33 Information goods
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Introduction

'Information age' is a shorthand term for a state of society in which commu-nication is ubiquitous and knowledge is instantly available. The 'information economy' corresponds to that state. It serves the needs of citizens for tele-communication services, education, entertainment and infinite varieties of information, either stored in libraries or delivered in real time. Firms and users involved in producing and consuming these 'information goods' operate under special conditions. The analytical implications of these condi-tions have been discussed widely under the heading of the 'New Economy'. Some of the fundamental issues that have emerged from this discussion will be considered below.

Cultural activities in general and artistic activities in particular have con-tributed to the supply of information goods ever since the beginning of markets. Under the heading of entertainment and education, they have generated artefacts, events, books and, in recent times, rapidly multiplying quantities of audio and video files. These products have become a part of many other value chains in the information economy.[1] It should therefore not come as a surprise that the results of the New Economy also apply to these older species of information goods.[2]

Not only do the new theoretical tools help us to understand the econom-ics of arts and culture, but the real growth of electronic networks also has a strong impact on the volume of goods and on the new forms of expres-sion in the arts and in the cultural industries. The empirical observation of that impact is a further topic of the 'economics of the information age' which has so far not been explored in any depth.

The discussion below will take its starting point from three features of the information economy which are in direct contradiction to traditional assumptions about the features of an economy. In each case, the change in argument will be sketched briefly, and some empirical observations will be made.

Access

The efficiency of market transactions depends heavily on the effective defi-nition and enforcement of private property rights. Property rights relating to specific information bundles or 'content', are notoriously difficult to

establish. The difficulties grow with the availability of cheap and effective means of digital reproduction and distribution. 'Access' rather than 'property' becomes the basic institutional condition of the information economy (Rifkin, 1998).

The analytical reason for this shift lies in the public goods nature of information products. Public goods are characterized by non-rivalry in consumption. Information is eminently non-rival because it is generated and stored in every individual's consciousness, both on the level of immediate experience and on the level of retrievable memory. Humans have the sensation of understanding the information when exposed to a stream of auditory or visual sensory signals.

Public goods can be converted into private goods if consumption can be made exclusive. This can happen through soundproof walls, or through the use of carrier media, like books and CDs. Excludability is eroded, however, if means are found which permit access to the original information bundle despite the artificial barriers erected by the producers or their agents.

Legal norms are social barriers which complement technical barriers. Various forms of intellectual property rights have come into use over the past centuries, with copyright becoming a legal institution under the pressure of book publishers (David, 1993). Today, it is the central means of protection for information goods ranging from software codes to data banks (Towse and Holzhauer, 2002). However, intellectual rights are only a means of emulating the effects of material property rights. Actually, they regulate access to something that remains intangible. The aim of the institution is to achieve, not a maximum of exclusivity, but an equilibrium: free access would not give the provider sufficient private benefits. Exclusive private access would rule out the collective benefits of information dissemination.

Accordingly, copyright is constructed as a temporary monopoly. Information bundles which have become a 'hit', be it in pop music, in software programming or in applied science, cannot be used for about 100 years without the consent of the copyright owner. The legal constraint and its detailed rules of execution determine the optimizing behaviour of information producers. Throughout the protection period, price differentiation strategies are implemented. It also makes sense for the producers to allocate resources to rent-seeking activities, such as the extension of protection periods, cost-saving rules for the collection of small royalties, and stiffer penalties for 'trespassing'.

The basic principles of modern copyright law were shaped with respect to artistic information goods, namely novels, music scores and prints of paintings. Today, the major lobbying forces come from the IT industries, and because of this their relevance to arts and culture has diminished. At the same time, low-cost access is bound to boost the diffusion of new artis-

tic and cultural inventions. It remains unclear how the private revenues of the artists who created the original works can be secured under such conditions.

Abundance
The institution of market exchange depends to a high degree on the condition of scarcity. Consumers relinquish a portion of their purchasing power in order to gain possession of or access to an object or service which is not available to everybody who wants it at any given point in time. This fundamental condition is not met in the information economy, for a number of reasons.

The foremost of these is the unique way in which information goods are produced: they are not the result of some assembly or transformation process, but of a duplication process called 'copying'. An original bundle – a text or a sequence of performances – is recorded, and that record can then be duplicated endlessly. Accordingly, the major cost of production is incurred at the beginning. But while the initial fixed cost is high, the variable cost of copying is low, approaching zero in the case of electronic reproduction. The average cost per unit of production decreases over the full range of total market demand.

The pattern is familiar from industries with economies of scale. Primary examples are goods and services that are distributed through networks, such as tracks and power lines. The costly infrastructure first has to be installed, but its subsequent use is inexpensive. The result is a so-called 'natural monopoly': the cost advantage of a unique producer justifies his operation as an exclusive supplier, allowing him to charge prices well above marginal cost in order to finance his initial investment.

The natural monopoly argument reinforces the exclusion argument developed in the previous section. However, the information production case diverges quite significantly from industries with economies of scale: infrastructure networks eventually reach a point at which congestion – and thus scarcity – sets in. They also use material resources to build and maintain the network, so that at least some of the inputs are bound to be, or to become, scarce. Therefore average costs eventually start to increase. Copy industries, by contrast, can reproduce at zero cost *ad infinitum* and will never be affected by decreasing factor productivity or increasing cost due to factor scarcity.

If copies cost next to nothing and if the demand for specific versions that become 'hits' is uncertain, then it stands to reason that producers will flood the market with their products, or at least with demonstration versions of their products. Abundance replaces scarcity (Kelly, 1998). Natural monopolies in copying industries and abundance strategies, like give-aways or

standard wars, have been discussed widely in the literature on the information economy (Shapiro and Varian, 1999).

When information flooding is the dominant strategy, the truly scarce resource is no longer found on the level of the good to be sold, but on the level of the individual consumer's consciousness: his or her attention must be attracted in order to initiate a transaction (Franck, 1998). In many cases, the probability of success can be increased by investing in publicity. If the success of a good is sufficiently correlated with such expenditures, a strategy of scarce, highly expensive, 'blockbusters' might succeed.

The abundance strategy of suppliers is complemented by another dimension of information bundles. Since information is a conscious experience, a notable measure of self-satisfaction is generated by the very act of creating new information, be it in science, art or entertainment. Consumers turn into suppliers as they produce their own artefacts. The utility thus generated may be so large that it crowds out all the individual's other activities, rather like an addiction. The result is an 'oversupply' (Kretschmer *et al.*, 1999) of artistic and cultural goods.

The application of the results to artistic and cultural goods is clear enough. The arts are ridden with oversupply, and art markets are flooded with fakes. In terms of real production, the new techniques of electronic recording and distribution have lowered the cost barrier for abundance strategies even further. Scarcity continues to exist, of course, on the level of original works, whose market value grows in proportion to the demand which their copies enjoy.

Networks and communities

Standard economic theory assumes individual, clearly distinct units of production and consumption. In the information economy, however, production often takes place in networks, and consumption is heavily dependent on the community context within which an individual acts.

The most striking effects seem to take place on the consumption side. First, there is the effect of 'network externalities': as a user can reach a growing number of communication partners, the utility of the network is likely to grow at the rate $U = n(n-1)$. Growth ceases only when the individual utility derived from the potential contact with distant individuals reaches zero. This 'net effect' explains the exponential increase in historical demand for all of the major communication media currently in use. The net effect introduces a significant self-enforcing impulse into markets which by necessity are based on the self-dampening impulses of increasing cost that lead to long-term equilibria. Also the net effect provides an explanation for the prevalence of monopolies in markets for network goods.

The explanation can be extended to markets for communication content

once the 'social contagion effect' is considered (Kretschmer *et al.*, 1999). Under the usual conditions of uncertainty about content quality, we find that social contact, that is, communication between individuals, determines preferences. Social contacts allow for positive feedback. The effects tend to run like waves through the population of those individuals who 'pay attention' to the content in question. However, unlike physical networks which stabilize their volume at a certain proportion of the population, social contagion effects inevitably weaken as fresh information about new products is fed into the communication channels. The monopoly position of the 'hit' is only temporary.

The third effect relates to the emergence and delineation of communities. The use of the Internet in particular has led to the formation of circles of users who share messages with other users on specific topics and problems. The newsgroups of the older Usenet are examples, as are the 'open source' programmer communities where every member writes code for a computer program whose source code is explicitly kept open for access (Raymond, 1999).

Why do users contribute their content to a community? Most commentators suggest that the reason lies in a preference structure that internalizes the reaction of others to one's contribution. The user becomes a 'prosumer' who signals his or her quality and earns attention and acknowledgement from other community members. In some cases, for example in the scientific field, the attention desired is restricted to a very small circle of peers, yet the effect on the utility of users is sufficiently strong for them to invest resources in order to maintain and increase the attention flow and reputation status.

The 'community effect' has implications for the traditional distinction between producer and consumer. Consumers contribute to content which is later sold by producers, and producers organize large projects, such as films or symphonic music, in network processes, linking the members of a loosely connected 'scene' into a team or an ensemble. These temporary communities then present a complex, integrated performance over months or even decades.

Again, network and community effects have a familiar ring in the context of art and culture. They explain the existence of art scenes, the 'open source' conviction that ideas cannot be appropriated and the difficulties of establishing continuous production in a field where individuals constantly switch between their roles as suppliers of talent and demanders of attention.

The recent spread of affordable communication equipment has had a globalizing effect on art communities. They are no longer restricted to local and regional entities, although their borders continue to serve as lines of

differentiation. There is increased competitive pressure between attention communities. Traditional local communities, such as families, neighbour-hoods, colleges and art scenes, now compete with global commercial and peer-to-peer communities. At the margin, the local real communities will lose membership and communication intensity to the expanding global virtual communities.

Conclusions

The new terminology and the newly defined theorems and effects are a boost to the economics of the arts and culture. Apart from providing fresh tools for the analysis of art markets, they bring cultural economics into touch with the economics of telecommunication and creative industries, and with the more general economics of information (Stiglitz, 2000).

Notes

1. For an early attempt, see Hutter (1992).
2. For an early study of the information economy, see Porat (1977).

See also:

Chapter 15: Copyright; Chapter 35: Internet: culture; Chapter 36: Internet: economics; Chapter 39: Media economics.

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