights are actually utilized by the actors could help to improve our understanding of how the public domain contributes to economic innovation. Specifically a closer look at inter-organizational practices might also help to reveal how intellectual property rights might be used to stifle competition via cartelization.

As far as regulation and governance of the public domain is concerned, there is also already a significant body of empirical research on how regulatory changes both in the political and market arena came about. Two avenues for further research do however seem promising. For one, we know little about the interaction of different, public and private, regulatory regimes over time. For another, the consequences of regulatory changes on economic and societal developments are more often implied than actually investigated.

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Both a complication and a so far largely untapped potential for empirical investigation in this regard is the fact that the public domain and its borders are defined to a certain degree by intellectual property laws that vary among jurisdictions. On the one hand, studies investigating the public domain need therefore to be very susceptible for these regulatory differences (Ginsberg 2000). As Dinwoodie and Dreyfuss (2004: 448) state for the case national implementation of TRIPS obligations, "the incentives likely to optimize social utility may vary widely from country to country." It is however, on the other hand, exactly those differences in regulation that provide interesting opportunities for comparative empirical assessments of the public domain. Examples for such endeavours are the comparison of different copyright levy systems in Europe by Kretschmer (2011) or the suggestion by Boyle (2008) to look at the case of database protection in the U.S. (no protection) and the EU (protection by an EU directive).

Aspect of the public domain	Research question(s)	Research strategy
Clarification	What areas of the public domain are most relevant in different fields?	Systematic (meta-)analysis of secondary data in relevant fields
Societal relevance	What are empirical measures of the public domain with respect to public discourse?	- Identify, systematize and measure tendencies to enclose and expand the public domain respectively
	How do initiatives to enclose or expand the public domain interact?	- Collection of field-level data on discourse diversity and dynamics
Economic relevance	How do innovation processes utilize public domain material and rights?	- In-depth case studies of innovation processes on the (inter-)organizational level
	What public domain related practices can be found in innovation processes?	- Cross-case comparisons of public domain related innovation practices
Regulation and governance	How do different types of public domain regulation interact over time?	- Identify and compare impact of public domain related differences in national intellectual property laws
	What are the (unintended) consequences of these regulatory iniatives?	- Exploratory case studies o

Table 2: Potential avenues for further empirical research on the public domain

Summing up, one can say that recent technological and regulatory changes have led to and justify the renewed interest of both practitioners and researchers into the public domain. Not only is a vibrant public domain relevant for economic and societal development but also is the constitution, composition and dynamic of the public domain currently in flux. This paper tried to provide a survey of our current scholarly knowledge on these issues, which might function as a starting point for further, particularly empirical investigations of the public domain. At the same time, it might also provide the

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foundations for theoretically re-conceptualizing the notion of the public domain that goes beyond the currently dominant negative definition, approaching a more constructive conception that transcends all-too narrow intellectual property discourses.

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