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# Knowledge as a Global Public Good: The Role and Importance of Open Access

Verschraegen

Michael Schiltz

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## Societies Without Borders

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*Societies Without Borders* is a bi-annual journal, co-edited by Judith Blau and Alberto Moncada. One of the main ideas behind *Societies Without Borders* is bringing scholars from different continents closer together by showing their different approaches of the same research material, especially human rights and public goods. Many scholars from developing countries, paradoxically, have utopian ideas that they pursue, whereas progressive US scholars, for example, are more engaged in criticism. *Societies Without Borders* aims at bridging this gap; the journal also aims at breaking down the walls between the disciplines of Social Sciences, Human Rights (as formulated in the international standards of the UN-related organizations), Environmental Sciences, and the Humanities. Next to the work of scholars, *Societies Without Borders* will include articles by activists, teachers, and practitioners who understand the importance of collaborative efforts to affect and study change, for the dissemination of knowledge, and for case-based prototypes.

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## Knowledge as a Global Public Good: The Role and Importance of Open Access

Gert Verschraegen and Michael Schiltz

*Research Foundation Flanders and University of Leuven, Belgium*

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### Abstract

This paper argues that knowledge should be considered as a global public good first and as a private right second. The argument is underpinned by the claim that the growing movements for source-, data-, and knowledge-sharing (Open Access, Open Source, Open Courseware, etc.) have enhanced our ability to facilitate the global production and dissemination of 'knowledge', so that more people in the world can enjoy its benefits. In contrast with the existing intellectual property regime – which does not succeed in balancing the public and private gains of knowledge – these movements and their corollary technologies have improved peoples' access to knowledge goods and services. By enabling less developed countries to tap into the global knowledge pool they have also provided a new context to rethink the 'digital divide'.

### El conocimiento como un bien público global: el papel y la importancia del acceso libre

Esta ponencia sostiene que el conocimiento debe ser un bien público global en primer lugar, y después un derecho privado. El argumento se basa en los crecientes movimientos existentes (Open Access, Open Source, Open Courseware, etc.) para compartir fuentes, datos y conocimiento, que han facilitado nuestra habilidad para acceder a la producción y disfrute del conocimiento, de modo que más gente pueda disfrutar de sus beneficios. En contraste con el sistema de propiedad intelectual vigente, que no logra equilibrar los beneficios públicos y privados, estos movimientos y sus tecnologías complementarias han mejorado el acceso de la gente a los bienes y servicios del conocimiento. Al permitir a los países menos desarrollados acceder al conocimiento global, han logrado crear un nuevo contexto para repensar la llamada 'brecha digital'.

### La connaissance en tant que bien public: le rôle et l'importance d'accès public

Dans cet article, on constate que le savoir devrait d'abord être considérée, comme un droit public et, ensuite, comme un droit privé. L'argument est souligné par la réussite des mouvements de partager les sources, les données, et la connaissance (Open Access, Open Source, Open Courseware, etc.). Ces mouvements ont augmenté notre capacité de faciliter

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la production et la diffusion internationale de savoir, de sorte que toujours davantage de personnes dans le monde puissent apprécier ses avantages. Contrairement au système présent du propriété intellectuel – qui ne réussit pas à équilibrer les gains publics et les gains privés de connaissance – ces mouvements et leurs technologies ont amélioré l'accès des peuples aux marchandises et aux services de savoir. En permettant au pays moins développés de brancher sur la somme globale de savoir, ils ont également fourni un nouveau contexte pour repenser 'la barrière informatique'.

#### **Keywords**

global public good, knowledge society, open access, intellectual property regime, informationalized development

#### **Introduction**

As is well documented by now, the advent of the Internet and linked digital technologies have played a crucial role in the emergence of a global knowledge society, in which the deployment and use of knowledge and information is a constitutive feature of social order.<sup>1</sup> The central role of information and communication technologies in today's social fabric has significantly increased the need for, and reliance on, knowledge generation and processing. *Access* to flows of information and knowledge has become a vital condition for the capacity to act in modern world society.<sup>2</sup> Without full access to knowledge, individuals, organizations or even whole countries see their capacity to participate reduced and even risk 'exclusion' from the global information society.

Yet, the effects of the information revolution are far from global and remain dependent on existing inequalities of wealth, infrastructure and education.<sup>3</sup> The world is divided between information-rich and information-hungry individuals and countries. This article considers how recent developments such as the open access and open source movements provide a new vocabulary and perspective to rethink this 'digital divide' and deliver new possibilities to guarantee peoples' access to adequate knowledge goods and services. We argue that the emerging technologies for knowledge-sharing create new possibilities to treat knowledge as a global public good, the benefits of which accrue to everyone in the world. Open Access has enhanced our ability to facilitate the production and use of the global

<sup>1</sup> e.g. Castells 2001; Steinmueller, 2002; Rooney, Hearn and Ninan 2005.

<sup>2</sup> Stehr 2001.

<sup>3</sup> Castells 2001, pp. 247–274.

public good ‘knowledge’ and makes it possible for less developed countries as well to tap into the global knowledge pool.

In the next section, we start out from today’s technological and legal context. We set out the idea of knowledge as a public good and relate this to the existing intellectual property regime, which – so we argue – does not succeed in balancing public and private gains of knowledge. We then discuss the idea of knowledge as a *global* public good and consider how the open access and open source movement have given a strong impetus to the public production and global dissemination of knowledge. We conclude that open access to knowledge must be considered a key to successful inclusion in world society and a crucial ingredient of strategies of ‘informational development’. As such, the open access and open source deserve public support at the national and global level.

### Knowledge, Information and Ideas as Public Goods

In economic theory public goods are formally defined as goods characterized by 1) *non-rivalry of consumption* – the consumption of one individual does not detract from that of another –, and 2) *non-excludability* – it is difficult if not impossible to exclude an individual from enjoying the good.<sup>4</sup> Public goods are thus contrasted to private goods, which are characterized by both rivalry of, and excludability from, consumption. Goods (or services) that possess only one of the two criteria are called impure public goods.

At first sight, knowledge clearly satisfies the criteria of both non-rivalry and non-excludability. Firstly, unlike material things, knowledge and information are not rivalrous in use or consumption: the consumption of one individual does not detract from that of another. I can use an idea or piece of information at the same time as other people are discussing this idea without any loss of utility for either of us. Using knowledge or information does not ‘consume’ the knowledge; it remains available for others to use.<sup>5</sup> It is clear how information distinguishes itself from ‘traditional’ commodities when considering an example. If I own a bicycle (as material property) you cannot use it while I’m riding it. But although we cannot ride a bicycle at the same time, I can teach you to ride a bicycle. Once that

<sup>4</sup> Samuelson 1954; Musgrave 1959; Ostrom and Ostrom, 1977; Desai 2003.

<sup>5</sup> Samuelson 1954, p. 378.

knowledge has been shared, your use of it has no effect on my ability to use the knowledge at the same time. There is no compromise to my utility; our use of the knowledge of riding a bicycle is clearly non-rival. What's more, when transmitted, information often exhibits "network externalities" – that is, its value can escalate with increased use.

Being non-rivalrous, knowledge, information and ideas partly qualify as public goods. But do they comply with the principle of non-excludability as well? In their intangible form, information and knowledge clearly fall into the category of a public good. It is difficult to exclude people from gaining insight in, for instance, Newton's theory of universal gravitation, once it has been discovered and publicized. Yet, this example refers only to the ideas and formula's found in reading Newton's *Principia* – not to the book itself which would be classified as a private good, to be bought and sold on the market.<sup>6</sup> Through the coupling of information with one or more material carriers (technologies for information dissemination) there are indeed several possibilities to exclude individuals from enjoying the benefits of it. Printed information, for instance, may be inaccessible to some readers because a book is out of print or is too costly. Digital technologies also allow for exclusion. Although digital information is essentially non-rivalrous – users do not diminish a website or database by their use, no matter how many there are – it is not so difficult to exclude people from use.<sup>7</sup> For instance, most electronic journals exclude non-subscribers from reading the articles, by using digital-rights Management (DRM), the software lock that opens for authorized users and blocks access to the unauthorized.

In sum, the non-rivalrousness of ideas – knowledge in its intangible form – does not suffice to make knowledge into a public good, because technological locks as DRM and legal restrictions (intellectual property rights including patents, copyrights, and trademarks), can constitute important barriers to the diffusion and use of knowledge.<sup>8</sup>

*Technologies and their corollary juridical frameworks thus matter a great deal when determining the position of a knowledge good.* For instance, knowledge goods can change their position when new technologies for distribution develop. Television signals are an excellent example. There was no question of public or private television before it came possible to scramble

<sup>6</sup> Cf. Hess and Ostrom 2007, p. 9.

<sup>7</sup> Suber 2007.

<sup>8</sup> Plant 1934; Lessig 2002; May 2002, 2004; Drahos and Braithwaite 2002.

television waves and to restrict transmission through cables. Now some channels can only be viewed for a fee.<sup>9</sup> The path from non-excludability to excludability may also be reversed. Presently, new technologies for knowledge sharing as the Open Access and Open Source movement aim to lift price barriers and permission barriers that block access and limit usage of knowledge.<sup>10</sup> By delivering open access to digital information and by providing mechanisms through which knowledge can be more effectively shared with a worldwide audience, the Open Access and Open Source movement create new possibilities and potentials to treat knowledge as a truly public good.

### The Effects of Exclusive Rights to Knowledge

These efforts to establish a ‘Knowledge Commons’<sup>11</sup> are taking place, however, in a communications environment which is rather characterised by proprietary models of information and a movement of enclosure of knowledge. As has been effectively documented by Lawrence Lessig, Vaidhyathan and Christopher May, the model of intellectual property is still the overwhelmingly dominant legal paradigm of the global knowledge society.<sup>12</sup> The last decennia we have even seen a trend of expansion of copyrights, patents, and similar exclusive rights, and a move to create new legal tools with which information vendors could hermetically seal access to their materials to an extent never before possible.<sup>13</sup> The Digital Millennium Copyright Act (DMCA), for instance, prohibited technologies that users can employ to use digital information in ways that the owners have no right to prevent.

At the core of the current regime of IPRs – globally consolidated in the Trade Related Aspects of Intellectual Property Rights (TRIPs) agreement – is the notion that the private ownership of knowledge as property is a major

<sup>9</sup> Kaul and Mendoza 2003, p. 85.

<sup>10</sup> Proponents of Open Access have been straightforward in clarifying their objectives: “The open access movement: 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” Suber 2006, <http://www.earlham.edu/~peters/fos/fosblog.html>.

<sup>11</sup> Benkler 2006; Hess and Ostrom 2007.

<sup>12</sup> Lessig 2004; Vaidhyathan 2003; Drahos and Braithwaite 2002; May 2004.

<sup>13</sup> Benkler 2006, pp. 380–381.

spur to continued economic development and social welfare. It is also emphasized that the development of knowledge is an individualized endeavour, and there should be a legitimate (i.e., monetary) reward for such individualized effort.<sup>14</sup>

One of the central purposes of intellectual property rights is indeed to secure a monetary reward for the supply of knowledge goods or services. This is not an obvious course, however. Without the possibility of excluding from use, securing a monetary reward for the supply of knowledge would be difficult if not impossible. Few people would be willing to pay for something that is freely available. Hence, intellectual property rights construct a scarcity of use where none exists per se.<sup>15</sup> By means of property rights in patents and copyright one can create scarcity, exclude nonpayers, and construct a market economy for knowledge and information. The underlying economic legitimation behind this model is that the production of (some forms of) knowledge can only be guaranteed if the returns can (to some extent) be appropriated. This also ‘works’: in industries such as metallurgy, firms will only invest in developing a new alloy if they can exclude rivals from knowledge of the chemical composition and the properties of the alloy.<sup>16</sup> If this new alloy cannot be kept secret and must be immediately available for competitors, the firm could not make profit from it and recuperate its research costs. Thus, “if firms cannot appropriate the returns to producing knowledge, they only will have limited incentive to produce it: in deciding how much they will invest, they will look only at the return that they acquire, not the benefits that accrue to others. The benefits that have accrued from the development of the transistor, the laser or the mathematical algorithms that underlay the modern computer have been enormous, extending well beyond the benefits accruing to those who made or financed these innovations and discoveries”.<sup>17</sup>

Efficiently designed intellectual property rights can indeed benefit the production of innovative knowledge, the benefits of which can accrue to everyone in the world. For example, by issuing patents and copyright protection to inventors governments can channel rewards to inventors and thereby stimulate incentives to knowledge production. Yet, as has been frequently pointed out, exclusive rights such as copyrights or patents have

<sup>14</sup> May 2004, p. 402.

<sup>15</sup> Arrow 1996; May 2002, 2005.

<sup>16</sup> Stiglitz 1999, pp. 309–310.

<sup>17</sup> Stiglitz 1999, p. 311.

more ambiguous effects dynamically. They not only raise the expected returns from information production (and thereby are thought to induce investment in innovation) but at the same time increase the costs of information inputs. Because any new information good or innovation builds on existing information, strengthening intellectual property rights increases the prices that those who invest in producing information today must pay to those who did so yesterday. “If existing innovations are more likely covered by patent, the current producers will more likely have to pay for innovations or uses that in the past would have been available freely from the public domain”.<sup>18</sup>

The reinforcement of the regime of IPRs during the last decennia has been the subject of sustained and diverse academic critique since the beginning of the 90s.<sup>19</sup> The core of this critique has been that granting legitimate private rights to business in order to encourage investment and creative production, should not bring about the public domain’s decline and disproportionately curb the rights of access to knowledge resources. IPRs should properly balance the rights of knowledge ‘owners’ and the rights of those who may need vital knowledge resources, otherwise they are no longer socially beneficial. In the economic parlance: IPRs can only be efficient if the gain in *dynamic* efficiency from the greater innovative activity is balancing out the losses from *static* efficiency from the underutilization of knowledge.<sup>20</sup>

There is substantive evidence however that the current IPRs regime does *not* succeed in this balancing act. The equilibrium between private rewards and public benefits on which IPRs have been traditionally built, has been steadily undermined by a systematic privileging of owners’ rights in the face of users’ poverty.<sup>21</sup> For instance, the heavily debated clash between pharmaceutical multinationals attempting to justify the patent protection of AIDS-related drugs and the developing countries in need of these drugs has revealed a severe imbalance between private rights to reward and public welfare (not least of all rights to life).

But what is even more important for our discussion, the current intellectual property regimes also do a very poor job of channelling rewards (and therefore: creating incentives) to *creators*: by severely straining, or

<sup>18</sup>) Benkler 2006, p. 49.

<sup>19</sup>) Cf. Benkler, 2006, p. 381; May, 2002, 2004, 2006.

<sup>20</sup>) Stiglitz 1999, p. 311.

<sup>21</sup>) Drahos and Braitwaithe 2002; May, 2002, 2004, 2006.

even cutting off access to intellectual products, there is considerable reason to believe that the potential for innovation and new ideas has become curbed as well. Despite being justified on the basis of the rights that individuals should arguably enjoy, mostly these rights are claimed by legally constituted individuals (i.e. companies) rather than individual inventors or innovators. The bulk of intellectual property rights are indeed owned not by their initial creators but by corporations that acquire intellectual property portfolios through a process of buying and selling, merger and acquisition.<sup>22</sup>

### Openness

Contemporary proponents of openness in digital matters have focused attention on especially this latter problem (and, admittedly, less to the passive beneficiaries of knowledge products as for instance, in the above case, AIDS-patients). They argue that current restrictive definitions of intellectual property 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.<sup>23</sup> It is not unimportant to distinguish these movements from one or more political agendas opposing all capitalist logic. No supporter of Open Source, Open Access or else would reject the idea that the market economic model has proved to be valid in the case of traditional commodities; nor would they oppose the mechanism of supply, demand and price as a mere capitalist construct. But they do identify market economies as being not foolproof.

They do this on the basis of the argument we have outlined earlier. Information, so it is argued, is not to be measured by its value of being scarce, but being plentiful. Again, it plainly defies comparison with material things as its transfer does not imply loss on the side of the transferor; 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 progress in knowledge, science and culture. Consequently, they say, its property must be judged in very different terms. It should be considered a public good, as e.g. water: its availability does not cause people to store as much water as

<sup>22</sup>) Drahos and Braithwaite 2002.

<sup>23</sup>) Willinsky 2005; Andersen 2005.

possible in their private homes, but is managed by the guarantee of, indeed, *having access to it*. And in other words, the transactions associated with their property are better off if conceived in terms of a *gift economy*, not a market economy.<sup>24</sup> This does 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 can for instance consist of academic prestige and recognition; the power to distribute scientific information is then rewarded by the flowback of information and eventually reputational benefits (which obviously can help to advance personal careers).<sup>25</sup> In the context of open source vs. closed source software, Linus Torvalds has therefore alluded to parallels with the evolutionary potential of science (believed to be open) respectively witchcraft: the latter died out.<sup>26</sup> Apparently, knowledge cannot thrive when guarded in secret. On the contrary, openness may forcefully enhance its chances for survival and even expansion.

This is certainly not the same as an argument for piracy, or a rejection of all copyright, as the debate has often been (and is still being) misrepresented. The Creative Commons<sup>27</sup> movement of the aforementioned lawyer Lawrence Lessig and its licenses are merely “an effort to expand the open source model of development beyond software to literature and the arts”.<sup>28</sup> As such, they are reactions against disproportionately restrictive notions of intellectual copyright (hence: ‘some rights reserved’, and not: ‘no rights reserved’). Open Access activist Peter Suber adds that the “campaign for OA focuses on literature that authors give to the world without expectation of payment”<sup>29</sup> or *royalty free literature*, the main body of which is the body of peer-reviewed scientific and scholarly research articles and their preprints. Noting that non-academics are often surprised to learn that most scholarly journals do not pay authors for their articles, he then sketches the vocabulary by means of which property of and access to scholarly production should be discussed:

<sup>24</sup> Kollock 1999.

<sup>25</sup> Schiltz, Verschraegen and Magnolo 2005, p. 360.

<sup>26</sup> Hamm 2004, [http://www.businessweek.com/technology/content/aug2004/tc20040818\\_1593.html](http://www.businessweek.com/technology/content/aug2004/tc20040818_1593.html).

<sup>27</sup> <http://creativecommons.org>.

<sup>28</sup> Laurent 2004, p. 85.

<sup>29</sup> Suber 2006, <http://www.earlham.edu/~peters/fos/overview.html>.

- Scholars write journal articles because advancing knowledge in their fields advances their careers. They write for impact, not for money. It takes nothing away from a disinterested desire to advance knowledge to note that it is accompanied by a strong self-interest in career-building. OA does not depend on altruistic volunteerism.
- Because scholars do not earn money from their journal articles, they are very differently situated from most musicians and movie-makers. Controversies about providing OA to music, movies, and other royalty-producing content, therefore, do not carry over to this unique body of content.

Consequently, the Open Access model is very much to the advantage of scientists, as the removal of most access barriers results in a much higher visibility of their research.<sup>30</sup> And not being a business model of any kind, but rather a different epistemological framework for thinking about the nature of knowledge, the scientific process, and intellectual innovation, it defies presentation in the market economic parlance. This is a seldom noted, yet crucial point: “The purpose of the campaign for OA is the constructive one of providing OA to a larger and larger body of literature, not the destructive one of putting non-OA journals or publishers out of business. The consequences may or may not overlap (this is contingent) but the purposes do not overlap.”<sup>31</sup>

### **The Provision of Knowledge as a Global Public Good**

By doing away with technological, legal and monetary barriers to knowledge, the Open Access movement has created unprecedented possibilities to treat knowledge and science as global public goods, the benefits of which reach across borders and population groups. The OA and OS movements play a crucial role in the emergence of a truly ‘global public’, which is principally unbound and not limited by spatial forms of integration of society.<sup>32</sup> In the OA model, knowledge is public, non-exclusive and available for all to enjoy.

OA thereby actualizes knowledge’s inherent potential to be a universal good with non-excludable benefits.<sup>33</sup> Especially scientific knowledge qual-

<sup>30</sup> See, compellingly: OpCit 2004–2006, <http://opcit.eprints.org/oacitation-biblio.html>.

<sup>31</sup> Suber 2006, <http://www.earlham.edu/~peters/fos/overview.html>.

<sup>32</sup> Schiltz et al. 2005, p. 351.

<sup>33</sup> Kaul and Mendoza 2003.

ifies for being globally public, because it does not discriminate between users. A chemical formula is as true in Belgium as it is in Russia, Botswana or the United States. To be sure, some kinds of knowledge are bound to a certain locality or culturally specific context, but scientific and technological knowledge can be considered valid across national and institutional boundaries. They are also particularly receptive for global dissemination. While law and politics are closely connected to specific or local cultural contexts, languages and institutions, science and technology are more unbound by institutions and thus more easily transmittable across cultural and territorial boundaries.<sup>34</sup> The global community of scientists is furthermore an excellent example of how electronic communications help geographically dispersed groups of people to form close ties and constitute epistemic communities that cut across national boundaries.

But science is only the most visible instance of a broader shift in the production and dissemination of knowledge and information. With the dramatic increase in interaction across boundaries in the contemporary world, the provision of knowledge and information has become increasingly organized across national boundaries, across sectors, and in collaboration of public and private actors. National states, the traditional providers of public goods, are less and less able to guarantee the provision of knowledge and control the flow of information across their borders. Non-state actors, both civil society and business, all contribute to the provision of knowledge as a global public good.<sup>35</sup>

Many of the most vital aspects of current world society are, in effect, co-ordinated via global networks that distribute intelligence and facilitate the production of new knowledge on a formerly unseen scale. Climatologists, environmental NGOs and international organizations collaborate in monitoring climate change, exchanging scientific information and setting up standards and emission norms. In the realm of human rights, international lawyers, NGOs like Amnesty or HRW, international organizations and various levels of government work together to gather and disseminate information in order to mobilize and pressure states and non-state actors (like multinationals) to consent with international human rights norms.<sup>36</sup>

<sup>34</sup> Callon 1994; Sand 2004; Schiltz et al. 2005, p. 353.

<sup>35</sup> Schiltz et al. 2005, p. 353.

<sup>36</sup> For example, the Human Rights Information and Documentation Systems International (HURIDOCS), a transnational network of human rights organizations, aims at improving access to, dissemination of, and use of human rights information. See also Tinnevelt and Verschraegen 2006, pp. 176–177.

Activists can develop networks for circulating place-based information (about human rights abuses, about local environmental, housing, political conditions, etc.) that can become part of political work and strategies addressing a global condition – the environment, growing poverty, lack of accountability of multinationals, and so on.<sup>37</sup>

### OA and Access Barriers

We do not want to suggest however that these informational networks will result in an ideal supply of the international public good ‘knowledge’. The provision of knowledge remains dependent on existing inequalities of wealth, infrastructure and education. Whereas the OA movement may confidently claim to be able to remove price barriers, it is neither a panacea for all problems related with social exclusion, nor a guarantee of universal inclusion. In countries with insufficient internet infrastructure, OA will not make a lot of difference. Computerisation is seldom, if ever, the most pressing developmental priority and cannot replace a concern for other goals or priorities: ‘many of the public goods a healthy community requires are physical in nature and cannot be provided through on-line interaction. Roads, hospitals and schools must be build and maintained and while the Internet can certainly facilitate the production of physical public goods . . . in the end bricks and mortar must be laid’.<sup>38</sup> There exists no lack of understanding hereof in the OA-movement. Again according to Peter Suber:

Open access is not synonymous with universal access.

- Even after OA has been achieved, at least four kinds of access barrier might remain in place:
  1. *Filtering and censorship barriers*. Many schools, employers, and governments want to limit what you can see.
  2. *Language barriers*. Most online literature is in English, or just one language, and machine translation is very weak.
  3. *Handicap access barriers*. Most web sites are not yet as accessible to handicapped users as they should be.
  4. *Connectivity barriers*. The digital divide keeps billions of people, including millions of serious scholars, offline.

<sup>37)</sup> Sassen 2006, pp. 369–370.

<sup>38)</sup> Kollock 1999, p. 236.

- Even if we want to remove these four additional barriers (and most of us do), there's no reason to hold off using the term "open access" until we've succeeded. Removing price and permission barriers is a significant plateau worth recognizing with a special name.<sup>39</sup>

Another access barrier which can not simply be removed by OA is *computer literacy*. This is obviously a precondition to taking full advantage of any online content, whether OA or non-OA. Providing access is one thing, but what is the use of freely distributing books to the illiterate – or put differently, to people who do not have an incentive to be literate? The term 'computer literacy' can be used in a broad sense. According to Laura D. Stanley, "beyond the costs associated with access and a lack of proximity to computers, several 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".<sup>40</sup> 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".<sup>41</sup> A binary divide between the information haves and have-nots is an oversimplification of the problem, as it assumes a mere causal relationship between lack of access and lack of chances for development. But 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. '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 can profit from taking into

<sup>39</sup>) Suber 2006, <http://www.earlham.edu/~peters/fos/overview.html>.

<sup>40</sup>) Stanley 2003, p. 407.

<sup>41</sup>) Warschauer 2002, 2003.

consideration those networks of webs of social practices that support or restrict extended literacy.

### Open Access and Human Development

Access to, and use of, information and knowledge have a significant impact on human development. Heightened information flows alone may not be sufficient, but they are certainly a necessary element of any developmental strategy. After all, *all* development is *informationalized* development: development is the application of (new) knowledge (and information) to existing or historical social, political and economic problems.<sup>42</sup> Effective medicines, for instance, depend on pharmaceutical research and access to its products, and health care depends on research and publication for the development and dissemination of information about best-care practices. Higher productivity, better crops, appropriate marketing conditions, or the proper use of irrigation facilities are all objectives which cannot be achieved without adequate communication and the provisions of needed data.<sup>43</sup> The manner in which we produce information – and equally important, the institutional framework we use to manage the stock of existing information and knowledge around the world – is then of crucial importance for global development.<sup>44</sup>

Not surprisingly, the UN World Summit on the Information Society (Geneva 2003 – Tunis 2005) has identified the OA and OS movement as critical tools to support the dissemination of valuable knowledge and information for development. In the context of development the OA and OS models can play distinct roles. Global electronic knowledge sharing can help to integrate the work of scientists everywhere into the global knowledge base and improve their opportunities for funding and international collaboration.<sup>45</sup> The problem of lack of access to academic publication because of their high-cost publication can be eliminated. OA may reduce the isolation of researchers and allow even late-comers to access the most advanced thinking and methods in certain fields. More fundamentally, OS and OA can offer opportunities for developing countries to attune

<sup>42</sup> May 2006.

<sup>43</sup> MacBride et al. 1980, p. 15.

<sup>44</sup> Benkler 2006, p. 310.

<sup>45</sup> Suber 2005, <http://www.earlham.edu/~peters/writing/wsis2.html>.

research agendas to the problems of developing countries.<sup>46</sup> Additionally, OA has important derived advantages such as guaranteeing access to copyright materials to meet the demands of mass education.

Another important advantage of OA and OS models in a development context is that they help the poorer regions of the world to take action on their own. Open Source Software for instance creates the potential for participation in software markets based on human ability, even without access to a stock of exclusive rights in existing software. According to Christopher May “open source may [...] reflect a post-development perspective that suggests economic and social change must flow from the communities themselves, not from some external source”. Using Open Source Software implies less dependence on software companies and their patented products, and has at least “the potential to support a more people-centered development practice based on empowerment and emancipation”.<sup>47</sup>

This shift echoes the famous view that *free* software should be taken to mean *free* ‘as in freedom, not as in free beer’: “In this freedom, it is the *user’s* purpose that matters, not the *developer’s* purpose; you as a user are free to run a program for your purposes, and if you distribute it to someone else, she is then free to run it for her purposes, but you are not entitled to impose your purposes on her”.<sup>48</sup> This makes our point. Open Source Software for development is not a mere technological strategy, but involves complex educational programs, and the willingness to define development so as to include political freedoms, the possibility of autonomous decision-making, organization and so on.

In sum, OA and OS provide tools and platforms on which innovation and development can be pursued by local actors in the developing countries itself, without having to pass through the proprietary system of information production. The emergence of these new models for information access and knowledge sharing provides a new framework for thinking about how to work around the barriers that international intellectual property regime places on development. In this respect, OA and OS are communicative innovations that tend to encourage the autonomy and inclusion of citizens all over the world, whether it concerns education, research, agricultural development, or health (the aforementioned example of aids-pharmaceutics

<sup>46</sup> For a good discussion see Benkler 2006, pp. 344–355.

<sup>47</sup> May 2006, p. 125.

<sup>48</sup> Free Software Foundation 2006, <http://www.gnu.org/philosophy/free-sw.html>.

comes to mind). Open access to knowledge can be considered a key to successful inclusion in world society and a crucial ingredient of strategies of ‘informational development’. It enables a more efficient production and equitable use of global knowledge and thus deserves public support at the national and global level.

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