Open Access to Scholarly Publications and Web Portals

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INTRODUCTION

"If I have seen further it is by standing upon the shoulders of giants." The famous statement of Sir Isaac Newton demonstrates that the progress of science relies on the dissemination of discoveries and scientific knowledge. Even though scientific progress is not strictly cumulative (Kuhn, 1970), information sharing is the heart of this progress. Nowadays, scientific knowledge is mainly spread through scholarly journals, that is, highly specialized journals where quality controls and certifications are achieved through peer-review.

The first section of this article will present the specificity of the current economic model of scientific publications. The second section will introduce to the open access movement and to its emerging economic model. The third section will introduce to the main Web portals for open access and will advocate the importance of their development.

THE ECONOMIC MODEL OF SCIENTIFIC PUBLICATIONS

The growing complexity of modern science induces a growing need of knowledge dissemination media. The number of academic journals is very difficult to estimate, but according to the "Ulrich's International Periodicals Directory" (http://www.ulrichsweb.com) there were about 164,000 scientific periodicals in 2001 in all disciplines (see Figure 1).

The largest publishers like *Elsevier-Reed*, *Blackwell,* or *Wiley* own most of these journals. Over the last 20 years, commercial firms—especially the largest ones—have raised prices at a rate, which cannot be justified by cost or quality increase (McCabe, 2000). According to ARL (2005), the mean serial unit cost of $89.77 in 1986 reached $258.73 in 2004. Former president of the University of California recently stated, "*University librarians are now being forced to work with faculty members to choose more of the publications they can do without."* (Atkinson, 2003, p. 1, original italics). As a consequence, Figure 2 shows that in the USA, acquisition expenditures have tremendously grown and that part of the budgets had to be reallocated from monographs to journals.

The rise of journal prices has a multiple origin, one of the most important being provisions to invest in electronic publications (Chartron & Salaun, 2000). These provisions are nevertheless insufficient to explain the current prices. Elsevier-Reed's gross-profit margin is estimated to be 32% (Wellen, 2004). Such "Microsoft like" margins are very unusual and demonstrate the inefficiency of the scientific publication market. There are four main reasons to this inefficiency:

- Researchers publish to popularize their works and to improve peers recognition (which has a great impact on their careers). They are "giveaway authors" (Harnad, 2001) and do not receive any royalties or fees. Furthermore, they do not have to pay to have access to scientific information since all the expenses are paid by academic libraries. Authors are then not concerned with the price of journals, they only consider the reputation and the citation impact of the journals they publish in.
- The demand is price-inelastic (that is prices have little impact on the volume of the demand) since prices are not important for researchers and journals are not easily substitutable.
- Libraries evolve on a commercial market but do not have any commercial approach. They buy up to their budget limit and not according to any price equilibrium.
- The multiplication of mergers among publishers has strongly contributed to the increase of prices (McCabe, 2000).

In this context, public research institutions pay twice for scientific knowledge. They pay researchers who publish freely, and publishers to have access to journals (Anderson, 2004).

The growing conflict between researchers who aim at disseminating their works as widely as possible, and libraries, which have a limited budget on the one hand and publishers who mainly have financial objectives on the other hand, gave rise to an accelerated development of the practice of open access to electronic publications.

Figure 1. Number of periodicals published worldwide ('000s) 1998-2001. (Source: Ulrich's International Periodicals Directory)

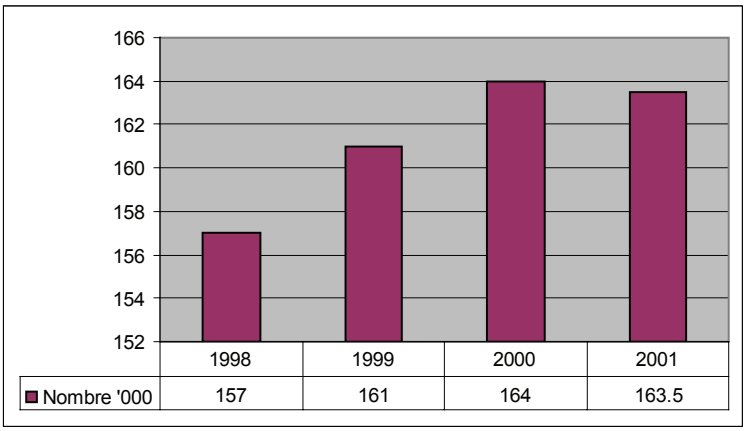

Figure 2. Monograph and serial costs in ARL libraries, 1986-2004. (Source: ARL, 2005)