MONEY - A SYSTEMS VIEW

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ABSTRACT

This is a paper about possibilities. It is the beginning of an investigation into the influence of perceptions of money on the dynamics of major economic policies. No concrete results are reported.

We begin with anecdotal evidence that many economic policies are based on a local and static perception of money. Local in that it only considers that part of the economic environment which directly impacts on, or is impacted by, the policies being made. Static in that it considers this environment to be essentially unaffected by those policies.

This usual perception of money is illustrated by exploring a number of common thoughts about money. This exploration reveals the confusion surrounding this perception. In order to penetrate this confusion, a step-by-step examination is conducted of the role that money plays in an economy. This examination leads to another perception of money: Money has no value itself; it is merely a proxy for economic product that already exists. This perception is more global and dynamic than the usual point of view. Global because the focus on economic product forces one to consider the full economic context of a transaction. Dynamic because that emphasis leads one to consider the impact of decisions on the whole economy.

A number of everyday economic transactions are illuminated by the new perception of money in such a way that consideration of those transactions naturally relates them to a wider economic system. Armed with this appreciation of economic transactions, the anecdotes presented early in the paper are revisited. In this visit, the new perception of money automatically suggests different approaches that the decision maker could take.

INTRODUCTION

The contents of this paper are presented to you in a form which is not fully developed. They are the result of my attempts over the last couple of years to come to grips with the realization that I didn't understand what money actually is and how people really use it to accomplish things in the world. The little bit of insight I had into this question suggested that most others also suffered from this lack of understanding, including those whose responsibility it is to make economic and financial decisions that affect us all.

My attempts to understand money involved a lot of careful thinking about the issues, and have led me far afield, touching on human qualities such as trust and suspicion or cooperation and competition, that characterize all human interactions, not just economic ones. These digressions were important in shaping my ideas, and I hope that their influence shows in what I have written below. In fact, much of what I say here is intended to speak to all human interactions, even when it appears to speak only to economic ones.

I had not intended to have my thoughts about money published, but pursued them out of my own curiosity. However, when I received the call for papers for this conference, I realized that someone else may be interested in these ideas, and that system dynamics was the natural vehicle to continue my exploration. So I committed myself to presenting them here. Because of my other commitments, and my natural tendency to procrastinate, I did not begin writing this paper until near the deadline for submission, and I fear that the paper does not express my thoughts as completely as I would like it to. Many of the arguments I make are far from air tight, but merely hint at the substance behind them.

My hope is that you in the audience will look for the substance behind these arguments, and that some of you will find these thoughts to be provocative or challenging or infuriating enough to join me in my investigation into the possibilities there are in finding out how people's perceptions of money shape the dynamics of our world.

PERCEPTIONS AND POLICIES

I start off with a number of anecdotal examples from my personal experience or observation, of situations where the policy maker's underlying perception of money causes undesired results. A common theme in all of these anecdotes is that the major actors have a limited view of the effect of their decisions on the economic system they are trying to influence. As a result, their actions have unexpected and unintended results in the long run.

My contention is that this limited view is often associated with a perception of money that is local and static - local in that the perception only takes into account the impact of a decision on the decision maker and his immediate economic environment, and static in that the viewpoint perceives the relationship between money and economic product as being fixed, and not influenced by the decision being made. I further contend that this perception arises from seeing money as something which is valuable in its own right, rather than in its proper relationship with the economy it serves.

A different perception of money is introduced later in this paper. The power of this other perception is precisely that it gives the individual economic decision-maker a more comprehensive view of the environment in which the decision is being made. It achieves this power by seeing money as it really is, an abstraction of economic phenomena that really are valuable in their own right.

Economic Development

When a nation with a traditionally rural economy wishes to develop into a nation with a healthy industrial base, the planners of that development have some difficult choices to make: How much of the technology for development should be imported and how much should be home grown; How should the technology that is being imported be paid for; And what preparation does the nation's society need for the transition from rural to industrial economy?

In the process of dealing with these questions, the focus is often too much on the question of the money involved, both to pay for the development and to be gained from that development, rather than on the development process itself. The following example illustrates this point.

I spent a number of years involved in planning for the water and power supply for an entire nation. This nation is a member of OPEC and was then enjoying the fruits of the sharp rise in oil prices of the early 1970's. The nation was embarking on an ambitious industrial development program, financed from the oil profits. The program was based on making huge investments in basic industry, without first assuring that the 'economic infrastructure' was in place to support that industry.

The result was not as happy as had been expected. Inflation ate up a large portion of the investment, as the benefits flowed back to the industrialized nations in the form of payment for construction, equipment and expertise. The traditional culture of the nation suffered severe shock as it was infiltrated by ideas and values foreign to it. I have lost contact with what is happening in that nation now, but I would expect that the new industrial capability still depends on foreign expertise to keep it producing, that the benefits of the industry have not been nearly as great as had been envisioned, and that there is a great deal of resentment toward outsiders because of the disruption and disappointment associated with the industrialization.

My hypothesis is that much of the reason for the failure of this industrialization to meet expectations lies in the policy makers' limited perception of money. The original planners of the investment did not foresee many of the problems associated with the investment. The cost of the development was seen in terms of the then-current world prices for oil, construction and equipment. The inflation and other dislocations which resulted from the development were not taken into account. My guess is that the cost of the development, in real terms, was approximately the same that it would have cost before the rise in oil prices that made the development possible. My measure of 'real term cost' here is the amount of oil, that was needed to be pumped from the ground to pay for the development.

The US Farm Crisis

It is no secret that US agriculture is experiencing a severe crisis.

On the one hand, we have examples of farmers destroying their products because bringing an overabundance to market would have forced prices disastrously low. This destruction takes place while there are many in the world, or even in the farmers' own regions, who could well benefit from the product that is being destroyed.

Viewed from a distance, this behavior is nothing short of insanity. Yet, from the point of view of the farmers and the people who take part in the commodity markets, each is acting rationally. They must lower prices in order to retain their share of the market. Many, if not most, would be glad to see their products go to the needy people who can't afford them, but fear that just giving the products away would erode the product's price.

On the other hand, in the midst of this abundance, farmers are going bankrupt. In fact some farmers go bankrupt in the same year that they have their most successful harvest. The reason is that farmers' debt is overextended.

Why is the farmer in this position? First, the movement of the large corporation into agriculture bid up the price of land. Second, the large corporations were able to mechanize their farms to a large extent, making them more productive in the short term. Farmers living on their own farms were forced to increase mechanization, and because land prices were rising, it was easy for the farmer to obtain financing. However, American agricultural products were already close to saturating their markets, and foreign agricultural products were beginning to compete. Demand for farm land and for farm products softened, with a decrease in land and product prices and in the ability of the farmers to pay their debts.

In this situation, all the major players are making rational decisions from their point of view. But, as in the last example, this point of view also treats money as if it had a value of its own.

Functional Unemployment

A situation similar to the farm credit problem described above often happens in the manufacturing or service sectors of an economy. In a sector near overcapacity, where there is just enough work to keep the workforce occupied, an improvement in productivity is rejected by the workers, because they fear a loss in the number of jobs or a loss in pay. And the fear is justified, because it has happened many times in the past.

Management in that sector will not be inclined to look for productivity increases, because of the labor problems that will arise. And as the sector becomes less competitive it can just die away even though there is still a substantial market for it. Everyone suffers - labor, management and customers alike.

As in the previous examples, each major participant in these decisions is acting rationally from his point of view. But I assert again that it is the participant's perceptions of money as something which has value in its own right that obscures possible avenues of escape from the dead end the sector seems to be in.

Cargo Overcapacity

I am currently working on projects with two industries, large cargo vessels, and tank truck carriers, in which the fundamental problems of the two industries are surprisingly closely related. Both industries are suffering from overcapacity. Prices for carrying goods are depressed, so bankruptcies are a common occurrence. However, when a company goes bankrupt, the overcapacity is kept in production by selling it off cheaply, in order to allow the banks to recoup some of their investment in the industry. The companies who are able to buy this inexpensive capacity are then able to compete successfully for a time in an underpriced market, and and may even be able to reduce prices further. In the cargo vessel industry, there is a further absurdity. Since keeping a vessel in operation is an expensive proposition, many owners are choosing to sell idle vessels for scrap. But the overcapacity does not decrease. Nations with a strong shipbuilding industry provide tax and other incentives for owners to buy new ships. So whenever, in the normal fluctuations of the industry, a company rises slightly above just barely surviving, it takes advantage of these incentives to buy new vessels. The result is a substantial flow of vessels from shipyard to scrap heap. This flow is subsidized by shipowners, by bank depositors and by taxpayers to the benefit of the shipbuilders and the shippers, with a great deal of productive activity going to waste in the process.

It is clearly redundant of me to make the assertion that behind this waste is a perception of money as something that actually has value in its own right. It is about time for me to start justifying this assertion.

SOME VIEWS OF MONEY

To illustrate that the usual perception ascribes money a value in its own right, let us look at a few hypothesized thoughts about money and about its importance in our lives.

Money is Wealth (Property) - Money is what keeps one from being a ward of the state and allows one to stand on his own two feet, and to hold one's head high among ones neighbors. The image of money as something valuable comes across very clearly in this example. But how does money achieve this valued status?

Money is to Buy Things with - You can buy anything you want, just by having the right price. Here we begin to see another side of money, that it derives its value from what it can do for us. But, why would the seller accept a few pieces of paper for something that has an intrinsic value such as a loaf of bread or a family automobile?

Money is a Proxy for Gold - For millennia people have accepted gold as payment for goods and services. Why? Because gold has some intrinsic value as a symbol of position, but also because it is portable, and easily transferable from one person to another. Gold has no intrinsic relationship to the value of the good or service for which it is being traded . The value attached to gold is no more than a general social agreement that gold can be used as a medium of exchange. The advantages that gold has over paper money are that it is more durable, it is harder to produce and it has a much longer history as a medium of exchange. But having the value of money depend on the value of gold is just begging the question. Surely the intrinsic value of gold as a symbol of status or as a material for industrial use is nowhere near as high as the value attributed to it in financial transactions. Where does the value of gold come from?

Money facilitates the transfer of control of the fruits of economic activity - In other words, money is a medium of exchange. This is getting much closer to the truth I am looking for. But even though the concept of a medium of exchange is fairly straightforward, I believe that people are very irrational in their relationship with money. Why should this be so?

Because money is thought of as wealth. That is, it represents all those tangibles, such as food and shelter and works of art that support our pride in ourselves. It also represents to us intangibles such as the power to control our environment and the power to stave off death. Because money is bound up in those things close to the core of our being, it is not surprising that we develop very self-centered attitudes toward money, such as

Once you spend it, it's gone - Since money has the element of power in it, and since we humans by nature dread giving up control in our lives, each expenditure of money is viewed, at the gut level, as giving away some of our power, or of dying a small death. This easily translates into the view that once money is spent then it is gone forever. A corollary of this view is that there is only a fixed amount of money around, and so we must struggle to corner our rightful share of it, and to make sure another person doesn't deprive us of that share.

But is money really gone once we spend it? Clearly not. Whoever we paid the money to now has the opportunity to use it in whatever manner this person sees fit. In other words:

Money makes the World Go Round - Money is capable of creating more money, as in the phrase 'It takes money to make money'. But money can create money in the deeper sense that it can be used to create something new, by being invested. But also, money can be created in other ways. In order to provide the proper setting to justify this statement, I first introduce a different view of money.

A FANCIFUL HISTORY OF MONEY

The views about money expressed above show a number of things. First, they show that there is a great deal of confusion about what money actually is. Second, they support my contention that people usually see money as something with value in itself. Third, there is a certain feeling of circularity in these statements trying to explain money. I always encounter this circularity in thinking about money when I perceive it as being something valuable in its own right.

In order to develop this different perception of money, which is the central idea of this paper, I find it convenient to run through an idealized, conjectured, history of money in order to highlight some of the attributes that money has today.

Specialization

Tens of thousands of years ago when our ancestors lived in a hunter-gatherer society, the economy was fairly simple. The basic social and economic unit was small, probably an extended family, in which everyone knew everyone else. Probably this unit also comprised the total society and economy for its members.

The number of tasks to be done was also small. Yet even at that time there undoubtedly was specialization in those tasks. When there was hunting to be done, certain people in the unit were more likely than others to participate in the hunt. When gathering was to be done, again certain people were more likely to participate than others.

Similarly, for each of the other economic activities -- processing the yield of the hunting and gathering into something to eat and something to wear, finding and building shelter, making major decisions -- for each activity certain of the people were more likely to participate than others. It is unlikely that anyone only participated in one activity, but each person would have been a major participant in only a limited number of activities.

What were the benefits of specialization? First, as more time was spent on a task, a person got more efficient at that task and could perform more of it in a certain time. Thus the economic unit could increase its total production without increasing its labor force. Second, as a person became really familiar with a task, and concentrated on doing that task well, it became more likely that improvements in the way of doing that task would be thought of. In other words, the specialization promoted the increase in productive capacity, in addition to promoting an increase in production itself. This last point is fundamental to the present high level of economic productivity in the world today.

However, one potentially disastrous shortcoming of specialization had to be dealt with before specialization progressed very far. Namely, if someone spends all day out hunting or gathering, how is that person assured ready-to-eat food, clothing and shelter upon returning to the living site. Or, how is the person who spends all day making clothes assured a share of the food brought in by the hunters and gatherers? Or, how is the elder who spends all day thinking and giving advice assured of the physical needs for living.

The answer is that there was no absolute assurance of these things. Each person in that era had to trust the other members of the unit to share the fruits of their efforts. This trust was much easier to give in those days, since all members of the economic unit were known and probably related to each other, and so were united by a common bond. Note that this concept of trust is right at the foundation of our economic system, and is essential to the smooth working of the economy even today.

Production and Service

I would like to use the example of the hunter-gatherer society to make another point about economic production that I think is not very well understood. Namely, that there is no distinction between production and service in the economy.

Who in the hunter-gatherer economy is producing goods and who is providing a service? Let us answer the second question first. Clearly, the elder who only gives advice is performing a service. But I maintain that the person who prepares the food each day is also providing a service, as is the person who turns animal skins into clothing and the person who turns sticks and stones into weapons and tools. Thus the only people who are producing goods appear to be the primary producers, the hunters and gatherers. But I question whether they are in fact producing goods. What human being has ever made a woolly mammoth, or a cow for that matter? What human being has ever made a grain of wheat, or a tomato? The answer, clearly, is no one. The only productive activity that humans ever do is to manage the materials and processes that nature gave us. Thus, at some level, all productive activities are activities that provide a service.

A more fruitful distinction among economic activities for our purposes is between development of productive capacity and other activities, which we will refer to as consumable production. Productive capacity is what supports future economic activities. This includes tools and equipment, land and other natural resources, knowledge and a stable economic environment. In this paper I will use the word investment to refer to development of productive capacity. It need scarcely be noted that there is a powerful positive feedback loop associated with investment: the more that economic activities are devoted to investment, the greater the returns, providing even greater ability to invest. This paper is addressed to the negative feedback loops mitigating this fundamental positive loop.

The points above do not deny that some services depend on the performance of other services. The elder cannot think without the services of the food-preparer, and the food-preparer cannot perform without the services of the hunters and gatherers. And it is also true that the hunters and gatherers would be nowhere near as efficient in their work if they did not get advice from the elder about where and how to hunt and gather. The main point is that the current popularity of distinguishing between a service economy and a production economy that is so much in the public eye today, is not a fundamental distinction but is only a distinction made to help someone make a point about the economy.

Trade

Let us now move our fanciful history forward several tens of millennia, to a time when agriculture has been well established but before the ancient civilizations have had a chance to develop. In this time, the economic unit was probably still the extended family, but the society and the economy were much larger, encompassing thousands of people, or more.

Specialization was much more advanced than in the hunter-gatherer society. While most people were probably still primary producers, in the traditional sense, a noticeable fraction of the populace worked in the service sector: administration, religion, defense. Manufacturing and agriculture were probably performed by different people for the most part.

A major problem that mankind had to overcome to reach this stage was how to assure that people in all sectors of the society were able to gain a fair living from the economic activities they performed. People no longer knew everyone in the society, and they probably did not have a special personal bond with even everyone with whom they dealt. The personal trust that had been a key in the earlier society was no longer as forthcoming, as one extended family unit may have been competing with another for land, for water or for other resources. Yet it was probably clear that someone who occupied land that grew excellent wheat, and someone who occupied land that provided copper ore had something to gain by trading what they were rich in for what the other had in abundance. And each would benefit from protection from hostile outsiders and from access to goods that were not produced in the immediate neighborhood.

Thus, the practice of trading goods for goods, and goods for services, and vice versa, probably grew up naturally as people began to appreciate its benefits. However, another problem likely gave rise to another level of specialization. The farmer could not spend a great deal of time away from his fields looking for copper to make into tools, and the smelter could not spend the time away from his forge looking for whoever needed copper that day. The role of merchant almost certainly arose because it was worth it to each of the primary producers to pay a little bit of their own product to someone else to trade that product for him.

Medium of Exchange

There were still problems with the system of directly trading goods and services even if there were a merchant to smooth the transaction. The apple grower only had apples to trade at one time of the year, but needed to eat and to have tools to work with all year long. The copper smelter might want fish when the fisherman wanted wheat, and the farmer wanted tools, but no two of them each wanted something from the other. The concept of a medium of exchange arose in response to this kind of problem. A medium of exchange is something that can be used in trade for any good or service.

What properties would a medium of exchange have? Its principal property would have to be that everyone in the economy where it was used would agree that they would trade their goods or services freely for this medium, and would trust that everyone else in the economy would do the same. In a situation where one does not have a personal bond with everyone with whom one deals, it must have been difficult to get that trust for a medium of exchange that did not have some value in its own right.

What other properties would a medium of exchange have? In order for our apple grower to survive all year long, the medium of exchange would need to last from one harvest to the next. That is, a medium of exchange must have some degree of permanence. It also must not be too easy to produce, because someone could spend his time producing the exchange medium in order to have access to the goods and services of the economy, without producing anything else of value to that economy.

Note that a medium of exchange is an abstraction of the fruits of any kind of real economic activity. Like most abstractions, the concept of a medium of exchange opened up powerful possibilities that hadn't previously existed. Also like most abstractions, this concept gained a life of its own which divorced it from the reality on which it was based, which interfered with the understanding of that reality.

In many societies during the time period we are now considering, grain was used for a medium of exchange. Grain clearly had an intrinsic value to the economy, since it was the principal food source at the time. It also had a degree of permanence, being storable for several years under properly managed conditions. Anyone could produce it, but this production did require some effort.

Gold as a Medium of Exchange

Let us again move our fanciful history of money forward to sometime between 2500 and 4000 years ago. By this time complex civilizations had arisen. The economy that an individual took part in had become extremely specialized, encompassing millions of people.

In order for civilization to progress to this stage another obstacle to assuring that people in all sectors of the economy were able to gain a fair living from the economic activities they performed had to be overcome. Namely, there was a major problem with using grain as a medium of exchange: it was too bulky. Fine for local usage, the bulk of grain made it impractical to be shipping it hundreds of miles to complete transactions between far-flung corners of the economy.

Something more portable was required. Yet this something needed to have an intrinsic value in order to sustain the trust necessary to the success of a medium of exchange. Gold, being beautiful, durable and rare had this value, and so eventually became the medium of exchange in widely separated economies. Its near universal value and it portability no doubt had a role in encouraging trade among those different economies. Yet, despite this universality, it is important to remember that there is nothing magical about gold that caused its adoption as a medium of exchange, but just some very specific properties that enabled people to easily reach the agreement needed, and to trust that gold could be traded for something else of value at any time in the future.

Gold also had a drawback as far as being a medium of exchange is concerned: it was an abstraction for the value of the economic activities of people, so as an abstraction it tended to obscure the more everyday reality it represented, namely the goods and services produced by everyday people. Gold became invested with the value of the economic production it represented. We are all familiar with woes associated with people's pursuit of gold for its own sake.

Currency, Checks, Credit Cards and What's Next?

Let us again move our fanciful history of money forward to the modern era, after the year 1700. By this time society and the economy was becoming truly worldwide and extremely complex. The average economic production per person was higher than it had ever been, and was rising.

Just as grain had become too cumbersome to serve as a medium of exchange in an earlier era, gold was now becoming too cumbersome. For a coal mine owner to exchange his coal for gold in the city, take it back home hundreds of miles to the mine, and then to take it back to the city again to purchase some equipment was just too inconvenient, time consuming and risky. So currency was invented.

Currency consists merely of pieces of paper that say they can be exchanged for a certain amount of gold on request. This claim is backed up by the government which issued the currency, and which holds the gold. But in truth what the government is guaranteeing is the stable continuation of the current economy, since that is in fact what the value of the gold derives from. The guarantee of redeeming gold would be worthless without the guarantee of the economy.

The value of currency is backed up by gold, which in turn is backed up by the agreement of people to have gold be exchangeable for the fruits of economic activities. Currency has the shortcoming of being an even more abstract representation of those fruits. People easily fall into the practice of thinking of money in terms of what it can buy, rather than as representing the value of economic activities already performed.

If we move our history of money further forward into the eighth decade of the Twentieth Century, we see further abstractions of currency, alias gold, alias grain, alias the fruits of economic activity: checks, credit cards, or whatever is next. None of these forms of medium of exchange is more valid than any other, given that they all depend on the continued functioning of the economy, and would all be worthless without it.

MONEY AS A PROXY FOR ECONOMIC PRODUCT

The preceding fanciful history of money has developed the concept of a medium of exchange as an abstraction for the fruits of economic activity that someone has already performed. Since this concept is the main idea of this paper, I emphasize it here by stating it as a formal definition:

> Money is a proxy for economic product that already exists.

The words in this definition are being used as follows:

Proxy: Authority or power to act for another.
Economic Product: My term for the fruits of economic activities.
Exists: Used in this definition to emphasize that since money is intended to be exchanged for economic product on demand, the economic product for which the money is a proxy must have already been performed.

If the economic product behind money does not already exist, the value of the money is eroded and we have inflation. Put another way, economic product that exists is economic production that has already been accomplished. In what follows, I will refer to money under some person's control as a claim on the economic product that the money is a proxy for.

A Simple Example

This economic product is a concept closely related to the concept of product as used in the expression Gross National Product. There are a number of differences though. The most important difference is that GNP is a quantity measured in monetary terms, usually dollars, whereas economic product is the real goods and services being measured by the GNP.

A simple example may help to illustrate my point. Picture water flowing over a dam. This flow can be measured in some convenient units, such as cubic meters per second. GNP is analogous to saying that the water is flowing over the dam at the rate of 100 cubic meters per second, while economic production is analogous to the flow of the water over the dam, independent of any units it may be measured in. The flow and the economic production are something real, whereas the GNP and the number denoting the flow are not real but are just mathematical representations of the real thing.

As a further illustration of the same point, GNP is calculated as a summation of the value added by each component activity of the economy. Thus the dollar I paid for a loaf of bread this morning contributes to the GNP in many ways, eg:

A 5 cent contribution from growing the grain and other ingredients,
20 cents for processing the ingredients and baking the bread,
25 cents for providing energy for processing and transportation,
10 cents for the transportation itself,
20 cents for wholesaling the loaf and
15 cents for retailing it.

The economic product associated with this loaf of bread is broken into parallel components:

The growing of one pound of wheat, two eggs, one quart of milk, etc.
The milling of the wheat into flour, the pasteurization of the milk, etc.
The pumping of petroleum from the ground, refining it into gasoline and natural gas, etc.
The loading of the loaf onto a truck, driving it to a warehouse and from there to the grocery store, etc.
Providing a market for the baker and a source of supply for the grocer, etc
Providing retail space at a location convenient to my residence where I can count on finding loaves of bread when I need them, etc.

I emphasize the distinction between the stuff in this example and the measurement of this stuff. In general, measurement is a proxy for one aspect of a real situation. And while it is useful for dealing with that aspect, it tends to obscure other important aspects of what is really happening in the situation. Yet we tend to discuss situations in terms of their measures. This distinction between money and what it measures may be the most important contribution of this paper.

Producing Economic Product

Money in the form of gold, currency or bank balances seems to be chronically in short supply. There never seems to be enough of it for our needs, and most efforts to increase its availability merely lead to inflation, the erosion of the value of these forms of money. However, money in the form of economic production already accomplished is relatively easy to produce: just step up production.

The difficulties occur in trying to put this simple guideline to work. First, one needs to survive while stepping up production, by doing things like eating, sleeping comfortably, etc. Second, in order to step up production, more productive capacity is needed, usually in the form of more materials, equipment, people, know-how or distribution capabilities. Finally, the economy must really be able to make use of the increase in production.

I now take a short look at a few ways that people use to increase their own money supply.

Wages

Most of us work for wages. What are wages? Wages are simply the money an employer pays to employees in exchange for services the employee performs on the behalf of the employer. What are wages in terms of the proxy perception of money? The service the employee performs is simply an act of economic production. The money the employer pays to the employee is part of the employer's claim on a share of the world's total accumulated economic product.

Thus, the worker's wages are a claim on the world's total accumulated economic product received in exchange for the worker's own contribution to that accumulated product.

Profits

In a well-run economy, the claim that the worker receives for his work should be equal to the economic contribution that the worker has made. The employer then turns around and makes this worker's contribution available to the rest of the economy. That service is also an act of economic production, and is the employer's contribution to the total accumulated economic product. For the total contribution, the worker's and the employer's, the employer receives his own claim on the world's accumulated product. The size of this claim should be slightly larger that the claim the employer had previously ceded to the employee, and the difference between the two claims is the employer's profit.

Investment

As indicated earlier, investment is the use of one's claim on accumulated economic product for the development of production capacity. A major reason for investing is to eventually increase economic production, with the investors having a claim on the resulting product in exchange for their investment.

Investment has undoubtedly been behind all of the economic advances in history, from the hunter-gatherer economy we talked about earlier until today, particularly investment in know-how.

Speculation

Speculation is the use of one's claim on the accumulated economic product in such a way as to increase the probability of receiving a portion of someone else's claim on the accumulated product, without having to perform any economic production along the way.

Speculation looks like investment on the surface, but is quite different in motivation, and leads to subtle but critical differences in behavior and results. The speculator and the investor both pay money in exchange for the hope of a future return on that money. The investor has a long-range point of view, and his attention is focused on the strategical issues of what needs to be done to increase productive capacity. The speculator has a short-range point of view, and his attention is focused on the tactical issues of what is happening with regard to the statistical fluctuations in the marketplace, and how to best take advantage of them.

Each gets what he is looking for. The investor gets economic progress and development. The speculator gets endless shuffling around of assets among his fellow speculators, with some gaining and some losing, but with no overall economic progress as a result.

My concern is that what passes for investment in today's Western economy is mostly speculation. My own speculation about why this is so is that the extreme abstraction that money is today, along with the extreme complexity of the economy it serves, tends to obscure the distinction between investment and speculation. My conviction is that when the distinction is clearly pointed out, nine out of ten people would choose the path of investment over speculation. That is my reason for writing this paper.

PERCEPTIONS AND POLICIES REVISITED

Armed with the perception of money as a proxy for existing economic product, and with the more global viewpoint of economic transactions that that perception gives us, we take another look at the anecdotes presented at the beginning of this paper. The solutions suggested here are no doubt simplistic and unrealistic. But the point of this section is to show that the proxy view of money is productive of new approaches to problems. If the actual participants in the situations described were to take this viewpoint, I have no doubt that they would come up with solutions that are much closer to the mark.

Economic Development

Let us look again at the issues of injecting an industrial capability into an agricultural economy, as illustrated by the above example of the OPEC nation. The real issues in this example were not how to pay for the industrialization and what kinds of return to expect on the investment. Rather, one issue was how to make the most effective use of the economic product, derived from pumping oil, to develop production capacity within the nation, and to have that development sustainable in the long run. Another issue was how much of this economic product was to be devoted to investment and how much to immediately obtaining consumable goods.

In any case, since importation of anything requires transportation production capacity, an early decision to be made was whether to invest in this production capacity right away or to pay others for the lack of production capacity through higher prices and delays for the imported goods. As it turned out, the second choice was made by default, because the issue was not posed in this way.

The import of production capacity met with still other problems. Only one of the components of productive capacity, materials, was available locally. Equipment had to be imported, with the same extra cost as for consumable products alluded to above. A third component of productive capacity, knowledgeable workers, was also not available locally, more of the accumulated product was squandered by having foreign workers come in to run the new industry and sending their earnings home.

The US Farm Crisis

The destruction of surplus farm products is clearly a waste of hard-won production, with no one benefiting from that production. Realizing that the problem was caused by thinking in terms of money rather than economic product, the farmers might have tried alternative solutions, such as making an exchange of the excess production for work on the part of the recipients. Another possibility would be to sell the product to a third party, who could have the people who use the product do something for him in exchange for the product. People who might be interested in being that third party might be the banker who finances the farmer or the person who supplies the farmer, both of whom have something to lose by the farmer's going bankrupt.

Functional Unemployment

Looked at from the proxy point of view of money, the reasons for the decline of the sector in this example should be clear to all parties involved: They are wanting to limit the economic production per worker in the sector while competitors are increasing production per worker, yet at the same time they want to receive from customers an increasing economic product in return. It should also be clear that the improved productivity would be better for all in the long run, if equitably divided.

One possibility for getting out of the bind that labor and management find themselves in is to recognize that there might be a decrease in employment because of the increase in productivity, but to have management commit to paying for the retraining of those workers no longer needed, and to finding them work in related sectors. The possibility that a more productive sector could in fact increase employment in the sector should also be taken into account.

Cargo Overcapacity

From the proxy viewpoint of money, the government incentives for shipbuilding are a subsidy (both voluntary and involuntary) of make-work jobs in one sector of an economy. The government involved should take a close look at whether this is what they really intended to be doing, and if not, target the productive (over)capacity in the shipbuilding sector to be used in other areas of the economy where it is really needed.

CONCLUSIONS

Out of the above tour through the various aspects of money, I hope that the reader has come away with the following important points:

Money is a proxy for economic product that already exists.

It is important to be aware of the abstract nature of money and not be misled into ascribing a real value to money in analyzing an economic situation, but to firmly concentrate on the real exchange of control of economic product that underlies any of the financial transactions in the situation.

The possibilities that these points open up seem to me to be endless, and my own efforts have barely made a beginning in discovering them. I invite anyone who is interested to join me in exploring these possibilities. I suggest that system dynamics is the most natural tool to use in conducting this exploration.