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## **Who owns knowledge? Preliminary theoretical thoughts on the collaborative production of knowledge**

This paper is a first attempt at discerning interesting theoretical questions with regard to the collaborative production of knowledge. I wrote it intending to provoke discussion and facilitate the further development of these first ideas. Note therefore, that it is a draft version and that I very much appreciate all comments and criticisms that help me in developing a better research agenda. Please do not quote this paper without my explicit consent. Any inquiries, input or criticism should be directed to me at [u.hoepfner@denkarium.de](mailto:u.hoepfner@denkarium.de).

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## ***1. Introduction***

Knowledge is a curious thing. Wolfram-Alpha, an automated search engine of the semantic web tells me that knowledge is "the psychological result of perception and learning and reasoning"<sup>1</sup>, i.e. something that happens with data, when it is put into context by people. Wikipedia offers a somewhat more complex definition, tracing the concept through philosophy and pointing towards the intricate connection between belief, truth and knowledge. References include Plato, Robert Nozick and, of course, Ludwig Wittgenstein.<sup>2</sup> Michel Foucault on the other hand associates knowledge with power, arguing that the creation and distribution of knowledge is intricately linked to mechanisms of power that produce subjects and thereby create our shared world (Foucault 2005: 64). These approaches share little, although they do seem to agree that knowledge relates to what is (believed to be) true and emerges only after information has been processed in some way. Exploring the further implications of different ways of defining knowledge is beyond the scope of my argument. For the ensuing theoretical thoughts it is all the more interesting, to look at the different ways these definitions, that are forms of knowledge themselves, are produced. Wolfram Alpha aims to automate the process of knowledge aggregation and production in order to facilitate men-machine interaction. Wikipedia builds knowledge from the inputs of many people. The page on knowledge for example has received more than 100 edits (revisions, additions, deletions of part of its content) by different users over the last six months alone. Michel Foucault than represents yet another way to create knowledge, namely the creative, intellectual effort of a person that can than be attributed to them and remains associated with them even after they enter it into discourse. It is this latter idea that fundamentally shapes the way we think about knowledge as property.

The question of whether or not knowledge can be the property of person or institution and what the conditions of and justifications for such ownership are, has been hotly debated for a long time and a number of different lines of argument exist. Property rights are seen as necessary to maximize net-social welfare and facilitate innovation, as a recognition of a person's effort to achieve an innovation or conceive an idea, as a crucial element in enabling people to engage in intellectual activities, that satisfy the fundamental human need for personhood and/or as a provision that encourages the formation of a more just and attractive culture (Fisher 2001). These approaches differ in important respects, yet they are not entirely incompatible and partly overlap. Property rights include, to different extents and with unequal emphasis, the right to decide what happens with an idea or innovation and the right to collect revenues arising from the idea or invention. These discourses than try to balance individual and collective interests in some way. Clearly, very different legal rules result from different

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1 <http://www.wolframalpha.com/input/?i=knowlegde> [10.03.2010] or just enter 'knowledge' at [www.wolframalpha.com](http://www.wolframalpha.com).

2 [http://en.wikipedia.org/wiki/Knowledge#Defining\\_knowledge\\_.28philosophy.29](http://en.wikipedia.org/wiki/Knowledge#Defining_knowledge_.28philosophy.29) [10.03.2010]

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weightings of these aspects, but both are usually present. All of these approaches to intellectual property, however, logically hold two presumptions: firstly, that an author or inventor can be identified and attributed the right to the idea or innovation and secondly, that incentives in terms of material gain and/or recognition have to be set in order to provoke and support intellectual activity.

These assumptions are specifically modern in the way they place the individual in the position of a creator and also in assuming that motivation to act results not so much from some inner need to act as more from some external incentive to be set. I do not intend to challenge these assumptions on a general, normative level, mainly because they are rather convincing and a general refutation seems unjustified. However, I would like to look closer at some instances of contemporary knowledge production that defy these basic presumptions and that thereby challenge notions of intellectual property. The paper seeks to explore some of the theoretical and political implications of forms of the collaborative production of knowledge, that are enabled by modern technologies and that increasingly change the way knowledge is produced, disseminated and appropriated. The questions raised will present a preliminary theoretical research agenda that is undoubtedly incomplete. Yet, the lack of previous systematic theoretical considerations of these problems, I believe merits the attempt.

After a brief overview of the specifics of knowledge as property, the paper will first explore the implications of collaboration in authorship. I will build here on existing scholarship on authorship and lay out how certain forms of knowledge creation for example in wikis defy these notions. Thereafter I will look at innovation and look at alternative ways it is encouraged and organised. While no entirely new strategies emerge, certain innovative processes present a much more complex picture of motivation and creative spirit. In the last part I will point towards some of the problematic aspects of these creative processes and suggest to use a saturated concept of ownership to challenge notions of intellectual property.

## ***2. The specifics of knowledge as property***

Modern theories of property developed in order to explain and justify how and why formerly common resources could be appropriated to the private realm. John Locke is maybe the most influential thinker in this regard, deriving a right of property from the right to one's own person and the work one does. By adding work to the common property of all, man can acquire an exclusive right to that part of the world (Locke 1977: 215ff). This right is restricted by what is called the Lockean proviso, namely that there should be enough and as good of the common property left to others, to appropriate if they wish (Locke 1977: 217, Shiffrin 2001: 139/140). Furthermore, any property may only be acquired to the extent that it can also be enjoyed. It is by introducing the notion of money as an exchange medium,

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that Locke nonetheless justifies unequal property relations. Those who are particularly apt or hard-working can exchange their perishable goods for money, which can then be kept for longer periods (Locke 1977: 228f).

Property in knowledge or intellectual property poses some difficulties on both accounts. Firstly, while there is infinitely much to know, knowing a particular thing is not replaceable by knowing another. So, restricting access to knowledge (e.g. an invention) could be regarded as depriving the others of something. The usual argument made here is that by enabling the inventor to have temporary exclusive rights to his knowledge, invention is encouraged and the overall good is increased (Fisher 2001: 173/174). Therefore all have more and profit. This argument and most of its variations contains some fundamental assumptions about the creation of knowledge. The motivating factor for invention and creativity, it is assumed, is an expected return, usually in the form of monetary revenue or recognition. Motivation for innovation in other words is thought to be largely extrinsic. So, appropriation of knowledge into private property makes sense when one assumes that its creation depends on the motivational power of personal rewards. Secondly, the issue of enjoyment is also more complex when it comes to knowledge. What knowledge as property is about is not the enjoyment of the knowledge itself, but - in line with the first assumption - a right to the revenues that might be generated by the exclusive right to this knowledge (Couser 1999: 26). Intellectual property rights then protect not so much the possession of the knowledge itself, but the use of it. This, of course, is what consequentially deprives others of the use of that particular piece of knowledge. And while this dispossession may not seem greater to some than with other forms of property (Andreasson 2006), it is of a different character. When knowledge is transferred to others, it remains still usable by the original "owner". Someone else knowing something does not keep me from knowing it, too, and in some cases - such as languages - increases the usefulness of my knowledge (Couser 1999: 13)<sup>3</sup>.

Knowledge is indeed a curious resource. It does not get used up, although it may become outdated. It is therefore non-rival, one person's use does not subtract from another person's ability to use. It is furthermore non-exclusive, meaning once an idea is out there, it is hard to keep others from using it<sup>4</sup> (Hess/Ostrom 2007: 9). It seems a perfect candidate for a commons resource, yet knowledge as property is a widely accepted and defended rule. The kinds of knowledge that exist are immensely

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3 Esther Dyson pointed out very early in debates on the internet, that the technologies behind the net made it necessary to give information away in order to receive revenues, because only through giving it away did the chargeable content acquire worth (Dyson 1995). The strategy is obvious in cases like the Acrobat Reader or the iTunes-Software. The rationality, of course, is still geared toward the creation of material gains from intellectual goods.

4 Unless you never tell anyone about your idea or never show your invention to anyone, thereby effectively removing it from the social realm altogether. But even this cannot prevent someone else from having the same idea.

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varied, from works of art, music and literature, to scientific understandings of natural and social processes and technical inventions, each carrying their own challenges, potential material rewards and relation to their creators. (see Gottschalk-Mazouz 2007: 216ff)

The idea that knowledge as property is of relatively recent origin and correlates closely with the 'discovery' of the individual in modern times (Lunsford/Ede 1994: 419, Siegrist 2006). As shown it rests on some variation of the idea, firstly, that the author of a work has a special right to his own work and, secondly, that revenues from innovation stimulate innovation and advance society. The arguments for knowledge as property consequently meander between individual rights and common good (Couser 1999, Fisher 2001). Also, debates on intellectual property evolve around the establishment of such rights in legal frameworks, intellectual property law is the focal point of thinking knowledge as property. The debates are proportionately complex. I do not wish to review these complex debates here, nor do my arguments aim directly at these discourses. I would like to raise two conceptual, logical questions if you want, that arise when knowledge is generated collaboratively and is not easily attributable to individuals or groups thereof. Firstly, collaborative authorship seems to defy some of the more commonsensical understandings of motivation for the production of knowledge. Secondly, the collaborative production of knowledge raises some normative challenges with regard to the application of knowledge, and the responsibilities for the quality and evaluation of the knowledge presented. While I cannot answer these questions in full, I will suggest that a saturated concept of ownership might allow us to approach the collaborative production of knowledge from a more plausible analytic angle.

### ***3. Authors and collaborators***

In order to speak of knowledge as property it is essential to establish a plausible link between the creator of a piece of knowledge and the product. If a work of art, an invention or insight is to be the property of someone, we need to know *who* should own it. The idea of an author in other words, is fundamental. It refers to the sole creator of a unique 'work' (piece of knowledge in the widest sense) that warrants legal protection because of its originality (Woodmansee 1994: 15). This idea is, however, neither historically universal as Lessig (2006: 171/172) suggests nor is it uncontested.

The historical development of authorship is complex and revolves ever since the invention of the printing press around those who create the content of knowledge (if you so want the knowledge itself) and those who create the means of its distribution. Originally, those in charge of the distribution were seen as the proprietors of the work - and those eligible to collect the revenues where they arose (Siegrist 2006: 66f). The construction of the author was a very deliberate process by different interest groups and individuals focusing on the particular value and nature of originality and the question of what constituted protectable new knowledge (Woodmansee 1994: 16, Jaszi 1994: 32). The struggles

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where largely fought in legal terms, and the romantic 19th century notion of authorship was slowly translated into legal rules governing intellectual property. Today, the idea that the originator of an idea should hold some moral and legal right to it is commonly accepted. And because it is seen as a moral right as well, there is ample discussion on how basic this right is and how it can be justified (Shiffrin 2001, Cruft 2010).

Martha Woodmansee points out, that this romantic notion of authorship inadequately captures the actual creative processes behind the creation of 'original' ideas. Using the example of Samuel Johnson she shows how intimately connected collaborative processes are to the creation of works of art and literature (Woodmansee 1994: 24f). Any author draws on other's ideas and until the 18th century naming the author of a text said little about who contributed the ideas or the words or the structure of the text. Interestingly, even contemporary legal discourse remains somewhat ambivalent, granting "authorship" to the creator of the idea rather than the writer in some cases (Jaszi 1994: 32). The focus on originality is the central element of any conception of property in knowledge, because without discerning some element of originality the piece of knowledge cannot be delineated from the body of knowledge to which it belongs. It is, however, also highly problematic, because the production of knowledge is by nature a process of appropriating, varying and complementing that which is already there (Apter 2008). Copyright law navigates the limit of originality and often fails to provide convincing arguments why one thing should be recognised as an original contribution and another not (Jaszi 1994: 41ff).

Two well-known criticisms on the concept of authorship approach the problem from a different perspective. Roland Barthes famously claimed the death of the author and argued, that the text should be freed of the control of the author that placing it in its context entails (Barthes 2002). The implication is, of course, that the idea itself should be more important than the author. Foucault's text "What is an author?" can be read as a critique of such an (over-)valuation of the abstract ideas. Foucault contends that the author is a construction, but one that is essential. The author has a function to fulfil in allowing us to access the text and extract an understanding of it (Foucault 2004). There is in other words another issue in authorship which relates to the role the author plays in relation to the idea. It is not necessary here to go into more detail on these arguments. It is quite possible to think of ideas without considering their creator, or to consider the attribution of the text to an author as a function of the discourse in which the text is set and that is constructed rather than morally justified. Either way what is contested is the role the author plays for an understanding and appreciation of an idea and, on a more normative level, this implies the question of the responsibilities toward his idea a creator has or is attributed.

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The concept of authorship that underlies contemporary discourses on intellectual property rights is essentially individualistic and romantic to the extent that it is intimately connected to ideas about creativity, originality and genius that are modern and very recent. Only during the 19th century were the rights of the author to his work were expanded at the expense of the cultural rights and possibilities of the readers, appropriators, listeners and onlookers of culture, that previously formed an important part of the cultural process (Siegrist 2006: 73). Rather than being actively engaged in the processes of cultural reproduction and knowledge creation everyone but the author was reduced to a consumer. Hence the insistence on originality - the process of knowledge creation here is an engagement of the individual with a body of knowledge that results in the contribution of something new and original to the realm of knowledge by that individual . The engagement with ideas of those, who do not consequently contribute something new and original is reduced to the role of benefactors of that original genius. The writing of a book on the right organization of society in this view produces knowledge, my appropriation of that idea to my daily practices does not.<sup>5</sup>

This so even where collaborative authorship is common such as in science; the romantic notion of authorship prevails. Universities often require teachers to grade collaborative student papers in a way that clearly identifies the individual contributions - which sort of defeats the purpose of having students do a collaborative paper. Furthermore, credit for collaborative work is assigned according to relatively firm rules if at all (Ede/Lunsford 2001: 357). Academic conventions imply that it is nice to credit student researchers with their contribution to the research that enabled the writing of a text and/or the development of an original piece of knowledge, but neither would they be included as authors nor need a professor who does not give that credit fear any consequences. This understanding is reflected also in the legal frameworks on intellectual property that tend to define collaboration as the combination of original thoughts of two or more authors, each of which should have contributed something, that in itself is 'copyrightable' (Jaszi 1994: 52ff). It is questionable in how far this represents an adequate approach to knowledge creation and other creative processes. Much of cultural and intellectual creativity is 'serial' collaboration, appropriation, commentary or parody, all of which potentially border plagiarism as the negative of authorship (Apter 2008). Authorship may be a solitary activity, but knowledge creation is not.

This, of course, implies, that the romantic notion of authorship was never more than an ideal. However, it is new technologies that enable the construction of knowledge in ways that openly defy idealised authorship, the most obvious of which is wiki technology. A wiki is a piece of software that enables many users to write one text together. Rather than sending each other text documents to edit

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5 By default, the romantic notion of authorship favours substantiated forms of knowledge production such as written work or machines. It underscores the importance of oral and cultural forms of knowledge. These tend to be considered in the common realm. They often lack, however, the recognition of others forms of knowledge in political discourse.

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one document is created on a server that can then be updated as people like. Version control mechanisms enable all readers and writers to follow the edits made and possibly reverse them. Discussion pages are present in most wikis and give authors and readers the opportunity to discuss edits, structure and content of the text.<sup>6</sup> Wikis can be open to everyone, to read and edit or restricted to certain users or groups. However, they tend to be used in projects where the aim is to get as many contributors as possible and still enable the creation of a unified text. Interestingly, this kind of large-scale collaboration is often successful (for example in the creation of the world largest encyclopaedia). Wikis usually allow other users in tracking versions to also track the users that created these versions. However, this is likely to be in the form of their IP number or an online alias, in ways in other words that do not easily reveal the identity of the author. Furthermore knowledge in wikis is created cumulative (Sunstein 2006: 152) in that any addition will - even if deleted - remain there as part of an older version of the text. The history of the making of knowledge thus becomes part of the body of knowledge itself. Rather than asking people to define their own original contribution and claim it as their own, wiki technology encourages people to profit from what other people have done, contribute what they can and value all kinds of contributions - editorial edits, additions, provision of sources, inclusion of pictures and graphs - as steps toward a better final result. What counts here is the collaborative result and the individual contributions are only valid in relation to the collaborative product. Consequently, the knowledge in wikis cannot be turned into property by attribution to an author.

The main concern about knowledge created in this manner is interestingly one of quality. Rather than assuming that the combined efforts of many people lead to better results the presumption is that knowledge created collaboratively is of a lower standard than the knowledge created through the intellectual effort assignable to an author. Some wikis, therefore, recreate the notion of the author and employ the technology largely as a limited tool to collect information that is then turned into knowledge by an expert (Hoffmann 2008). Open Wikis often succeed in producing largely reliable bodies of knowledge as recent research on wikipedia suggests, but the quality of individual entries, i.e. single 'pieces' of knowledge, varies widely (Kittur/Kraut 2008). This is likely to be true for other forms of collaborative knowledge production in social forums etc. as well (Grabher/Maintz 2006). In order for collaborative knowledge production to work, it has to be assumed that the large majority of contributors engages in the process with an attitude that is aimed at the betterment of the final result (Sunstein 2006: 155/156). This is true also for other similar projects such as OpenStreetMap, a wiki-like site that aims to provide geographical information in the widest sense to everyone. With a few simple clicks of the mouse anyone can add to the maps information on local facilities, restaurants or public transportation, can provide place names and edit other people's information. While all the

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6 Not surprisingly the article on wikis in wikipedia is rather good <http://de.wikipedia.org/wiki/Wiki> [12.03.2010].

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information is subjective and incomplete, it is assumed that over time the map can be more accurate and up to date and just generally helpful than other maps. Drawing on the knowledge of many people that have actually been there and not just the knowledge of those who professionally gather relevant data is presumed to yield better overall results<sup>7</sup>.

This particular problem represents in many ways the central challenge of collaborative knowledge production. The underlying assumption when it comes to judging quality is, that knowledge that cannot be easily attributed to an author is more likely to be inaccurate, biased and or incomplete, that knowledge is less adequate because no-one (such as an author does) assumes personal responsibility for the final result. This is not to say that authors generally are seen to be responsible for what becomes of their knowledge, but they are responsible for what they say.<sup>8</sup> Only in so far as they do that are they entitled to property in (their) knowledge. Furthermore, the processes of production and consumption are separated, the creative and productive effort is made by the author not the consumer. Collaborative processes of knowledge production, especially those based on new technologies tend to blur this distinction. The roles of consumer and producer tend to flow into each other, on the one hand because it is so easy to change from one into the other on the other because consuming knowledge produced in these open ways trains certain skills that mark a more active, creative and productive consumption behaviour. Where formalised quality control is not present consumers ideally develop skills of verification through triangulation, source checking and critical reading. They have to learn to judge the process of knowledge creation itself (e.g. number of edits to a wikipage, expertise of contributors), make reasonable assumptions about content based on nature of the topic and engage with the sources of the knowledge. One could argue that wikipedia is under permanent peer review and revision. This exceeds what those who are used to being consumers of intellectual products usually do to gain access to knowledge. The work put into the product knowledge is distributed between the authors and the consumers and hence justifying property in knowledge is made much more difficult.

Contemporary notions of knowledge production and intellectual property are challenged by forms of authorship that defy romantic ideas of the singular, creative genius author. They raise concerns about the reliability of knowledge and responsibility therefore. They require the active rather than passive consumption of knowledge and blur the distinction between producers and consumers. Collaborative forms of knowledge production, however, also question some fundamental assumptions about human

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7 [http://www.openstreetmap.de/faq.html#was\\_ist\\_osm](http://www.openstreetmap.de/faq.html#was_ist_osm) [10.03.2010]

8 Interestingly, there is some tendency of consumers with regard to knowledge produced through recognised means (e.g. scientific knowledge) to neglect quality control and to assume reliability by default or based on formal arguments (peer-review, codes of scientific research). It implies a hierarchy of forms of knowledge production that devalues traditional, intuitive and cultural forms of knowledge and enforces a separation between producers and consumers of knowledge that is generalized and not just determined with regard to a particular piece of knowledge.

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nature, creativity and innovation. Since these impact the proposed notion of ownership (5) I will address them briefly in the following section before concluding with my preliminary ideas on the collaborative production of knowledge and property.

#### ***4. Innovation and Collaboration***

Producing and productively communicating and furthering knowledge is a fundamental task of all societies as new challenges emerge. It is the essence of progress and change. One of the central justifications for property in knowledge than is the promotion of innovation. The argument rests on the idea that innovation is fostered by entitling people to the arising benefits. These benefits may be material or immaterial, but the motivation to innovate results from some expected return on the investment. This corresponds to the presumption of an individual return, i.e. a return that goes to the creator (Fisher 2001: 169ff). We find, again, a recourse to romantic and individualised notions of knowledge production and creativity. This rather one-dimensional conception of motivation heavily favours extrinsic motivation for creative processes. Approaches building on Kant and Hegel in contrast argue for intellectual property on the grounds that the protection of intellectual products is justified as these products are essential parts of one's personality fulfilling a fundamental human need (Fisher 2001: 171f). This implies an intrinsic drive for creative expression. However, in so far as intellectual enterprises are the expression of a fundamental need, the fulfilment of that need is the expected return for the individual. Clearly, in the field of artistic and spiritual expression these kinds of intrinsic motivations are well accepted and expected. However, we would not normally expect people to engage in more tedious tasks such as walking long distances with a GPS in order to collect data for an open street map project or proofreading encyclopaedia entries out of intrinsic motivation. Personality returns are low as is recognition.

Nonetheless, collaborative processes of knowledge production quite often capitalise on immaterial returns to contributors. One obvious example is the development of open source software, that is often although not always, done by programmers who get no material reward. The special characteristic of this kind of software is that its code is open and anyone can change and reuse it. All (and there is many successful ones) business model related to open source software do not thrive on the sale of the intellectual product as such but on services and "extras" that relate to it. Motivation to contribute to such projects here stems from a variety of motives, some of which have to do with reputation and social recognition, some with improving business conditions, others with increased knowledge and yet others with the desire to create better software or what might be called "gift culture" (Sunstein 2008: 173ff). In a more general perspective coordinating and managing the collaborative production of knowledge in ways that facilitate motivation to contribute seems to depend on three main features of the process: (1) modularity, i.e. the division of the project in different blocks that can then be taken up by different contributors; (2) a heterogenous granularity that allows different

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contributors to contribute according to ability and motivation and (3) low-cost mechanism that integrates the different contributions in the finished product (Benkler/Nissenbaum 2006: 400/401). So, basically what matters is that the collaboration is organised in ways that require a relatively low frustration tolerance (no negative feedback) and enable fast results (positive feedback).

However, while there is preconditions to successful peer-production, these cannot explain why people engage in these processes. Nor can simple participation be explained simply in economic terms. There is an element of altruistic behaviour involved in all the aforementioned project, that is unpredicted by more narrow understandings of human nature. This kind of collaboration, Benkler and Nissenbaum argue, does not just require virtuous, altruistic behaviour, it also provides a training ground for virtuous behaviour that encourages further such behaviour through positive feedback (Benkler/Nissenbaum 2006: 414). It seems that defining human nature in predominantly economic terms, an assumption on which much of the discourse on intellectual property rests, is inadequate to capturing collaborative forms of knowledge production.

The presumption that protecting intellectual property is essential to encouraging innovative knowledge is equally called into question.<sup>9</sup> In such collaborative structures innovation is facilitated precisely by *not* protecting intellectual products but sharing them and encouraging change and improvement. Open source software projects for example feature very different kinds of contributors, all of which rely on the openness of the code. Usually there is a small core group of programmers, a larger group of early users with programming expertise and finally a fairly big number of educated beta-users that report bugs and thereby provide programmers with important information on the workings of their software. All of these have important functions to fulfil, but only in combining their efforts and specific expertise do they achieve the desired results. In terms of bettering code and innovating technology open source software has been highly successful and innovation cycles tend to be faster than in closed source software development (Raymond 2000). Motivation to innovate (at least in intellectual products), than, is a complex issue and it is by no means clear that the entitlement to returns on the knowledge produced is the most effective tool.

### ***5. Toward Ownership***

Admittedly, the argument presented here is still rudimentary. I presented two question regarding the usual justifications for intellectual property and their validity in cases of collaboratively produced knowledge. The first regards the notion of authorship as such. When knowledge is produced by many minds not just combining separable original ideas but in fact combining very different contribution into an integrated whole, the distinction between authors and consumers blurs. Learning from others and producing knowledge tend to fuse and make the process of knowledge creation part of the body of

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<sup>9</sup> For a similar argument see Moglen 1999.

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knowledge itself. As a consequence, authorship as a concept (constructed or not) loses plausibility. The second question aims at the more functional arguments for intellectual property. These evolve around the motivation to generate knowledge and the effects this has on innovation. I have pointed toward some of the complexities of motivation to contribute and to cases where the returning of knowledge to the community works as a motor of innovation. Implied is, that intellectual property may not always and reliably yield the results that are the basis of current justification discourses.

One important challenge, however, is specific to the collaborative production of knowledge. When no single author or creator can be identified, responsibility for the reliability and use of the knowledge cannot easily be attributed. This, of course, is problematic, especially in societies that thrive of knowledge and knowledge production, because the reception and application of knowledge is consequential. Collaboratively produced knowledge requires a much more active contribution by the consumers of knowledge to the point that the distinction becomes arbitrary. What is required, then, is a different, more critical and engaging attitude toward knowledge. I would suggest that the idea of ownership may provide an approximation of that attitude.<sup>10</sup> Ownership should suggest that all those interacting with knowledge need to take an active role in developing, criticizing and appropriating it. Ownership comes with rights to use knowledge but also with duties to protect, further and distribute it. While not a direct challenge to contemporary legal discourses, the underlying philosophy of such a concept points towards the restrictions of intellectual property conceptions with regard to the collaborative production of knowledge and possibly beyond<sup>11</sup>.

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10 A similar notion of ownership has been discussed controversially in development theory (NACHWEIS).

11 Bob Stein of *if:book* in a recent comment implies that such an extension is indeed likely, albeit from a different perspective [http://www.futureofthebook.org/blog/archives/2010/03/follow\\_the\\_gamers.html?utm\\_source=feedburner&utm\\_medium=feed&utm\\_campaign=Feed%3A+ifbook+%28if%3Abook%29](http://www.futureofthebook.org/blog/archives/2010/03/follow_the_gamers.html?utm_source=feedburner&utm_medium=feed&utm_campaign=Feed%3A+ifbook+%28if%3Abook%29) [25.03.2010].

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