

A New Economic System for the Information Era

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When the airplane pilot in the opening scene of the movie *The Gods Must be Crazy* throws a bottle of Coke out of the airplane window, he triggers a chain of events that sets the stage for a fantastic social experiment. The bottle falls down on a tribe of Bushmen that had never seen an object quite so remarkable. It has a strange shape, it is pleasant to handle, it can hold liquids, it can crush grain, and new uses keep showing up. However, there is a drawback. There is only one instance of that object, so only one person at a time can use it. You see, the Bushmen are dirt poor. They live in the Kalahari Desert, where it is hard even to survive on what nature has to give. Strangely enough, however, whatever little the Bushmen do have, they have plenty of it. Anything one Bushman can have, any Bushman can have as much of it as he wishes. Now, for the first time in their lives, they had one object they could not reproduce. There was only one bottle of Coke, and no more could be found. If a woman used it for holding water, another one could not use it to crush the grain. The quarrels start... and another use for the bottle is quickly found: banging it on your opponent's head! All the harmony that prevailed before the bottle had been found is now lost. "The Gods must be crazy to have sent such an object". The Bushmen had discovered one of the harsh realities of the economic system that runs most of the world outside the Kalahari Desert: *resources are scarce*.

In fact, the Gods of our own world have been crazy all along. The first thing we learn in Economics 101 is that our present economic system is based on the scarcity of resources. If I own one nice cheese and I give it to you, I will no longer have a cheese to eat. So, I do not want to let go of my cheese, unless you are ready to give me some other object in return for my loss. By some other object, I mean something of which you will be deprived when you hand it to me, not something we both can easily find anywhere. That explains why, under normal

circumstances water, an essential life resource, is far cheaper than diamonds, which for the most part are useless. If I give you some water, there are good chances I will be able to find some more. If I give you my one diamond, I will no longer have it, and diamonds are unique. Hence a bartering system was set up in the very early stages of our civilization, based upon the exchange of goods that were scarce. Under the bartering system, each person owns a limited set of physical resources, and the owner will only let go of some of his resources if he expects to obtain other resources in return. Money, invented much later, was simply a more convenient way of implementing the same bartering principle based upon the scarcity of resources.

Well, now the situation has dramatically changed. A great percentage of the world's GDP is now based on a kind of resource for which the non-reproducibility principle is no longer valid: that resource is information. Information is an intriguing kind of resource because it can be reproduced indefinitely with little or no cost. If I own a great computer game on a CD-ROM and make you a copy, my own copy will still be with me, and I will lose no functionality in the process. That is, information is inherently not scarce. Once you have a piece of information you like, anybody can have it without you having to give up on your own copy. Of course, information has been around for a long time, but it was not as easy to copy in the old days. People did *own* books. But the books were thought of more as material objects in the shelves than as the ethereal information contained in their pages. Books were lent around just like any other object, but they remained the property of a single owner. And nobody thought much of this lending scheme, nor did anyone think an author's rights would be violated when one of his books was lent.

Today, information as a resource is being shifted to a new medium - the digital medium. In this new medium, information can live up to its true nature. It can be reproduced, transmitted at the speed of light, cut into small pieces, rearranged, etc... At the same time, the economy relies more and more on information as a good in itself. Information is entertainment in the form of DVD movies, CD music,

electronic books, computer games, but it is also a manufacturing resource in the form of computer software, patents, genetic sequences, financial data, learning material, etc. So, we might say that the economy is starting to rely on a resource that is not scarce because it is reproducible.

A person watching, from afar, this dramatic shift in the nature of economic resources might see it as a positive turnout. Scarcity, that dreadful word, is no longer associated with an increasing number of products that make people's lives more comfortable, and so everyone can share a common resource that no single person has to own, right? ...Wrong! The old order of things is so entrenched in our mental mechanisms and hence in our economic system that we do not lightly accept the end of scarcity! If scarcity ends, our economic system, which is based upon it, will collapse. So, what do we do? We artificially make information scarce. We invent *copyright*. It becomes acceptable for me to say that if I create an original piece of information, I will *own* it. Whatever that means in this context. I cannot physically lock my information away in a safe, and sell it piecewise, but I can send the police after you if I catch you making copies of *my* information without paying me a due fee. Of course, that artificial constraint we impose on information reproducibility goes against the nature of things. It is very hard to prevent a *crime* that is so easily committed in the privacy of the home, using a very limited number of resources, especially when information transmission and reproduction technology is getting more and more sophisticated. And so we try to impose even stricter restrictions, and harsher penalties. While it used to be considered acceptable behavior for me to buy a book, read it, and then lend it to a friend, most software contracts nowadays will threaten me with all sorts of legal punishments if I do that. Many will keep the old rules of the game, saying that my friend can use the software, as long as I am not using it at the same time, but others go so far as to say that I alone can use the software, and I can never lend it to somebody else. As I am writing you this, some companies are even considering an even stricter restriction. I can use the software, but only for a certain amount of time. After that, if I want to keep on using it, I will have to pay

for a new license. Other companies are threatening magazines with legal action if they publish known glitches in their copyright protection schemes. In a landmark case before the US Supreme Court, someone is being tried for printing on a T-shirt a few lines of C code that breaks the DVD regional selection mechanism. A consequence of that case might be a prevalence of copyright protection over freedom of speech.

Of course, information's true nature backlashes and people react by ignoring copyright protection laws. If companies are not reasonable about copyright, the thinking goes, why should we be? The laws of supply and demand control any other product in the economical system. If an economical entity charges too steep a price for its product, we will simply buy it from somebody else. Not so in the information field. Since copyright belongs to a single person or company, the copyright owner will have a monopoly on that particular piece of information. But, in Economics 101, we also learned that in a monopoly system, the monopoly holder tends to charge an unfair price for the goods it provides. And that is undoubtedly happening with many copyright owners whose products are absolute necessities, like some miracle drugs or mainstream computer operating systems. We have seen many companies experience growths in the 3- or 4-digit range that were unthinkable in a more traditional economy. Did the economies of scale make those companies substantially lower their prices, by reducing the individual products' profit margins? Not substantially. Consider a software title that costs 10 million dollars to produce, and that will be sold to only 100 big corporations. How much will it sell each copy for? Well, maybe 200 thousand dollars, if we allow for a fair 100% profit margin. If another software title that costs exactly the same to produce will sell 20 million copies, will it also aim for a 100% profit margin, and sell for one dollar a copy? We all know it won't. Of course, it won't cost 200 thousand either, but it might easily cost 100 dollars. The same company will thus enjoy a 20000% profit margin on that product. In a traditional economy, any company that enjoyed a 20000% profit margin on a single product would immediately see thousands of competitors jumping on the market, and bringing

the prices down to a fair profit margin of, say, 40% or 50%. But information is copyright protected, so if you own the rights to a mainstream operating system, a patent for a miracle pharmaceutical drug, a movie everyone wants to see, a song in the top charts, a genetic strain that boosts crop yields, you can mass produce it at virtually no cost, while keeping the same price per-item. Your profits will skyrocket. And the beauty of it is that your own consumers, through their taxes, will make sure you keep your monopoly, by supporting a state that upholds copyright protection laws. A side benefit is that free market-entry, an indispensable requirement of free market competition, will also be seriously hindered. A small start-up company has two major obstacles working against it: first, it cannot sell *exactly* the same product, and second it won't have the legal resources to fight for its own copyright through the legal system. While a huge multinational has the resources to sue a teenage hacker in Turkey for distributing illegal copies of its software (in the broad sense of computer games, programs, movies, music, e-books, etc.), a small family-owned software house will be lucky if it gets the neighbors not to copy its products. Not only that, since per-item costs lower with mass production while the sale price stays roughly the same, in the copyright business big is always better.

Not being able to face corporate Goliaths, consumers resort to their David stings, and fight back through piracy. A small company will buy a single license for a software package, and install it in five different computers. A private consumer won't even bother to buy the first license. Mentally, they excuse themselves by saying the software producer (again in a broad sense) has made enough money just as it is. The movie studio won't face bankruptcy because of a few illegal copies, the music label will make enough money through the sale of CDs that they can tolerate a few Napster downloads, software companies have such huge profit margins that they might as well bundle a few free copies with every unit sold. Even some countries are beginning to follow the same path, as we recently saw in Africa where some nations lost their patience with the pharmaceutical companies' profit

margins on AIDS drugs' patents, while huge fractions of the population die, not being able to afford treatment.

The copyright owners of this world are beginning to face the problem of copyright rebellion by assuming a very tough stand against piracy. A landmark case was the music labels' court action against Napster, which succeeded in effectively shutting down a channel where copyright-protected music in MP3 format was freely exchanged. But, like a bathtub that leaks, once you cover a hole another one starts to drip water. The moment Napster was closed, Fasttrack began to offer a safer alternative to music exchange, because it is not centrally based. If music labels now want to stop it, they will have to shut down every single user who is using the system. Similar wars between pirates and copyright owners are taking place in every economic area in which information is the resource being sold.

So, now when will we finally face the fact that information is inherently reproducible and it is not a scarce resource at all? When are we going to abolish copyright, patent protection, and information ownership in general, because they go against the nature of things?

Critics will counter that some sort of reward still has to be given to good information producers. Even if all information became free, people would still have to pay for food, a home, clothing, cars, and other material needs. And that is true for information producers as well, so they have to be paid somehow. That's a very important point. *Some* sort of economical system has to exist in the information era, but one that takes into account the true nature of information.

So, while the founding principle of the old economical system was that physical resources are scarce, the founding principle of the economical system for the information era is the exact opposite: information is bountiful, and can be easily copied in a way that will reach every citizen of the world, if need to be. Moreover, the economical system of the information era has to be integrated with the old economical system (at least until we find a way to easily convert bits into food,

houses, clothing, etc...), so that information producers can still survive in the old order of things, and have access to scarce physical resources.

My proposal for such an economical system starts by the realization that many of the global problems we now face are truly global, and so will have to be handled by a true global government: the United Nations. But a government, in order to rule, needs to have teeth, and teeth only grow from money. So, the United Nations would have to be granted the right to levy taxes. The exact tax system would have to be worked out. It might be the one we have now, in which member states levy their own taxes and then pay the United Nations a set contribution (but they really would have to pay or else face dire consequences), or the UN might have its own staff on the ground collecting the tax. After the tax system was set up, we would assume information is a common patrimony of mankind, and it would thus belong to everyone. But that information ownership entails costs, so we would all have to pay for it through our taxes. We are talking about the exact same principle that forces us to pay taxes to build roads, which in the end belong to every citizen. Only this time the information highway is global, so it has to be paid globally. Of course, people in rich countries tend to consume more information, thus should probably pay a little more for that extra consumption, and so the tax might be indexed to the *per capita* GDP of each country or even to each taxpayer's individual income. Again, that would have to be worked out in international summits, but several alternatives exist. The bottom line is that some UN institution would collect a substantial amount of money from all the citizens of the world, in order to provide for their information consumption needs. And how would it go about spending that money? It would of course distribute it among all the information producers of this world, according to their individual merits. By now, every one is probably thinking what a tremendous bureaucratic monster that would create. Having a body decide how best to award billions and billions of dollars to millions of information producers? A communist central planning system would pale by comparison.

No, here we have to resort to what good old market capitalism has to offer: the possibility that consumers have to *vote*, through their money votes, on which producers to reward, and which to punish. Only here, we would take the voting literally, and we would award each tax-paying world citizen a fixed amount of information-votes he could use, say, one million votes a person. At the same time, every information producer in the world would voluntarily register himself or itself with the UN as an information provider. In exchange, a registration number would be awarded to that entity, which it would stamp on all the information it produced. During the course of the year, each information user would award his votes to the entities that, in his opinion, have been most useful to him. Suppose you just saw a movie that deeply touched you, and you want the movie studio to go on producing that kind of good material. You might award them 500 of your info-votes, and the movie studio could take those to the UN agency to have them cashed. Of course, the way you split your info-votes is entirely up to you. The question is that, if you don't award them, they will be of no use to you, so you might as well award them to the people who produce the kind of information you want to see. If, for instance, a pharmaceutical company comes up with a drug that saves your life in the course of this year, you might feel tempted to give them a substantial amount of your info-votes, because, say, a computer game is not so useful to you if you're dead, and you want that company to pursue its life-saving research. But, if you're alive and well, you also want to be able to get entertainment, so most people will probably award some info-votes to the entertainment industry. News services might be more or less important to you, so you will reward them accordingly. And if your work productivity is boosted by a new piece of software that just came out, you want new versions to keep on coming, for which you will gladly award info-votes to the software producer.

In the end, of course, all the information providers will be able to cash their info-votes, thus getting a material reward for their information-production efforts. We would have thus achieved the goal of integrating the new economic system, based upon information's true nature, with the old one, based upon the scarcity of

physical resources. The system would also be robust, because even if only a small percentage of consumers returned their votes (1% maybe), we would still get a good statistical sample of the consumers' tastes. And just like in any political election, people who don't bother to vote can only blame themselves if the wrong candidates, from their viewpoint, are the ones that get chosen.

As we go along, a growing fraction of the world's GDP will be based upon information. With robotic manufacture, even physical resources like clothing and housing might one day boil down to the software that programs the robots producing those items. So, in the end, the new system might even engulf the old system, and we won't even need a system, because everything will be information, and information is free. But until then, the system proposed here might bridge the gap between scarce physical resources and bountiful information resources.

There would be some nice side benefits, too. If you produce information for the whole world, without having to worry about a distribution infrastructure, you may start to target smaller market niches. TV, for one, nowadays is very generalist. Since market entrance is very expensive, TV stations tend to target the broadest audience possible, and lowering the standards usually does that best. Some consumers have already shown they are willing to pay for premium content, in order to see their niche market filled. That would be even more true with the voting system, since the demanding consumer would be willing to award more info-votes for premium content. Good content providers might then be able to focus on smaller audiences, first of all because those viewers pay more votes in spite of being less, second because a niche market, at a world scale, is still an important market (say, all the persons in the world who like to watch a good game of chess). New companies would also have a much lower market entry cost. They would not have to start with a small number of clients, and grow up from there. Good products tend to spread like fire on the Internet, nowadays. A new company putting out a very good product would very quickly see info-votes pouring in from all over the world, without even supporting the marketing costs. Just think how many info-votes Linus Thorvald would have been awarded for his creation of Linux

that wasn't even profit-minded. The new system would also solve the problem of many web information providers that try to make the most out of the shrinking publicity blanket. They could instead seek financing from the info-votes they would get out of good web content, and leave viewers alone with the nagging popup windows.

Now, for this system to be implemented, a huge battle has to be fought. Many present copyright owners would not be willing to suddenly give up their rights for a system they don't know how well it will reward them. In any case, the obscene profit margins now so common with big information-based corporations would probably disappear, so you could expect a nasty fight from them. National politicians, on the other hand, would not be comfortable with the existence of a world governing body, with real powers, above them. Also they are increasingly dependent on the present economic *status quo* to finance their reelection campaigns, so they might be pressured to resist. The people, on the other hand, would profit tremendously. Many market distortions that patent and copyright protection now create – like when big corporations file for patents of products that do not yet exist, just to keep competitors off bay – would disappear, and thus consumers would pay a fairer price for the information they consume. Small and middle-sized companies would also benefit, since they could easily reach the world market with their products, at a fraction of the present cost. Quality and not deep pockets would decide the fate of many products. So, it is up to the people to force politicians and the bigger economic institutions to accept the new system, at the risk of otherwise watching economical power grow to the point of subverting democratic values.

How can the people do it? Copyright owners biggest production cost is upholding their rights in the legal system. Luckily for them, they don't have to pay for most of that cost. You pay for it, through your taxes, which pay the judges, police, and other government bodies that defend their interests. So, the first step would be voting to abolish patent and copyright protection, as we know it. Without the umbrella of the state upholding their claims, no matter how unreasonable they

are, companies would be forced to accept the second best thing: to be paid according to their individual merits!