

## Education as a Public Good

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## Abstract

*Education used to be a private good with positive externalities. Thanks to technology and government largesse, it is no longer the case. It is being transformed into a non-pure public good.*

*Technology-borne education is nonrivalrous and, like its traditional counterpart, has positive externalities. It can be replicated and disseminated virtually cost-free to the next consumer through the Internet, television, radio, and on magnetic media. MIT has recently placed 500 of its courses online and made them freely accessible. Distance learning is spreading like wildfire. Webcasts can host - in principle - unlimited amounts of students.*

*Yet, all forms of education are exclusionary, at least in principle. It is impossible to exclude a citizen from the benefits of his country's national defense, or those of his county's dam. It is perfectly feasible to exclude would be students from access to education - both online and offline.*

## Paper

"We must not believe the many, who say that only free people ought to be educated, but we should rather believe the philosophers who say that only the educated are free."

-- Epictetus (AD 55?-135?), Greek Stoic philosopher

## Public Goods, Private Goods

Contrary to common misconceptions, public goods are not "goods provided by the public" (read: by the government). The private sector and private goods sometimes supply public goods - by the public sector. It is the contention of this essay that technology is blurring the distinction between these two types of goods and rendering it obsolete.

Pure public goods are characterized by:

- I. Nonrivalry:** The cost of extending the service or providing the good to another person is (close to) zero. Most products are rivalries' (scarce) - zero sum games. Having been consumed, they are gone and are not available to others. Public goods, in contrast, are accessible to growing numbers of people without any additional marginal cost. This wide dispersion of benefits renders them unsuitable for private entrepreneurship. It is impossible to recapture the full returns they engender. As Samuelson observed, they are extreme forms of positive externalities (spill over effects).
- II. Nonexcludability:** It is impossible to exclude anyone from enjoying the benefits of a public good, or from defraying its costs (positive and negative externalities). Neither can anyone willingly exclude himself from their remit.
- III. Externalities:** Public goods impose costs or benefits on others - individuals or firms - outside the marketplace and their effects are only partially reflected in prices and the market transactions.

As Musgrave pointed out (1969), externalities are the other face of nonrivalry [1].

The usual examples for public goods are lighthouses - famously questioned by one Nobel Prize winner, Ronald Coase, and defended by another, Paul Samuelson - national defense, the GPS navigation system, vaccination programs, dams, and public art (such as park concerts).

It is evident that public goods are not necessarily provided or financed by public institutions. But governments frequently intervene to reverse market failures (i.e., when the markets fail to provide goods and services) or to reduce transaction costs to enhance consumption or supply and, thus, positive externalities. Governments, for instance, provide preventive care - a non-profitable healthcare niche - and subsidize education because they have an overall positive social effect.

Moreover, pure public goods do not exist, with the possible exception of national defense. Samuelson himself suggested [2].

"... Many - though not all - of the realistic cases of government activity can be fruitfully analyzed as some kind of a blend of these two extreme polar cases" (p. 350) - mixtures of private and public goods. (Education, the courts, public defense, highway programs, police and fire protection have an) "Element of variability in the benefit that can go to one citizen at the expense of some other citizen" (p. 356).

From Pickhardt, Michael's paper titled "Fifty Years after Samuelson's 'The Pure Theory of Public Expenditure': What Are We Left With?" "... It seems that rivalry and nonrivalry are supposed to reflect this "element of variability" and hint at a continuum of goods that

ranges from wholly rival to wholly nonrival ones [3]. In particular, Musgrave (1969, p. 126 and pp. 134-35) writes:

"The condition of non-rivalness in consumption (or, which is the same, the existence of beneficial consumption externalities) means that the same physical output (the fruits of the same factor input) is enjoyed by both A and B. This does not mean that the same subjective benefit must be derived, or even that precisely the same product quality is available to both. (...) Due to non-rivalness of consumption, individual demand curves are added vertically, rather than horizontally as in the case of private goods".

"The preceding discussion has dealt with the case of a pure social good, i.e. a good the benefits of which are wholly non-rival. This approach has been subject to the criticism that this case does not exist, or, if at all, applies to defence only; and in fact most goods which give rise to private benefits also involve externalities in varying degrees and hence combine both social and private good characteristics".

### The Transformative Nature of Technology

It would seem that knowledge - or, rather, technology - is a public good as it is nonrival, no excludable, and has positive externalities. The New Growth Theory (theory of endogenous technological change) emphasizes these "natural" qualities of technology.

The application of Intellectual Property Rights (IPR) alters the nature of technology from public to private good by introducing excludability, though not rivalry. Put more simply, technology is "expensive to produce and cheap to reproduce". By imposing licensing demands on consumers, it is made exclusive, though it remains nonrivalrous (can be copied endlessly without being diminished).

Yet, even encumbered by IPR, technology is transformative. It converts some public goods into private ones and vice versa. Consider highways - hitherto quintessential public goods. The introduction of advanced "on the fly" identification and billing (toll) systems reduced transaction costs so dramatically that privately-owned and operated highways are now common in many Western countries. This is an example of a public good gradually going private.

Books reify the converse trend - from private to public goods. Print books - undoubtedly a private good - are now available online free of charge for download. Online public domain books are a nonrivalrous, nonexcludable good with positive externalities - in other words, a pure public good.

### Is Education a Public Good?

Education used to be a private good with positive externalities. Thanks to technology and government largesse, it is no longer the case. It is being transformed into a nonpure public good.

Technology-borne education is nonrivalrous and, like its traditional counterpart, has positive externalities. It can be replicated and disseminated virtually cost-free to the next consumer through the Internet, television, radio, and on magnetic media. MIT has recently placed 500 of its courses online and made them freely accessible. Distance learning is spreading like wildfire. Webcasts can host - in principle - unlimited amounts of students.

Yet, all forms of education are exclusionary, at least in principle. It is impossible to exclude a citizen from the benefits of his country's national defense, or those of his county's dam. It is perfectly feasible to exclude would be students from access to education - both online and offline.

This caveat, however, equally applies to other goods universally recognized as public. It is possible to exclude certain members of the population from being vaccinated, for instance - or from attending a public concert in the park.

Other public goods require an initial investment (the price-exclusion principle demanded by Musgrave in 1959, does apply at times). One can hardly benefit from the weather forecasts without owning a radio or a television set - which would immediately tend to exclude the homeless and the rural poor in many countries. It is even conceivable to extend the benefits of national defense selectively and to exclude parts of the population, as the Second World War has taught some minorities all too well.

Nor is strict nonrivalry possible - at least not simultaneously, as Musgrave observed (1959, 1969) [1,3]. Our world is finite - and so is everything in it. The economic fundament of scarcity applies universally - and public goods are not exempt. There are only so many people who can attend a concert in the park, only a lighthouse can guide so many ships, only so many people defended by the army and police. This is called "crowding" and amounts to the exclusion of potential beneficiaries (the theories of "jurisdictions" and "clubs" deal with this problem) [4-8].

Nonrivalry and nonexcludability are ideals - not realities. They apply strictly only to the sunlight. As environmentalists keep warning us, even the air is a scarce commodity. Technology gradually helps render many goods and services - books and education, to name two - asymptotically nonrivalrous and nonexcludable.

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