

Margrit Kennedy
with illustrations by Helmut Creutz

A CHANGING MONEY SYSTEM **The Economy of Ecology**

What is money? Let's take the good news first. Money is one of the most ingenious inventions of mankind. It helps the exchange of goods and services and overcomes the limits of the barter system, thereby, creating the possibility for specialization, which is the basis of civilization.

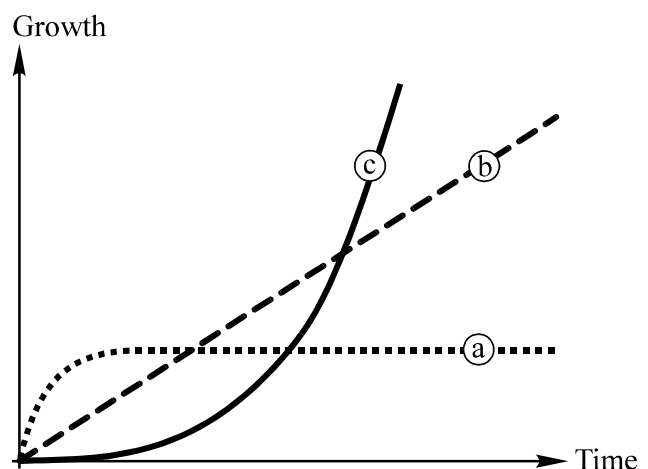
Why then do we have a 'money problem'? Here is the bad news: Throughout most of history, the circulation of money has been based on the payment of interest. Interest leads to compound interest. Compound interest leads to exponential growth. And exponential growth in turn – wherever it cannot be transformed – is unsustainable. Therefore, in order to understand why our monetary system works, as the "invisible wrecking machine" since its inception, we must first understand three generically different growth patterns and how they relate to different types of growth (Figure 1).

Curve a in Figure 1 represents an idealized form of the normal physical growth pattern in nature, which our bodies as well as those of plants and animals follow. We grow fairly quickly during the early stages of our lives, then begin to slow down in our teens, and usually stop growing physically when we are about twenty-one. This, however, does not preclude us from growing further 'qualitatively' instead of 'quantitatively.'

Curve b represents a mechanical or linear growth pattern, e.g. more machines produce more goods, more coal produces more energy, etc. It is not so important for our analysis. It should be clear, however, that in a finite universe even this growth pattern will eventually create problems.

Curve c represents exponential growth the most important and generally least understood growth pattern which may be described as the exact opposite to curve a in that it grows very slowly in the beginning, then accelerates continually faster and finally grows in an almost vertical fashion. In the physical realm, this growth pattern usually occurs where things are out of

Basic Types of Growth Patterns



- a natural curve
- b linear curve
- c exponential curve

Figure 1

order, where there is sickness, often leading to death. Cancer, for instance, follows an exponential growth pattern, and, using this analogy, interest may be seen as the cancer on our social and economic system.

Based on interest and compound interest, our money doubles at regular intervals, i.e. follows an exponential growth pattern. Figure 2 shows the time needed for our money to double: at 3% compound interest it takes 24 years; at 6% it takes 12 years; at 12%, 6 years. Even at 1% compound interest, we eventually end up with an exponential growth curve.

Since through our bodies we have only experienced the physical growth pattern of nature, which stops at an optimal size (curve a), it is difficult for human beings to understand the full impact of the exponential growth pattern in the material realm.

Constant Growth Curves

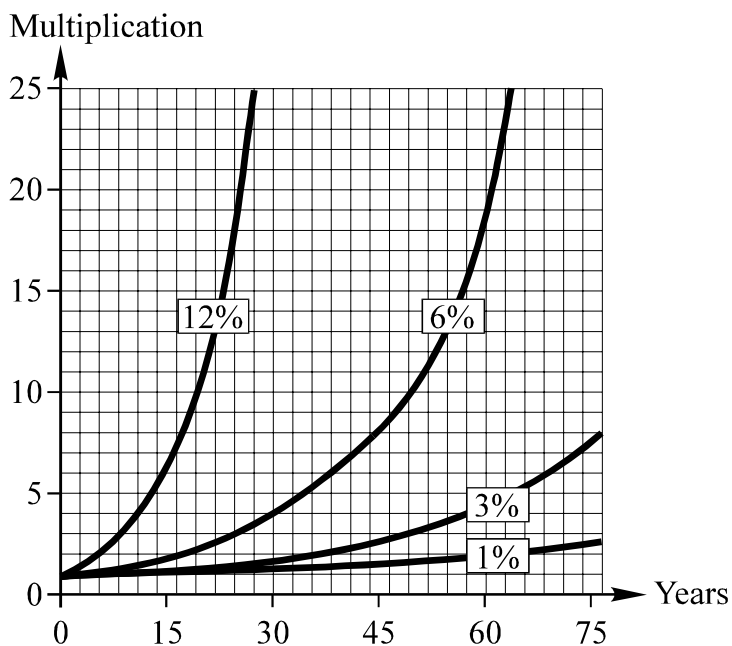


Figure 2

This phenomenon can best be demonstrated by the famous story of Joseph's penny: If Joseph the father of Jesus would have invested one penny at his birth at 5% interest, and Jesus would have returned to the same bank in 1990 - at the time of the German unification - he would have been able to buy with the money accrued in the meantime 134 billion balls of gold of the weight of the earth based on the official price of gold at this time. This shows mathematically that the continual payment of interest and compound interest over a longer period of time is practically impossible and explains why - in regular intervals - we have economic and social breakdowns.

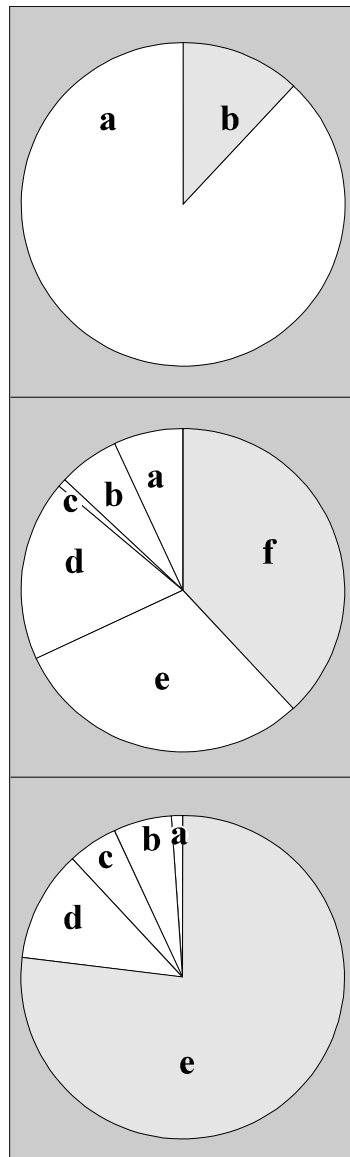
Three Misconceptions about Money

1. A further reason why it is difficult for us to understand the full impact of the interest mechanism on our economic system is, that it works in a concealed way.

Most of us assume that we only pay interest when we borrow money. Therefore, if we want to avoid paying interest, we think all we have to do is to avoid borrowing money.

What most people do not understand is, that every price we pay includes a certain amount of interest. The exact proportion varies according to the labour versus capital costs of the goods and services we buy. This ranges from a capital share of only 12% in garbage collection, (because here the share of capital costs is relatively low and the share of physical

labour is particularly high) to 38% in drinking water, and up to 77% in public housing (Figure 3). On the average we pay about 40% interest in all the prices of our goods and services. In medieval times, people paid 'the tenth' of their income or produce to the feudal landlord. In this respect, they were better off than we are nowadays, where almost one half of each Euro or Dollar goes to serve people who own capital.



Examples of the Amount of Interest within Normal Prices und Fees

1 Garbage Collection Fees

Example of the city of Aachen 1983

a) Depreciation, fixed, personal and miscellaneous costs	88%
b) <i>Cost of interest on capital</i>	12%

Fees for
110 l. garbage can: DM 194,- 100%

2 Drinking Water Costs

Example of a Northern German Water Supply Works 1981

a) Energy costs	7%
b) Plant maintenance	6%
c) Water treatment	1%
d) Personnel and fixed costs	18%
e) Depreciation	30%
f) <i>Cost of interest on capital</i>	38%

Preis per cu. metre: DM 1,36 100%

3 Cost of Rent in Public (Social) Housing

Calculations of the Federal Office of Statistics 1979

a) Risk and profit	1%
b) Administration, running costs	5%
c) Building maintenance costs	6%
d) Depreciation	11%
e) <i>Cost of interest on capital</i>	77%

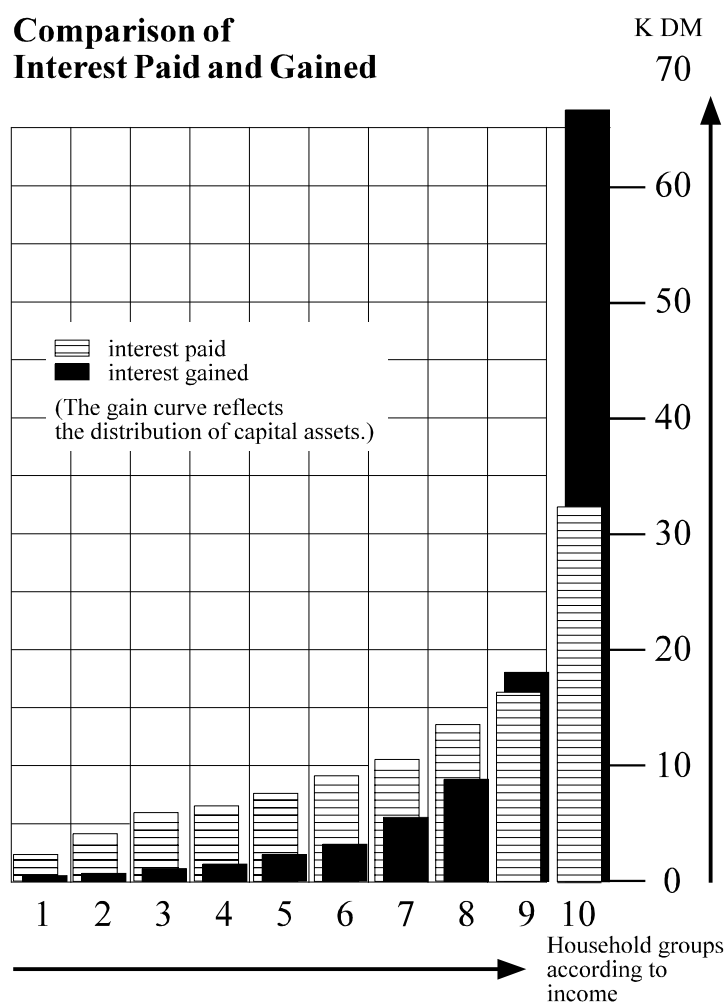
Rent per sq. metre: 13,40 DM 100%

Figure 3

2. Because another misconception concerning our monetary system may be formulated as follows: Since everyone has to pay interest when borrowing money, we are all equally well off within our present monetary system.

Not true again. There are indeed huge differences as to who profits and who pays in this system. Comparing the interest payments and income from interest in ten equal parts of 2.5 million households each in West Germany, Figure 4 shows that 80% of the population

Comparison of Interest Paid and Gained



Income paid per HH (in K DM):	2,3	4,1	5,9	6,5	7,6	9,1	10,5	13,5	16,3	32,3
Interest gained per HH (in K DM):	0,5	0,7	1,1	1,5	2,3	3,2	5,5	8,8	18,0	66,5
Balance:	-1,7	-3,4	-4,8	-5,0	-5,3	-5,9	-5,0	-4,7	+1,7	+34,2

Figure 4

The interest and compound interest mechanism not only creates an impetus for pathological economic growth, but also works against the constitutional rights of the individual in most democracies. If a constitution guarantees equal access of every individual to governmental services - and the money system may be defined as such - then it is illegal to have a system in which 10% of the people continually receive more than they pay for that service and 80% of the people receive less than they pay.

Many of the great political and religious leaders like Moses, Mohammed, Luther, Ghandi and most of the churches and spiritual groups throughout history have tried to reduce

pay more than they receive, 10% receive slightly more than they pay, and the remaining 10% receive about twice as much interest as they pay (i.e. 34.200,-DM per household and year in 1985), that is the share which the first 80% have lost. This illustrates one important reason why 'the rich get richer and the poor get poorer.' In absolute figures, this amounts to a transfer of about 500 million DM every day from those who work to those who own capital in West Germany (1985). The same holds true for any other country. In fact, In most countries the percentage of those who profit from the present system is even smaller.

In other words, within our monetary system we allow the operation of a hidden redistribution mechanism which constantly shuffles money from those who have less to those who have more money than they need: Thus, on the one hand, large amounts of money concentrate in the hands of ever fewer individuals and multi-national corporations and, on the other, "Third World Countries" will never be able to get out of debt in the current system, as by now they have to pay back several times the amount of what has been loaned to them.

social injustice by prohibiting interest payments. They understood it as the main cause of social injustice. However, they did not come up with a practical solution to keep money in circulation. Thus, the archaic flaw in the system remained unchanged. The prohibition of interest payments among the Christian community by the Popes during the Middle Ages in Europe, for instance, just shifted the problem to the Jews. While the Jews were not allowed to take interest from each other, they could do so from the gentiles. If they took interest from each other they allowed a remission of debts every seventh year. Islamic banks, which follow Muslim law, are not allowed to take interest from their clients. Instead they become partners in the business to which they make a loan. Whether or not this is a better solution depends on the partners, but it certainly creates a more direct link between creditor and debtor.

3. A last misconception relates to the role of inflation in our economic system. For most people, inflation seems like an integral part of any money system, almost 'natural,' since there is no country in the world without inflation.

In the Federal Republik of Germany between 1950 and 1989

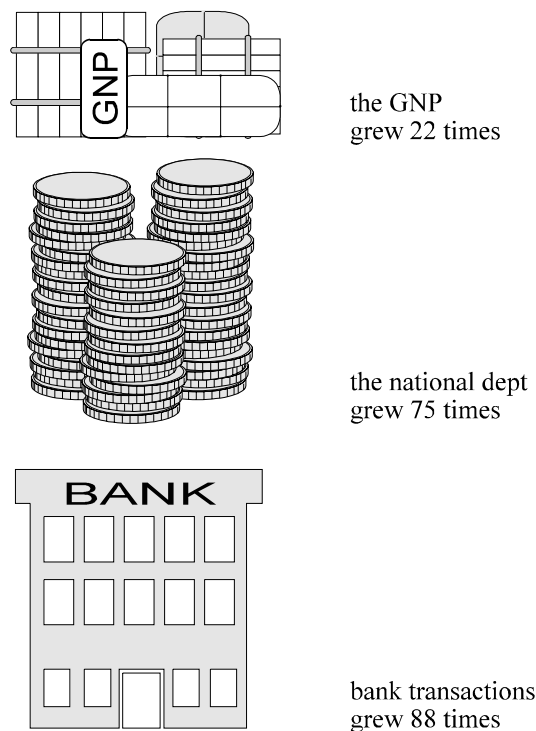


Figure 5

Few realize that this is just another form of taxation through which governments manage to overcome the worst problems of an increasing interest burden. Between 1950 and 85 the GNP in Germany increased 18 times, interest paid on debt, however, 51 times (Figure 5). Since the largest borrower on capital markets is the government, it pays the highest share of interest. Obviously the larger the gap between increases in government income and government debt the higher the inflation needed. Printing money enables the government to reduce its debts. This is another way of making those 80% of the people who pay more interest than they gain, pay even more, since they cannot withdraw their assets into 'inflation-resistant' investments like those who are in the last 10% income bracket.

**Two Further Effects:
Arms Race and Ecological Exploitation**

Besides the social injustice of a constantly widening gap between the rich and the poor in industrially developing and industrialized nations alike, two further problems associated with the interest system need to be identified: the arms race and ecological exploitation of the earth.

1. The present concentration of money in the hands of ever fewer people or large multi-national corporations creates a constant pressure for large-scale investments, e.g. atomic power plants, huge dams for hydroelectric power, and arms. Seen from a purely economical

angle, the politically contradictory behaviour of the U.S. and Europe installing bigger and better weapons against Russia on the one hand, and sending butter, wheat and technological know-how to Russia on the other, made perfect economic sense: military production was one area where the 'saturation' point could be postponed indefinitely as long as 'the enemy' was equally able to develop faster and better weapons. And profits in the military sector were far beyond any profits made in the civil sectors of our economy. While capital investments in the latter often have returns around 2-5%, the military sector often averages returns around 50%.

2. A further problem may be seen in the vast field of ecological investment. Let us take an investment in solar collectors as an example. If they only allow a 2% return on our money, it would be economically unwise to invest in this sensible, ecological technology for preparing hot water, since in a bank it returns at least 6%. The bank in turn usually has to invest it in less ecological projects. Therefore, as long as every investment must compete with the money making power of money on the money market, most ecological investments, aimed at creating sustainable systems (i.e. stopping quantitative growth at an optimal level, see curve a Figure 1), don't have a chance.

The Solution

At the beginning of this century, a practical solution was formulated by a German merchant, called Silvio Gesell, which would eliminate the problems caused by interest. Instead of paying people a reward (= interest) in order to bring surplus money back into circulation he suggested that they would have to pay a small penalty if they did not. He proposed to use money as a public service instead as a private good.

An Example

Between 1932 and 1933, the small Austrian town of Wörgl started one of the first model experiments, which has been an inspiration to all who have been concerned with the issue of monetary reform, up to this day. Within one year, the 12.600,- "Free Schillings" (i.e. interest-free Schillings) circulated 463 times, thus creating goods and services worth (12.600x 463) over 2.547.360,- Schillings. (valued in 1995 at approx. 63.684.000,- Schillings) At a time when most countries in Europe had severe problems with decreasing numbers of jobs, Wörgl reduced its unemployment rate by 25% within this one year. Income from taxes increased by 35% and investments in public works by 220%. The fee collected by the town government which caused the money to change hands so quickly amounted to a total of 12% of the 12.600,- Free Schillings, which is 1.512,- Schillings. This was used for public purposes and thus no single individual gained by it, but the community as a whole. In addition, the need for exchanging goods and services determined the pace of circulation and not the fee. If the town would had borrowed the 12.600,- Schillings on the money market they would have paid back three to four times the same amount over 10 to 20 years.

When, however, over 300 communities in Austria began to be interested in adopting this model, the Austrian National Bank saw its own monopoly endangered. It clamped down on the town and prohibited the printing of its own money.

Practical Possibilities Today

As 90% of all monetary transactions are just numbers in a computer, the payment modalities of today would make a 'use-fee' on money technically a much simpler issue. Everyone would have two accounts: one current account and one savings account. The money on the current account which is at the disposal of the owner continually would be treated like cash and lose as little as 1/2% per month or 6% per year. Anyone with more money in his current account than needed for the payment of all expenses in a particular month would be prompted by this small circulation fee or demurrage to transfer the amount not needed for some time to a savings account. From there, the bank would be under the obligation to pass this money on to those who needed it for a certain amount of time and, therefore, on the savings account it would not be debited with a fee.

By the same token, the money owner would not receive any interest on his or her savings account - but the money would retain its value. (As soon as interest is abolished, inflation becomes unnecessary - see above.) Equally, the person receiving credit would not pay interest, but a risk premium and bank charges quite comparable to those contained in every bank loan today. It amounts to about 2.5% of normal credit costs.

Thus, very little would change in practice. Banks would operate as usual, except that they would be more interested in giving loans, because they too would be subject to the same use fee that everyone else would have to pay, were they to sit on their money.

In order to prevent the hoarding of cash, one additional technical aspect of the implementation of such a monetary reform would be to recall one particular series of banknotes once a year, or all bank notes every second year without prior announcement.

The basis of this reform would be a fairly accurate adaptation of the amount of money created to the amount of money needed to handle all transactions in the exchange of goods and services within and without a given geographical area, region or nation. Money would now follow a 'natural' physical growth pattern (curve a, Fig. 1) and no longer an exponential one. When enough money has been created to serve all transactions, no more would have to be produced.

Prospective Results

Within the larger context of a global transformation of values and behavioural patterns as well as other changes such as land and tax reforms the change in our monetary system will hopefully assist the switch from quantitative growth to qualitative growth. As people would have the choice of leaving their money in a savings account where it would keep its value, or to invest it in a beautiful piece of furniture, an art work or a solidly-built house which equally would keep their respective values, they might well opt for those investments which would enrich their daily lives. Moreover, the more that lasting quality is asked for, the more it would be produced.

Thus we may expect a total revolution of values, which would almost certainly affect environmental issues. Investments in ecological technologies would be able to compete within the context of a sustainable way of life and 'stable' money, which just pays without making unnecessarily large profits. Thus, planting a forest would soon be economically feasible - rather than cutting the forest and putting the money in the bank - which is the most "economical" solution today.

While interest nowadays is a private gain, the fee on the use of money would be a relatively small (see the example of Wörgl) public gain, which would enable to reduce the amount of taxes needed to carry out public tasks.

Even the volume of economic activities would be more easily adjusted to real needs. Since high capital returns in order to pay off interest would not be needed any more, the pressure for over-production and over-consumption would be considerably reduced. Prices could be reduced by an average of 40% which now cover capital costs. In theory, 80% of the people would only need to work half the time in order to keep the same standard of living. The last 10% of the people who now are able to live off their interest would not lose their money. They would, however, stop earning money through money and start to live off their capital unless they work or invest it in business ventures.

The two critical questions are: will those who profit from the system now understand that the branch on which they are sitting grows on a sick tree and help to plant a healthy one before the old one collapses? Or, will those who pay too much understand soon enough that there is an alternative for change and that they must work together to implement it? At this point in time, the introduction of a new cooperative monetary system could create a win-win situation for everyone. It could help to develop, finally, a sustainable world economy and civilization.

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Author: Prof. Dr. Margrit Kennedy, Ginsterweg 4-5, D-31595 Steyerberg 21.10.2001