Much recent commentary on the Internet in particular and information society in general has proclaimed the death of economics. Such commentators are either vague about what they mean by economics, or unclear about what is to replace it, completing their arguments with more hype than substance. A few, like Michael Goldhaber in his paper, "The Attention Economy", published in the previous issue of First Monday, have something valuable to say about the way people will trade goods and services, in whatever shape, in the realm of cyberspace.

Yet, like Goldhaber - "The old concepts will just not have value in that new context," - even commentators with original thoughts apparently feel that the irrelevance of classical economic ideas must be exaggerated in order that ideas of their own be seriously considered. Perhaps this is true - the information revolution is even more forcefully heralded as panacea or as poison than its agricultural and industrial predecessors, and has been driven by belief in its powers as much as anything - but it hardly serves to clarify our perception of the new revolution's mechanisms. Authors like Goldhaber, perhaps recognising this, start their papers with denunciations of the tools of classical economics, and later go on to use these very tools as they attempt to clarify their ideas.

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### What is economics?

Paul Samuelson provided the textbook definition of economics as the "study of how societies use scarce resources to produce valuable commodities and distribute them among different people." Would this definition apply to the information age - or to life on the Internet? Controversies in current literature relate primarily to the words "scarce", "resource" (and hence "commodity") and "produce".

Must these words refer to industrial products that, in the memorable words of The Economist, "you can drop on your toe," or can they be more abstract and still be validated in the application of classical economic methods? Scarcity, for one, is much misunderstood - it does not have the same meaning in this context as when used to describe water in a desert. For the application of economics, anything that is not truly infinite is scarce. Moreover, scarcity is a relative term, so as long as the quantity of all things is not the same, it is a useful concept to evaluate the terms of trade between one valued resource or produce and another.

Resource: it is odd that we should hear so much about the limitless resources in the knowledge economy - or the broader society of the utopic future. Quite aside from the fact that we will not soon evolve into Asimov's civilisation of minds who have abandoned their bodies and therefore depend on the clearly finite physical resources of this planet - or this universe, if you prefer - speaking of infinite information resources ignores the fact that human minds will always be limited in number. Economics being the science of human interaction, the human brain will be the final, numerically limited resource in any information society.

If cars are built upon the resources of the world's metal, and our stomachs are filled by the resources of land and water, anything of value in cyberspace rests eventually upon the resources of the mind. It may be correct to say that information per se will have little value in cyberspace because it is effectively limitless. Information economy is a misnomer; we use it because it is convenient, not because of what it means! Goldhaber's "attention economy" is closer to the mark for the simple reason that it pinpoints a resource that is, as he rightly puts it, "an intrinsically scarce resource", limited as it is by the number of people with attention to give. Indeed, human attention, like everything else in the "future" of cyberspace has been recognised as a resource by society throughout history, from Brutus who borrowed his audience's ears, to advertisers and publishers who buy and sell their audience's "eyeballs".

Commodity: it is already used to refer to the efforts of human actors such as those who politely point you to the early music section in a store, in the "service economy." It is a term that clearly extends itself to any deliberate or implied result of human activity in cyberspace, from the speech given at a symposium to the collection in which those words are later distributed to the attention provided - "produced" - by the few among the crowd who actually listen. Commodities are valuable (though some, such as the collection of papers, may well be less valuable than others, such as the action of speech and its attentive reception); the creation and maintenance of anything valuable is, for the purposes of economic reasoning, production. Similarly, benefitting from anything valuable is consumption.

Trade, demand and supply

Given this definition of our subject, let us examine its tools. Goldhaber writes "We are moving into a period wholly different from the past era of factory-based mass production of material items when talk of money, prices, returns on investment, laws of supply and demand, and so on all made excellent sense," and goes on to imply that none of this continues to make sense in the "new" economy. Except, of course, that mixing money and prices and return on investment with the laws of supply and demand is like mixing a six-cylinder engine with the law of conservation of mass. The movement of money and prices is an instance of the operation of the laws of supply and demand, but not necessary for the validity of these laws.

"Changes in supply and demand drive changes in output and prices," so goes the theory (Samuelson again). Price - money itself - is merely a proxy for the value imputed on a good, relative to other goods. Theories of demand and supply remain powerful tools to make sense of economic interactions devoid of price, such as barter. If a kilo of rice trades for a metre of cloth or one fish, and the rice crop fails cutting demand, the terms of trade would change to something like a kilo of rice for two metres of cloth or two fish. If the cotton crop also fails, it would be a kilo of rice for one metre of cloth but still two fish.

This is true in cyberspace and similar environments. In the "attention economy", a surfeit of goods of the same kind - such as indefinitely recycled soap operas, or omnipresent political campaign speeches (and their speakers), whatever else can grab your attention - leads to that marvelous attention-killer we call "boredom". Here "surfeit" applies to whatever "good" is scarce, which includes what Goldhaber calls "illusory attention," the engaging presentation skills of a purchaser of your attention, i.e. one party to two-way attention trade. Keanu Reaves has your attention, even if he appears in a large number of films distributed to millions of people, because there is only one of him. If there were thousands who acted just as he does - in other words if he was like everyone else - he would not have your attention at all. Similarly, if you watch Die Hard I, II, III, IV and V, you'll be less bored with Bruce Willis than if you watch Die Hard 1to 365 every day. Quite possibly, for the average viewer, Die Hard V watched the tenth time will be less interesting than when watched the ninth time. Samuelson again: "the law of diminishing marginal utility states that, as the amount of a good consumed increases, the marginal utility of that good tends to diminish."

Goldhaber agrees: "since it is hard to get new attention by repeating exactly what you or someone else has done before, this new economy is based on endless orginality." But instead of mentioning this as an instance of supply, demand and marginal utility operating on the scarce resource of attention, leave alone further exploring the topic with this tool of classical economics, he contrasts it with the mass production of industrial
The industrial economy was a society in action, where the theories of classical economics operated; the theories are not limited to such a society, so the change from one type of economy to another need have little impact on its economics.

The money economy?

Goldhaber accepts that trade - and therefore by definition markets - are integral to the economics of cyberspace. (This is, of course, the "distribution" of the textbook definition of economics.) However, he sometimes seems to imply ("if you have enough attention, you can get anything you want") that attention is or will be predominant among valued goods. This is as wrong as is saying that money is today the predominant among valued goods ("the money economy"). In fact, money is merely a proxy for goods of inherent value; all money markets can be translated, with difficulty, into barter. Money happens to be widely accepted as a proxy; when it is not - as in Weimar Germany between the wars - its value vanishes. Attention, on the other hand, is a good of inherent value, not just a proxy. It can become a proxy - as can gold, or Masai cows, or a cigarette - or anything else that is valued for itself. But it needs to be as widely respected as a stable proxy, and it is far from clear that this is, or will soon be, the case. And although attention can be treated as the only valuable in cyberspace - just as food can be treated as the only valuable, into which everything else translates for living human beings - there are other things people online value, so it would be simplistic to assume it will accept a basic price market model (with attention as convertible currency).

In fact, even attention can be monetised - the whole advertising industry is grounded on this. So a better comparison would be between the "attention economy" and the "industrial economy" or "agricultural economy" - if Goldhaber holds that attention is the prime scarce resource of the "new" economy. Similarly, "information economy" and "industrial economy" can be compared. The "money economy" is a model for trade and markets, not an economy, nor the necessary basis for classical economics; it can be compared to various forms of "barter economy" that some believe would be more appropriate to "new" economies, whether dominated by attention or something else.

Tools for reasoning

Reasoning about an "attention economy" - I stick to Goldhaber's thesis here because reasoning about some of the vaguer alternatives proposed to classical economics or the industrial economy is quite a strain on the imagination - it is necessary to use tools of classical economics. Unless one accepts that it is impossible to compare the value to Oprah Winfrey of one viewer joining an audience of 50 million with the value to Goldhaber of an addition to his conference audience of (say) 500, one has to make use of the classical concept of marginal utility. Similarly, why is it that when Goldhaber speaks, his attention gain is "illusorily magnified" by an audience of 500 while Oprah's is magnified hundred-thousandfold more? Do we ignore such questions? If we do, then classical economists could answer them. The supply of Oprah-like shows may be more than the supply of attention-economy speakers; but the demand - and hence available attention "currency" - for disclosures on the President's underwear is far higher than the demand for speeches on the new economy.

Whatever the new economy looks like, whether its "scarce resources" are information or attention or something (many things?) else altogether, whatever its means of producing and evaluating its commodities, whatever its means of distributing (trading in) them, from price markets to barter, it will need tools for us to analyse and understand it. It will need tools to predict how it could operate, and to form models of its functioning. These tools have been known to humans for millenia, and codified over time, forming the core of classical economics.

This core is like the basic laws of geometry - e.g. a triangle has three sides; two sides together are longer than the third. The precise version of economics, like the precise version of geometry, can differ from context to context. So all angles in an equilateral triangle must be 60 degrees; but an angle of 90 degrees is no less valid, just more useful in another context.

People always produce, consume and trade ... how
triangle scrawled on paper (where Euclidean geometry applies) are 60 degrees; but on a sphere such as the earth, Reimann's geometry makes three angles of 90 degrees each. But two sides remain longer than the third. Similarly, in economics, people always produce, consume and trade; they generally evaluate according to some basic, rational principles. How those principles translate into action depends on the context; but an understanding of the principles is an essential tool for a reasoned understanding of human actions.

To conclude, given the validity of the core economic concept of scarcity, "information economy" and "knowledge economy" are inappropriate to describe the "new" economy - if taken at face value rather than as convenient placeholders. "Attention economy" is closer to the truth, being tied to the truly scarce resource of cyberspace, its human inhabitants. We could explicitly name that scarce resource in our terminology: the "human economy." On the other hand, human interactions are what economics has always been about; perhaps the simple term "economy" is still the best.

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