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Open Access to Knowledge in World Society?

Zusammenfassung: Der Text untersucht die gesellschaftliche Bedeutung der Open Access Bewegung, insbesondere ihre Rolle in der sog. Public Domain und dem, was üblicherweise ›globale Zivilgesellschaft‹ genannt wird. Dabei nutzt die Studie die Möglichkeit, das Entstehen einer potentiell die Formen der Kommunikation verändernden Technologie zu beobachten dazu, das soziale und evolutionäre Potential von Open Access herauszustellen, indem sie zeigt, daß die globale Verbreitung von Technologien und damit zusammenhängenden Semantiken der ›Offenheit‹ zu einem neuen Verständnis von Öffentlichkeit, Zivilgesellschaft und Inklusion führt. In einem ersten Schritt wird gezeigt, daß das klassische Konzept der Zivilgesellschaft immer weniger überzeugt, da es nicht an die neuen Formen der modernen Weltgesellschaft angepaßt ist. Anschließend werden unterschiedliche Konzepte von ›Zivilgesellschaft‹ und ›Öffentlichkeit‹ vorgeschlagen, die der Realität der Weltgesellschaft, in der Wissen eine immer wichtigere Ressource für die Herstellung von Verbindungen und Netzwerken wird, angemessen sind. Die Open Access und Creative Commons Bewegungen haben, so unsere These, zur Verbreitung nichtlokaler, globaler ›epistemic communities‹ beigetragen und neue Definitionen von Information und Eigentum geschaffen. Der Aufsatz kritisiert Ansätze, die Open Access als eine radikale Ablehnung von Urheberrechten oder Gewinnstreben mißverstehen, indem er zeigt, daß Open Access durchaus mit den herrschenden ökonomischen Realitäten und den Strukturen der entstehenden Weltgesellschaft kompatibel ist.

Introduction: global civil society and the emergence of the internet

The recent decennium has witnessed a considerable surge of interest throughout the world in the broad range of organizations and institutions that are often referred to as global civil society (Falk 1995; Kaldor 2003). This set of institutions includes very diverse entities such as human rights organizations, transnational pressure groups, NGO's and professional and scientific networks (of climatologists, demographers, etc.) for environmental and social reform. Despite their diversity, however, these global entities share some common features. Firstly, they are considered to be private in character and not part of any governmental apparatus. Yet, unlike other private institutions these entities are expected to serve some public purpose and not simply to generate profits for those involved in them (Salamon/Sokolowski/Lester 2003). The claim is that these non-political bodies should raise issues and look to it that

governments, citizens and economic enterprises act more in line with the global public interest. Secondly, these transnational civil society actors are to a large degree dependent upon intensive flows of communications and sharing of knowledge and information. To deal with highly complex, cross-border issues these transnational networks must be able to exploit very diverse sources of information and propose solutions on primarily scientific and social-scientific grounds. As weak political actors they cannot simply deploy power, but have to rely on relevant information to exercise influence. Thirdly, because of their global nature and high dependency on information, these networks make intensive use of global information and communication technologies (Castells 1997). Only by exploiting the most modern and global means of communication, they can sometimes outflank national government and international capital alike – a typical example being the mobilization of consumers to boycott multinational corporations (Shell).

Until now social and political theorists have described this emerging global civil society very much in line with the existing discourse on civil society, as it developed in the framework of the modern nation-state, by transposing the conventional view to the international level (Keane 2003). For instance, global civil society actors are considered to exercise control over existing international institutions such as the IMF or the World Bank in parallel to the interaction between national civil society actors and political institutions (O'Brien/Goetz/Scholte/Williams 2000). In a similar vein, the Internet is seen as platform for public discussion and organization spanning the world, but comparable to the classic national public sphere based on print media.

This is not the view adopted here. We argue that the attempts to rephrase civil society in conventional terms can be reproached for not sufficiently adapting and generalising the traditional concept of civil society in order to fit today's circumstances. The idea is that the classical model of civil society presupposes certain conditions which, given the scale and complexity of contemporary world society, are not up to date any more. It will be proposed that important evolutions in communications require us to rethink the notion of ›civil society‹ and a related term as the ›public sphere‹. Through a case-study of the Open Access and Creative Commons movement, mainly in the field of science, it will be demonstrated how new types of civil organization emerge, which are in themselves global and delocalized, but at the same time enable local actors to gain access to global public goods like scientific data and results, public health, etc.

We will start by sketching some of the main transformations undermining the classic model of civil society and propose different ways to rethink civil society to fit the reality of the emerging world society. In the second part of the article we aim to show how a wholly new range of digital technologies, and the Open Access and Creative Commons movements, can illuminate the changing role

of civil organizations in our world society. These new communication technologies are not simply regarded as instrumental and external support to perform existing functions more effectively (for example, facilitating transnational organisation) but rather as a logic of communication that contains a new form of publicness, information and ›civil society‹ (Bach/Stark 2004; 2005).

The erosion of the classical model of civil society

The notion of ›civil society‹ has a long and rather complex history in Western social and political thought (Keane 1998; Taylor 1995). Early modern thinkers have used the term in a great variety of ways that have often been inconsistent with one another. The most common use of the term today is one which is indebted to philosophers as diverse as Locke, Montesquieu and Hegel. Civil society is considered as a sphere of private individuals, organizations and classes which are regulated by civil law yet are formally distinct from the state. These free, self-governing associations are considered to be the backbone of civil society (Taylor 1995). Because they are not under tutelage of state power they are free to debate and criticise the regulation of society and the conduct of the state, and provide a critical counterweight to the interests of the political elite.

Yet this classical liberal model, based on the separation of the state and civil society, seems to be less and less convincing as a descriptive account of modern world society. Let us briefly consider three evolutions, which undermine this classic liberal vision of civil society.

First of all, the boundaries between state and civil society, a sphere of private individuals and organizations, have become increasingly blurred. We can no longer see contemporary world society through the model architecture of a classical liberal society: a limited state controlled by representative government and bound by the rule of law, and a largely self-organizing civil society independent of the state, but protected by the state's law and administrative procedures (Hirst 1997; 2000). The public-private divide has ceased to be clear or salient in the way classical liberals suppose it to be. Private companies often have powers that surpass those of many governments; they do govern substantial areas of social life through their administrative decisions, and yet they are treated for many purposes as if they were private associations of individuals in civil society (Hirst 2000). On the other hand, much of the public sector is now organized on corporate lines and the corporate bodies in question often enjoy a high degree of autonomy. Such public simulacra of private governments are generally neither answerable to their stakeholders nor effectively accountable to elected central and local governments. Moreover, many of the elected members of these governments have to think and behave like corporate managers them-

selves. Thus, the public-private divide is criss-crossed by essentially similar organizations, and the notion of an independent civil society of freely associating individuals is less and less meaningful (Hirst 2000). In the maze of organizations, public, quasi-public, and private – the citizen is often lost as to who governs what and how, and is seldom consulted or listened to.

Niklas Luhmann has often pointed out that the current popularity of the semantics of civil society is precisely connected with a certain ›resentment‹ of citizens against the societal dominance of organizations that often – and inevitably – exclude them from participation, yet confront them with the results of organizational decisions (e.g. Luhmann 1996; 1997, 844-845). This is especially evident in the sphere of world politics where organized political protest is voiced against central and highly visible political organizations (World Bank, the IMF, the WTO and so on). The internet is commonly seen an essential medium for these kinds of political protest, because it enables these movements to use a flexible and distributed logic in which ›loose coalitions, semi-spontaneous mobilizations, and ad hoc movements of neo-anarchist brand substitute for permanent, structured, formal organizations‹ (Castells 2001, 141; cf. Bach/Stark 2004).

Secondly, the classical liberal model of civil society has been undermined by the process of globalization and the increasing global dynamics of markets, new technologies and media which are irrespective of national boundaries. The conventional idea of civil society has relied heavily on the notion of a single, self-governing community coinciding with the nation state. It was also more or less implied that modern states, with their institutions, competences and legitimate authority, have been the main actors in national and international public decision-making and problem-solving. When public authority has been used at international level, it is presumed to have been derived from the authority of the nation-states or their representatives. Today, the notion of a single nation state as the exclusive entity for political representation and problem-solving has been largely replaced by the image of simultaneous, diverse and often contradictory sites of governance (public, quasi-public, private, local, regional, national, global) (Bach/Flinders 2004; Joerges/Sand/Teubner 2004). There is a shift to ›governance without government‹, to governance arrangements beyond the nation-state in which private actors – firms and NGO's – are involved systematically and which rely primarily on non-hierarchical forms of steering. Various factors such as the internationalization of markets and the development of new information technology have allowed denser communication across borders and encouraged the creation of new ›transnational‹ societal networks, including both public, quasi-public and private actors. At the same time, states are less and less able to control the flow of money, goods, pollution, people and crime across their borders. They cannot solve the most complex cross-border problems on their own. Many of the most vital aspects

of modern societies are, in effect, co-ordinated across boundaries via common knowledge and technology. Through global media as the Internet, relevant information and knowledge are shared among all types of actors, civil society organizations, corporations, informal groups and single individuals, etc. It has been argued by Arquilla and Ronfeldt (1997, 5), with reason, that

the rise of network forms of organization – particularly ›all channel networks‹, in which every node can communicate with every other node – is one of the single most important effects of the information revolution for all realms: political, economic, social and military. It means that power is migrating to small, nonstate actors who can organize into sprawling networks more readily than can traditionally hierarchical nation-state actors. (...) It means that whoever masters the network form stand to gain major advantages in the new epoch.

Networks have thus contributed to the disaggregation of authority as well as the formation of new collectivities not founded on hierarchical principles (Rosenau 2004). In this process civil society actors such as international NGO's and organisational or professional networks have emerged as complex nonstate actors which are engaged directly in the transformation of national, international and transnational political space.

The public sphere and the evolution of communication media

For our discussion, it is a *third evolution* that is of particular importance. *It concerns the fact that the classic notion of civil society is subject to influence by the changing nature of communications. The growing importance of the Internet and new developments in ICT underline the need to rethink ideas of civil society, publicness, knowledge diffusion and access to information.*

Due work has been done to show how much the concept of civil society is related to the emergence of the printing press and its modes of production, diffusion and appropriation (Habermas 1962; Warner 1990). The development of communication media based on print enabled the emergence of a modern form of ›public life‹ and the articulation of a kind of ›public opinion‹ which was distinct from, and potentially critical of, the official doctrines of the state (Thompson 1995, 69-75). The journals and weeklies which began to appear in Europe in the late seventeenth century and eighteenth century provided a new forum for the conduct of public debate, in which the activities of the state could be confronted and subject to criticism. This made it possible for political institutions and actors to observe and control each other through the mirror of public opinion (Luhmann 1996; Baecker 1996). Concurrently, concepts of openness and *publicness* became prominent in the self-description of modern society, pointing to the relevance of access to information and inclusion.

Authors like Locke, Madison or Mill argued that meaningful inclusion in the democratic process required informed citizens and a rejection of secrecy. The information gathered by the parliament became increasingly open to scrutiny, eventually abandoning the right to prevent the publication of its proceedings. Nowadays, one even speaks of a ›human right to information‹, also in the Universal Declaration for Human Rights.¹

With the advent of the latest information revolution – from the 1990's – and the rise of the internet, the public sphere has taken an important leap to become a truly global and interactive institution. Although the concept of the ›public sphere‹ was not developed on the basis of the internet, its arrival amply confirms and enhances the basic idea that a ›public‹ is principally unbound and is not limited by forms of spatial integration of society (Luhmann 1997, 314; Stichweh 2002). Telecommunication and information technologies have indeed increasingly enabled the emergence of a ›global public‹ and global public sphere.

The impact of the internet on civil society actors and the public sphere can be distinguished by its potential range versus previous media, in that the internet provides an interactive component that radio and television, for instance, lack. The internet's strength is its ability to support simultaneous, interactive communications among all interested people. Unlike the telephone, which primarily supports one-to-one communications, or print media, radio and television, where information flows in only one direction, from a single source to an audience that can only read, listen or watch passively, the Net allows information to flow back and forth among millions of sources at practically the same time. The implication is that millions of people can be exposed to a medium in which they have an active role to play and in which they can influence political as well as other outcomes.

By allowing a more active role for civil actors, the Web also deconstructs the traditional ›publishing model‹ of the public sphere of print media. As David Weinberger rightly remarks (2002):

 this old model is about control: a team works on a document, is responsible for its content and format, and releases it to the public when it's been certified as done. Once it's published, no one can change it except the original publisher. The Web ditches that model, with all its advantages as well as its drawbacks and says instead, »You have something to say? Say it. You want to respond to something that's been said? Say it and link to it. And you never has to ask anyone's permission (...)« By removing the central control points, the Web enabled a self-organizing, self-stimulated growth of contents and links on a scale the world has literally never before experienced.

1 For more information, see the publications at http://www.humanrightsinitiative.org/programs/ai/rti/articles/intl_articles.htm

Today's digital developments are removing the possibility of controlling reproduction and open all communication for change, enrichment and continuous ›peer review‹. In this way, the new information and communication technologies have decisively contributed to the proliferation of increasingly efficient and specialised transboundary and transnational dissemination of information and knowledge. They have created cross-boundary, non-institutionalised and extremely flexible networks of knowledge sharing, and have facilitated the proliferation of non-localised, global ›epistemic communities‹. As also pointed out by Bach and Stark, the emergence of interactive digital communication technology has shifted the global logic of organisation from ›brokering information‹ to ›facilitating knowledge‹ (Bach/Stark 2004). The emphasis is less on possession of information and rent-seeking but more on distributing intelligence and facilitating knowledge throughout self-organizing networks.

The growth and transformation of a knowledge-based world society

Scientific and knowledge-based communications are particularly receptive of simultaneous global dissemination across national and institutional boundaries (Sand 2004; Stichweh 2003). They are typically seen as universal, rather than as primarily culturally embedded communications. The general code of science is true/not true and deemed to have a universal quality (Luhmann 1991; 1997). Like other social systems or function systems (education, science, religion, economy, etc.) scientific communication is not restricted to spatial or territorial boundaries but has an inherently global reach. Yet, whereas law and politics are closely connected to specific or local cultural contexts, languages and institutions, science is more unbound by local institutions, and thus more easily transmittable and transversal across cultural and territorial boundaries (Sand 2004).

Not surprisingly, inclusion in the global system of science is typically associated with ideas of universality, publicness and openness. Stichweh (2003, 212) describes this association as follows:

If science can claim universality, especially social universality in the sense of presupposing validity of its truth claims for any individual whosoever in the world, then it follows with a certain consequence that access to these universal truths should not be denied to any one of those individuals for whom these truths are supposed to be valid on the first hand. And if openness is the only standard acceptable in dealing with scientific knowledge then again this openness should be realized for a public of maximum social extension.

It is our thesis that realizing such a global public not only points to the importance of ›science popularization‹ (cf. Stichweh 2003) but also to the availability of open knowledge resources and free access to scientific information.

This is all the more important because science's importance stretches beyond the narrowly described boundaries of the scientific system. It is one of the general and crucial societal and communicative functions and is vital for the transformation of modern societies. Science-based and knowledge-based discourses have not only spread globally, they have also become predominant in many areas of world society. Nowadays, significant parts of communication in politics, public institutions and private organisations are based on various types of scientific or other knowledge-based discourses. Environmental regulations, health policies, development strategies, food security, educational and pedagogic policies, etc. are all increasingly, and to a large extent, dependent on scientifically deduced knowledge. To some extent, science- and knowledge-based discourse also takes on an important role in political decision-making and regulatory law by developing standards on scientific grounds (Luhmann 1991; Sand 2004). Environmental protection and health or medicine policies are based on the idea that it must be possible to prove scientifically which situations, substances, etc. are hazardous or not. From the point of view of systems theory, this broad knowledge basis of world society points towards the orthogonality of knowledge itself in the principle of functional differentiation (Stichweh 2004; 2006). Important forms of knowledge figure in nearly all function systems and none of the function systems is able to claim a societal primacy for the production of knowledge.

Consequently, it is to expect that the recent and sudden shift towards globally available knowledge is itself an event of potentially dramatic or catastrophic evolutionary importance. This leads to several intriguing questions. What would such impact be? What would it imply for political, journalistic, and scientific organization? Or less futuristic: is it possible to discern tendencies projecting or proclaiming such transformation as we speak? Interestingly, such tendency does exist. One finds undeniable traces of such claims in a host of movements that make a common appeal to ›openness‹ (of information, of software, of innovation ...).

Open Access and Creative Commons

Not surprisingly, the origin of the notion of openness, including its ambiguous connotations of being free in economic and political terms, has been closely related to the societal syntax of the digital media, and the difference they make with a crucial characteristic of the printing press: the latter's costliness. Possessing a printing press, printing material and disseminating it have always

been associated with a relatively high economic cost. And consequently, printed information can neither be said to be completely free in a political sense – it is simply not something that just anybody can produce and disseminate without a strong budgetary commitment. Socio-historical research has convincingly shown that writing and, later, the printing press must therefore be held responsible for definitions of information that were hitherto nonexistent (Ong 1982; Havelock 1963; Eisenstein 1979; Castells 1996). More specifically, this meant that information came to be subjected to the same economic laws that applied to material needed for its production and dissemination (the printing press itself, paper, a postal infrastructure etc.). And consequently, what constituted information was expressed through a vocabulary narrowly related to economic scarcity. Not only did it come to be imbued with an owner (the ›author‹); it also came to be regarded as a commodity the ownership of which had to be judicially protected (through ›copyright‹), or the scarcity of which could be the subject of an economic payment, expressing the (partial) transfer of its ownership. Paradoxically, indeed, information thus came to be associated with exclusivity and even exclusion: ex-formation, if it were.

The computer age distorted this relationship between the production of information and strong concentrations of economic capital to a considerable degree. Apart from time and learning, everybody can potentially write software. And the advent of the worldwide web further exacerbated matters. Nowadays, the economic costs associated with producing information and even spreading it on a global scale are marginal. The implications of the new information technologies must be said to be far-reaching. If our assumption that economic costs associated with the printing press have entailed limitations on the political and judicial freedom of information is right, then, *vice versa*, the principally marginal costs associated with digital media and the Internet must imply that the production of information must potentially also be politically free. As we shall see, this has enormous consequences for the persistent yet historically contingent semantics of authorship and the proprietary or exclusive definitions of information.

We want to argue that new global movements and developments in the field of digital media challenge the existing semantics of authorship, copyright, and our proprietary definition of information.

The Open Source Revolution

Typically, these new visions and definitions took shape in close relation to the deep syntax of the digital media: programming, or, in the wider sense, software, and the telekinetic infrastructure of those media (the Internet and its precedents). And typically, they developed without any clear awareness of

their transformative potential, let alone a medium theoretical framework – unfortunately, the Owl of Minerva only takes flight with twilight closing in. Those movements emerged in the largely untrodden field of computer science and did not even concern definitions of ›information‹ per se. Early ventures into the discipline may well be compared to the exploitation of a vastly unknown and unmapped territory. Seen in hindsight, computer science and software development at the time *all* conformed to what is nowadays referred to as **open source**: programmers freely borrowed (›copied‹ or ›stole‹) from each other, and thus lent defining momentum to the much applauded information age. This same spirit of academic freedom was later at work in the development of the Internet. As indicated by Manuel Castells, the Internet typically did not develop in the commercial sector: »It was too daring a technology, too expensive a project, and too risky an initiative to be assumed by profit-oriented organizations« (Castells 2003, 9-35). Its birth must be situated on the intersection of military research, high-end science, and grassroots individualistic culture. It needed the momentum of the Cold War and its paranoid military climate in order to profit from the level of resources necessary to build a computer network and design appropriate technologies; it could only thrive thanks to the unlimited autonomy of research and innovation granted to its developers; and thanks to the deliberate infusion of individual freedoms fostered at several key intellectual institutions, it is characterized by the openness and self-regulation that are at the root of several key developments nowadays.²

Yet, especially in the eighties, open source development seemed to have come to an end. Personified by companies as Microsoft, commercial software developers conceived of the idea that they may claim certain intellectual rights to their products, just as the publishers and authors of conventional books and vinyl records. Software thus became a corporate asset, and, what is more, it came to be severely protected. Source code not only halted to be freely available; it stopped being available *at all*, defined as proprietary by the companies that owned it. This changed IT in a way not foreseen by the early developers of the 1950s or 1960s. Suddenly, software came in ›packages‹, and was not to be modified, but turned out to be made for ›end-users‹ operating within the boundaries set by program developers. For more than a decade, this paradigm remained in place as the dominant production mode of the technologies that were believed to be the backbone of the new media revolution.

2 Nowadays, there exist quite a few excellent histories of the internet. For the sake of editorial necessity, we simply list the ones that are most accessible: All about the Internet <<http://www.isoc.org/internet/history/>>; A Brief History of the Internet (by those who made the Internet) <<http://www.isoc.org/internet/history/brief.shtml>>; Nethistory <<http://www.nethistory.info/>>; Hobbes' Internet Timeline v8.1 <<http://www.zakon.org/robert/internet/timeline/>>

Yet, in the 1990s, a young Finnish engineer by the name of Linus Torvalds apparently reversed the tide once again. Malcontent with the mounting commercial orientation of the UNIX OS, he devised his own operating system, **Linux**, and put it under the GPL-license (cf. infra).³ The idea was more than an interesting experiment. In a few years after its origination, Linux turned out to be a viable alternative to the proprietary candidates, is growing *vertically* (in terms of stability and quality) and *horizontally* (in terms of product variety and user-friendliness), and backed by a motivated and well-informed community. Nowadays, the most visible difference with proprietary systems is its multifariousness: Linux not being a company, it does not come as one, but as many. RedHat, Fedora, Debian, Gentoo etc. are so-called *distributions* with their own fora, philosophies and ›corporate cultures‹. They have driven the development of many of the tools that keep today's proverbial ›virtual culture‹ running: most of the Internet today runs on computers running Linux operating systems and Apache web server software. In the meanwhile, the earlier drive for *uniformization* came to be replaced by an unmitigated desire for *customization*, a mounting visible and important characteristic of contemporary digital artefacts.

Interestingly, the Linux-paradigm also realized a remarkable spin-off into fields that were until then the monopoly of commercial developers. The cry for **Open Source Software**⁴ (OSS) – including applications for the Windows and Macintosh operating systems- became louder. On the one hand, worries about overdependence on one or a few (mainly U.S.-based) companies have caused several governments to openly revert to OSS. On the other, individual users and organizations have started to think that the commercial interests of the same companies may not have been the most efficient incentive for guaranteeing the quality of software they are looking for. Adding to OSS' momentum, its learning curve has also tended to grow less steep. OSS generally became more user-friendly, even if ›plug-and-play‹ is not yet the appropriate term here (and it may never be, also due to a different thinking about software). In some most important examples: OpenOffice,⁵ the Firefox browser and the Thunderbird mail-client (both products of the Mozilla-foundation),⁶ ... are completely free and reliable, if not superior, multi-platform substitutes for well known proprietary applications as resp. the Microsoft Office suite, Internet Explorer, and Outlook.

Conclusion no. 1: Being free (both in the sense of ›free beer‹ and ›free speech‹), OSS has been gaining ground, including in the field of common end-user applications.

3 <<http://www.linux.org/>>

4 The literature on the topic cannot possibly be exhaustively mentioned. See, as important online material: Open Source Initiative (OSI) <<http://opensource.org/>>. Highly relevant printed publications include: Raymond 2001; Williams 2002; diBona/Ockham/Stone 1999.

5 <<http://www.openoffice.org/>>

6 <<http://www.mozilla.org/>>

The OSS paradigm and ›social environments‹

Important for our discussion, the development of OSS does not reflect the corporate interests of a business plan, production schemes, release projections etcetera, but *bears striking similarities to the fundamentally deregulated, flexible and self-organizing nature of the process of scientific publishing*. As argued by Feller and Fitzgerald, »OSS development communities exploit the power of *peer review* to facilitate the debugging process of feature enhancement« (Feller/Fitzgerald 2002). Such massive peer-review furthermore causes OSS projects to be generally characterized by *rapid, incremental release schedules*, in which (limited) extra functionality is added in each release. Yet, the real fuel of the robust engine that is OSS is the **GNU** – the whimsical abbreviation of »GNU's Not UNIX« –⁷ **Public License (GPL)** (Laurent 2004): a »terms and conditions« accompanying any piece of OSS, and stipulating that anyone may copy, modify, and redistribute the software as long as they follow two rules. 1) They must retain the GPL license and author notices in the original code; and 2) they may not restrict others from redistributing code they received. The GPL uses copyright law to maintain the freedom valued by OSS developers. It is thus at the forefront of a number of software licenses that are each concerned with guaranteeing the availability of source code to individual developers, yet with different restrictions on further distribution (of e.g. patches) in view of the rights of their original developers (Laurent 2004). Yet in general, the now common practice of open-source software licensing involves rethinking traditional ideas of ownership and intellectual property to encourage more open sharing and collaboration, with the aim of enhancing software production.⁸

Recently, technologies associated with sharing knowledge and information communities has reinforced the OSS paradigm, without necessarily being OSS themselves. Social environments such as *blogs* and *wikis*, the wikipedia-project⁹ and several google-services,¹⁰ annotation tools such as *del.icio.us*,¹¹

7 <<http://gnu.mirrors.typhon.net/>>: »The GNU Project was launched in 1984 to develop a complete UNIX style operating system which is free software: the GNU system. [...] Variants of the GNU operating system, which use the kernel Linux, are now widely used; though these systems are often referred to as »Linux,« they are more accurately called GNU/Linux systems.«

8 Interestingly, its opponents describe this deregulatory aspect as contrary to the public interest: »Customers will never really know who stands behind this product« (Microsoft Chief Executive Steve Ballmer) <http://news.com.com/2008-1082_3-998297.html> <http://news.com.com/2100-1016_3-999371.html>

9 <<http://www.wikipedia.org/>>

10 <<http://www.google.com/>>; <<http://scholar.google.com/>>; <<http://desktop.google.com/>>;

11 <<http://del.icio.us/>>

*Flickr*¹² and *Furl*¹³ or *Spurl*¹⁴, more hybrid utilities such as *JotSpot*,¹⁵ and especially RSS (Rich Site Summary or Really Simple Syndication, i.e. the possibility of syndicating web-content) have contributed to the ever-expanding dominance of the Web as the pre-eminent, global information medium and the pinnacle of virtual culture. Importantly, these tools challenge the orthodoxy of the traditional website as a static and relatively independent unit of information, and visibilize the production of knowledge and information too as a highly decentralized and dynamic process, which is characterized more by access to potential sources of (other) information than by the *prêt-à-porter* characteristics of the static and closed website. RSS, for instance, is in many respects, the opposite of the website. It is not a ›home page‹ for visitors to call at, but it provides a snapshot of the current state of a website with simple titles and links. It can more generally be interpreted as a kind of network connector between disparate applications. Syndication and annotation are the order of the day and are beginning to herald a new immediacy in information provision.

In this respect, the vociferous blogger David Weinberger has attempted to picture the web and its merit as necessarily characterized by messiness, and a lack of ›author-ship‹ and thus ›author-ity‹.¹⁶ In his view, the internet has started to question the idea of the structure of knowledge as hierarchy, in which specific (later) claims are dependent on more general (earlier) claims, and according to which the scientific progress is presented as gradual and accumulative. The internet, so Weinberger argues, shows us a different and more complex picture. Progress of knowledge is not so much linear, but shattered and multi-layered (as in so-called ›tangled hierarchies‹)¹⁷. And the ›units‹ in the web of information are no hierarchical nodes, but ›rhizomes‹ or ›knots‹ without a defined position.¹⁸ The wellknown **Wikipedia-project** provides compelling evidence supporting his view. Admittedly, an online dictionary and encyclopedia is nothing new. What makes Wikipedia different, however, is the story of its construction. Entries are not prepared, edited and published by a hierarchically organized core team of senior professionals, but are out there in the open.

12 <<http://www.flickr.com/>>

13 <<http://www.furl.net/index.jsp>>

14 <<http://www.spurl.net/>>

15 <<http://www.jot.com/>>

16 David Weinberger in an address to the John W. Kluge Center of the Library of Congress (Library of Congress Lecture Series »Managing Knowledge and Creativity in a Digital Context«, Nov. 15 2004). Archived lectures can be found at <<http://www.c-span.org/congress/digitalfuture.asp>>.

17 After Douglas Hofstadter. A tangled hierarchy is a system in which, whenever movement is made upwards or downwards through the levels of its hierarchy, the system unexpectedly arrives back where it started. As such, tangled hierarchies are the expression of a system's self-reference.

18 For a provocative example of rethinking news gathering and journalism in the context of Weinbergerian ›messiness‹: Dan Gillmor 2004.

Everybody has the right to construct, edit, or re-edit entries, and ›peer-review‹ is eschewed as much as possible. Only in a very limited number of cases (e.g. in the case of the entry on the American president George W. Bush)¹⁹ was it necessary to intervene in the editing process. One would expect the result to be a non-transparent mess of highly volatile quality and quantity, but nothing is more untrue. After all, the lack of initial vetting does not mean that there is no vetting of work once it is submitted. Within Wikipedia nearly all the editing and reworking is done by other members of the community, guided by a very simple and informally agreed set of editorial principles, and driven by the impetus to climb the ladder of prestige in the ›community‹. A volatile notion of merit (in opposition to the hierarchical power structures of organizations) thus translates into a stable and robust production of quality and quantity (opposed to the limited production potential of classic organizations and their members).²⁰

Conclusion no. 2: Apparently, the growth and quality of information technologies and information (knowledge) is aided by a production mode that emphasizes deregulation and openness (i.e. free in the sense of ›free speech‹), much more than corporate planning and closedness (through licensing).

A New Information Paradigm

Yet, whereas the aforementioned social environments certainly are a new kind of staples of the Internet society, their arrival alone may not suffice to indicate the Internet as a radically transformative technology, as has been said about e.g. the printing press. The larger part of contemporary usage of the internet is (not yet) sufficient indication of an ›Internet Galaxy‹ (Castells 2003). For this, one must credit *the arrival of new definitions of information and ownership*, as presented in Creative Commons Licenses, and, more recently, the swiftly growing impact of the Open Access movement.

As pointed out by Andrew Laurent, the **Creative Commons License** is »an effort to expand the open source model of development beyond software to literature and the arts« (Laurent 2004, 85). An initiative of the American lawyer Lawrence Lessig, and hosted by the Stanford Law School Center for Internet

19 See: < http://en.wikipedia.org/wiki/George_W._Bush > and the related talkpage: http://en.wikipedia.org/wiki/Talk:George_W._Bush; for information on Wikipedia's ›neutrality policy‹, see <http://en.wikipedia.org/wiki/Wikipedia:NPOV_dispute>

20 The evidence speaks for Wikipedia's evolutionary potential. The project passed 1,000 articles around 12 February 2001, and 10,000 articles around 7 September. In the first year of its existence, over 20,000 encyclopaedia entries were created – a rate of over 1,500 articles per month. By 30 August 2002 the article count had reached 40,000. By 20 November 2004 the English wiki had 400,000 articles, and by 18 March 2005 the count was 500,000. (Mulgan/Steiberg/Salem 2005).

and Society, Creative Commons²¹ is a reaction to what could be defined as (very) restrictive notions of intellectual copyright. Importantly, its aim is not the denial of copyright, but a rethinking of its definition in the field of information (hence: ›some rights reserved‹, and not: ›no rights reserved‹). Most fundamentally, its starting point concerns a definition of information that sharply differs from what could be called the market economic viewpoint. The latter's line of thought is well-known and, at first sight, quite convincing. Material and immaterial (or intellectual) commodities are to be considered scarce, as not everybody can simply will them into being. Scarcity is articulated through the zero-sum notion of property (I cannot have what you have; if I made an original scientific invention, I should be able to claim it as mine and reinforce my intellectual property by means of law), which is in turn achieved or lost by respectively the possibility and impossibility to pay.

The Creative Commons movement refuses to adopt this reasoning. Information, so it is argued, is not to be measured by its value of being scarce, but being plentiful. First of all, it plainly defies comparison with material things as its transfer does not imply loss on the side of the transferrer; a payment and consequent transfer does not cause knowledge to be ›gone‹ from its inventor; it only causes *access* to that knowledge to be restricted. And restricted access is more often than not disadvantageous to scientific progress. Consequently, they say, its property must be judged in very different terms. For once, its property should be considered a public good, as e.g. water: its availability does not cause people to store as much water as possible in their private homes, but is managed by the guarantee of, indeed, *having access to it*. A proprietary definition of public goods would not only considerably complicate their management; it would also hamper their full potential. And in still other words, the transactions associated with their property are better off if conceived in terms of a *gift economy*, not a market economy. This would not mean that incentives for producing scientific content are destroyed, but simply that they are not formulated anymore in monetary terms. A set of incentives could for instance consist of academic prestige and recognition; the power to distribute scientific information would then be rewarded by the flowback of information and eventually reputational benefits (which obviously can help to advance personal careers). In the context of open source vs. closed source software, Linus Torvalds has therefore once alluded to parallels with the evolutionary potential of science (believed to be open) respectively witchcraft: the latter died out. Apparently, knowledge cannot thrive when guarded in secret. On the contrary, openness may forcefully enhance its chances for survival and even expansion. In short and with due attention to nuance, the Creative Commons movement believes that current restrictive definitions of intellectual property

21 <<http://creativecommons.org>>

may have been at least as detrimental to the growth of culture and knowledge as they have been beneficial to providing incentives for their production (Willinsky 2005; Andersen 2005).

Open Access and the ›pricing crisis‹

Corollary of the (mainly) ideological inspiration of the Creative Commons, economic conditions²² are largely responsible for the rise of **Open Access**.²³ Commonly referred to as the ›pricing crisis‹, the inflation associated with scholarly publishing and the consequent hardship for even main scientific libraries to maintain large collections of journals in the ever more specializing (sub)field(s) of science have caused librarians and scientists to look for publishing means outside the domain of a few ›information oligarchs‹. Obviously, aforementioned technologies as weblogs, wikis etc. reinforce these ideas, for they show that Open Access is a real possibility ... through the Internet. Whereas there does not yet exist one universally accepted definition – which has led some to believing or erroneously claiming that there exists no definition at all – the core of its arguments is the common ground of three documents formulated after meetings at respectively Budapest²⁴, Bethesda²⁵ and Berlin²⁶ (hence abbreviated as the ›BBB‹). Basically, the OA definition reiterates the debate on freedom of (scientific) information (cf. supra) and is once more an attempt to tackle common misunderstandings infused into the latter. OA, almost all proponents agree, must be defined as 1) removing *price barriers* (›free as in free beer‹), but must also be credited for 2) removing *permission barriers* (›free as in free speech‹): »Putting peer-reviewed scientific and scholarly literature on the internet. Making it available free of charge and free of most copyright and licensing restrictions. Removing the barriers to serious research.«²⁷

22 Yet, as rightfully indicated by Peter Suber, »The pricing crisis itself is just one factor in the rise of OA. Even if scholars did not turn to OA in order to bypass unaffordable access fees, they'd turn to it in order to take advantage of the internet as a powerful new technology for sharing knowledge instantly, with a worldwide audience, at zero marginal cost, in a digital form amenable to unlimited processing. » We will discuss this as the evolutionary advance and advantage of OA. See: <<http://www.earlham.edu/~peters/fos/overview.htm>>

23 For a most authoritative overview, see: <<http://www.earlham.edu/~peters/fos/overview.htm>>; for an overview of available literature about OA, see: Bailey 2005

24 See: <<http://www.soros.org/openaccess/read.shtml>>

25 See: <<http://www.earlham.edu/~peters/fos/bethesda.htm>>

26 See: <<http://www.zim.mpg.de/openaccess-berlin/berlindeclaration.html>>

27 Opening quote of Peter Suber's Open Access News: <<http://www.earlham.edu/~peters/fos/fosblog.html>>

Peter Suber, the most prolific writer on Open Access and its central reference, explains and expands the above definition with the following specifics:²⁸

- Open-access (OA) literature is digital, online, free of charge, and free of most copyright and licensing restrictions.
- OA is compatible with copyright, peer review, revenue (even profit), print, preservation, prestige, career-advancement, indexing, and other features and supportive services associated with conventional scholarly literature.
- The legal basis of OA is either the consent of the copyright holder or the public domain, usually the former.
- The campaign for OA focuses on literature that authors give to the world without expectation of payment.
- Many OA initiatives focus on taxpayer-funded research.
- OA literature is not free to produce or publish.
- OA is compatible with peer review, and all the major OA initiatives for scientific and scholarly literature insist on its importance.
- There are two primary vehicles for delivering OA to research articles, OA journals and OA archives or repositories.
- The OA project is constructive, not destructive.
- Open access is not synonymous with universal access.
- OA is a kind of access, not a kind of business model.
- OA serves the interests of many groups.

But being a reaction against the ›overpricing‹ of scientific journals, it is also one of the hottest and most contested (and most misunderstood) of the ›opens‹ we have presented here. The publishers of scientific journals, threatened in their oligopolistic position as vehicles of scientific information, typically argue against the assumed advantages of OA's marginal costs. Frank and Glassroth, in their review of the American National Institute of Health (NIH) OA-policy, criticize the call for free public access to publicly-funded research by comparing research to wheat: »The government also subsidizes wheat growers, but they still sell their grain, and no reasonable person asks those who produce bread from that wheat to give their bread away for free« (Frank/Glassroth 2005). Rudy M. Baum dismisses OA as a flawed ›socialist‹ project, and proposes a parallel between OA to research and OA to BMWs (Baum 2005, 5):

BMW's should be free. They're great cars, safe and fun to drive. Cost should not be a factor in determining whether every citizen has access to a BMW. I hereby proclaim the open access to BMW's movement. The federal government and BMW dealers should join forces to ensure that

28 After: <<http://www.earlham.edu/~peters/fos/overview.htm> >

every U.S. citizen has a free BMW. Absurd, yes? But scientific information – peer reviewed, edited, packaged, and archived as a journal – and BMWs are both commodities, and both cost a substantial amount of money to produce. There is no logical difference between the axioms and, if one is absurd, then so is the other.

However, contrary to these assumptions and as we have explained above, there exists *no isomorphy* between knowledge and intellectual products on the one hand, and material commodities on the other. Wheat is rivalrous or scarce, which means that possession or consumption by one person excludes possession or consumption by others; knowledge is not. And with regard to BMW's (in the words of Peter Suber): »If the creators of BMW's didn't expect to be paid, if the costs were already paid by taxpayers, and if the distribution could be done over the internet at costs approaching zero, then free BMW's might be a good idea.«.²⁹

Whether the Open Access movement must be dubbed communist, socialist or liberalist is obviously not the issue here. It is also not on the OA-agenda to deny the validity of market-economic principles. OA proponents simply point out inconsistencies in the assumptions that scientific products are one class of commodities, that they are subjected to the principle of scarcity, and that monetary incentives are the only way to create incentives for scientific innovation. In our view, OA should rather be assessed in the dispassionate terminology of the theory of *evolution*. Described as such, it demonstrates the historical contingency of printed publications as the coupling of science and the economic system, and thus deconstructs the traditional notion of authorship as the expression of that coupling (St Clair 2004). As explained above, the latter was obviously invoked or created because of economic costs associated with printing and the dissemination of information in a material form, and not because of an inherent right of ownership. Thus, information came to be defined in terms of scarcity much against its characteristics. The advent of digital formats, on the other hand, seems to have broken the stalemate. It decouples information from any material carrier and, as such, the strict coupling of science and the economic interests of scientific publishers. It also enabled a fresh interest in thinking about information, and the intricacies of its possession. Open Access is a major step forward, if only by indicating that it is to the advantage of scientific production if plenty and ubiquitous – an idea to which even scientific publishers must eventually concede (Kanter 2005). Current debates on Open Access provide a critical mass needed to visibilize the true impact of the digital revolution, even if all of its aspects may not even be remotely known. Digital media have come full circle, so to speak. Whereas openness and the organizational form of the network were accidentally and certainly uninten-

tionally at work in the minds of the ARPA engineers responsible for the Internet, the Open Access movement stands as a semantical realization of the advantages and promises of a non-proprietary and non-hierarchically dealing with knowledge, science, and information.

Open Access, social inclusion and ›the digital divide‹

As already indicated above, the emergence of non-hierarchical, knowledge-based networks has stretched beyond the scientific domain into politics and civil society. Openness includes the possibility of revisiting notions as civil society and the public sphere. To conclude we would also like to argue that Open Access can shed some light on the broadly discussed issue of the ›digital divide‹, which precisely refers to inequality of access to the Internet.

Factually, issues as global inequality, development and equal inclusion have been a crucial concern of the Creative Commons movement. Its **Developing Nations** license allows one to invite a wide range of royalty-free uses of one's work in developing nations while retaining one's full copyright in the developed world.³⁰ As a good example of its evolutionary potential, reaching out to the periphery has been an objective of the open access movement as much as it has been a motivation for pursuing an open agenda. Again according to Peter Suber,

For researchers in developing countries, OA solves two problems at once: making their own research more visible to researchers elsewhere, and making research elsewhere more accessible to them. OA, if adopted widely, can raise the profile of an entire nation's research output. When Indian research, for example, is published in expensive journals, then all too often it goes unnoticed by other researchers in India. OA journals and archives help to integrate the work of scientists everywhere into the global knowledge base, reduce the isolation of researchers, and improve opportunities for funding and international collaboration.³¹

Again, the scientific domain was the first to recognize the transformative potential. In a move unprecedented in modern history, the Massachusetts Institute of Technology (MIT) decided to start its OpenCourseWare³² initiative:

30 <<http://creativecommons.org/license/devnations>>: »The Developing Nations license allows, for the first time, any copyright holder in the world to participate first-hand in reforming global information policy. The fact is that most of the world's population is simply priced out of developed nations' publishing output. To authors, that means an untapped readership. To economists, it means »deadweight loss.« To human rights advocates and educators, it is a tragedy. The Developing Nations license is designed to address all three concerns.«

31 <<http://www.earlham.edu/~peters/writing/wsis2.htm>>

32 <<http://ocw.mit.edu/index.html>>

not exactly an example of OA but of OpenContent and »based on the conviction that the open dissemination of knowledge and information can open new doors to the powerful benefits of education for humanity around the world.«.³³ With 1,100 courses published of June 1, 2005, the policy proved attractive enough for Japanese top-universities to follow its lead.³⁴ Yet, there has been a rapid spill-over of calls for openness and accessibility to other domains of social organization. (Open) Access has become a catch-all term for those communicative innovations that tend to encourage the inclusion of citizens all over the world, most prominently where it concerns health and agricultural development. And importantly (especially for the proliferation of OA), there has been extensive research into *preventing OA from contradicting the dynamics of e.g. gain and profit in those sectors*. At the most shallow level, OA is defined as being a tool for corporate image building. A corporation may advance its reputation for social responsibility and win greater esteem from the public by accepting humanitarian licensing. But there exist more proactive methods for stimulating combinations of OA and profitability. Transferring technology to developing countries, for instance, may make it possible to develop, produce, and distribute the product at much lower cost than typical partners in the U.S. or other industrialized countries. Stimulating OA may also include measures punishing its potential abuse by licensees. A powerful example are »performance milestones«. They are often used in public-private partnerships and sponsored research agreements to measure a project's progress and success. An example of a humanitarian licensing milestone might be a requirement that on or before the date of the first phase of a clinical trial for a new drug, the licensee will have identified a generic manufacturer in a middle-income country to produce the licensed technology at a reasonable price for developing countries. Subsequently, if this mile stone is not met, other provisions and reservations in the agreement would be triggered, for example loss of exclusivity, sublicensing, and even termination of the agreement (Brewster/Chapman/Hansen 2005).

Yet, whereas the OA movement may confidently claim to be able to remove financial barriers, it is neither a panacea for all problems related with social exclusion, nor a guarantee of universal inclusion. Barriers remain – what is the use of freely distributing books to the illiterate?! Obviously, lack of education and lack of informational structure will remain important. On the other hand, inequalities can shift from the wallet to the intricate difficulties associated with *computer literacy*. The problem is not unknown, but still largely untouched upon in the Open Access movement. According to Laura D. Stanley, »beyond the costs associated with access and a lack of proximity to computers, several

33 <<http://ocw.mit.edu/OcwWeb/Global/AboutOCW/our-story.htm>>

34 <<http://www.jocw.jp/sub2.htm>>

social and psychological obstacles interfere with individual motivation to engage with and thus potentially benefit from this new technology. In short, the divide's topography is defined by psychosocial factors as well as by access« (2003, 407). Her analysis reflects concerns voiced by Mark Warschauer, who plainly argues for a reconceptualization of the digital divide. Such notion should go beyond the narrow notions of providing access to hardware and software, and should include »physical, digital, human, and social resources and relationships« (Warschauer 2002; 2003). A binary divide between the information haves and have-nots, all too often taken for granted by the larger bulk of the OA community, is probably an oversimplification of the problem, as it assumes a mere causal relationship between lack of access and lack of chances for development. However, as this is undoubtedly true, so is the reverse: those who are already excluded will also have fewer opportunities to access and use computers and the Internet in the first place. Inclusion demands the consideration of complementary resources and complex interventions. Put differently: ICT is no exogenous factor which can simply be ›injected‹ in order to guarantee social inclusion and access. It is rather *one element of the broader social conception to advance the latter*.

How can the Open Access movement profit from these insights? First of all, if it is really committed to address problems of development, it should redefine the very notion of ›access‹. Whereas the latter is more often than not taken to relate to the physical or tangible availability of (scientific, journalistic, and other) information, this definition has several flaws. At the very least, the accessibility of information also presupposes costs that transcend mere physicality. It also relates to the permanence and reliability of broadband communications, the availability of technologies aimed at making the information available (OS or proprietary), and, not in the least, knowledge of these technologies. ›Access‹ may therefore profit from being redefined so as to include *literacy* in a medium theoretical meaning: i.e. not to be confounded with the narrow notion of schooling or cognitive skills, but involving a variety of skills, knowledge, and attitude (obviously including cognitive processing skills); but also background knowledge about the world; and, possibly most important of all, the motivation, desire, and confidence to ›read‹ and learn. Hence, exactly because of the broader nature of literacy, OA campaigns should also take into consideration those networks of webs of social practices that support or restrict extended literacy. In many cases literacy is not so much granted from above, as seized from below through the social mobilization and collective action of the poor and dispossessed – a mobilization of *physical, digital, human* and *social* resources. In Warschauer's own words (2002):

In considering these four sets of resources, it is important to realize their iterative relation with ICT use. On the one hand, each of the resources is a *contributor* to effective use of ICTs. In other words, the

presence of these resources helps ensure that ICT can be well used and exploited. On the other hand, access to each of these resources is a *result* of effective use of ICTs. In other words, by using ICTs well, we can help extend and promote access to these resources. If handled well, these resources can thus serve as a virtual circle that promotes social development and inclusion. If handled poorly, these elements can serve as a vicious cycle of underdevelopment and exclusion.

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