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MONEY AS A SOCIAL CONTRACT*

I

The institution of money, like that of language, or that of state, has often been seen to be based on some kind of contractual agreement. Aristotle describes the nature of money as follows:

> (M)oney has become by convention a sort of representative of demand; and this is why it has the name 'money' (*νόμισμα*) – because it exists not by nature but by law (*νόμος*) and it is in our power to change it and make it useless.[1]

The word *νόμος* is ambiguous: in another translation of Ethica it has been translated as 'custom'. This ambiguity reflects a theoretical problem in the classical social theory: money has been seen either as a result of an act of will of the sovereign, or as a contract based on voluntary agreement between economic agents. The Roman jurisprudence and Medieval political thinkers considered that the sovereign had an unlimited power over monetary institutions, including the power to determine the real value of money. This was the opinion supported by, e.g., Thomas Aquinas, who translated *νόμος* as 'lex'.[2]

The contract theory of money formed a natural part of the general contractarian view on society in the works of such thinkers as Pufendorf or Locke. They saw monetary institutions as being based on an explicit social contract.[3] The views of the Physiocrate economists were mostly similar to those expressed by contractarian thinkers.[4] Probably the changes in the monetary system itself especially the emergence of paper money, made the contractarian theory of money more appealing than before.

The last great controversy on the nature of money, in which the classical positions were still represented, appeared among the German economists and sociologists before the First World War. The German version of the sovereign-based doctrine was 'Staatliche Theorie des Geldes' as presented by G. F. Knapp.[5]

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According to Knapp, the 'validity' of money was derived from the will of the State. With this formulation, Knapp did not mean that a state could arbitrarily decide on the purchasing power of money, neither did he mean the triviality that a modern state decides on the nominal values of bills and coins. Rather than this, he stressed the acceptance of the State as a necessary condition for the adequate working of monetary systems in modern societies.

Ellis[6] summarizes the Knappian theses on the 'validity' of money as follows:

> (1) Money comes into being when the state selects a certain unit of value, describes its physical bearer carefully, gives it a name, and proclaims its validity in terms of the historically preceding unit.
>
> (2) Proclaimed validity is secured in trade by the state's accepting all its money at face value; legal tender in private trade is a complementary measure, not a universal one. The state causes a money to be standard by forcing it out in payments to private persons.[7]

There is some resemblance between the concept of the 'validity' of money and the concept of the validity of law introduced in the traditional Legal Positivism. According to the Positivism, a norm is legally valid if and only if it has been accepted by the organs of the state; the validity of a norm is not dependent of its actual efficiency. In both theories, 'validity' seems to be a special normative property of social institutions, a property which is in some sense independent from actions and preferences of individual members of the society.

Carl Menger, the founder of the Austrian school of economics, opposed strongly the explanation of money which stressed the intentional planning by the State. According to Menger, money, like other social institutions, should be explained in terms of the interests and actions of individual agents. But the coordination of individual actions which is a necessary condition for the existence and growth of social institutions is usually not a result of an explicit agreement among the agents. More often, it is a product of an invisible hand, an un-intentional result of numerous individually rational and intentional acts performed by agents.[8] Menger derived his ideas from the evolutionistic thinking common in German legal and social science, but criticized organistic analogies used by various Historical Schools.[9] In the famous Methodenstreit Menger was the main proponent of the anti-inductivistic methodological view. This combination of evolutionism and deductivistic methodological

individualism is especially clear in his analysis of the emergence of money, which has become a paradigm among the later representants of the Austrian economic school.[10]

Menger considered that the individualistic explanation of the institution of money is, at first sight, paradoxical:

> (T)hat in a market anyone who offers goods for sale is ready to turn these over for a definite other item, that is, according to varying conditions, for cattle, cocoa beans, certain amounts of weight of copper or silver, even when he has no direct need for these goods or has completely satisfied his possible need for them, while he nevertheless rejects certain other goods under the same presupposition – this is a paradoxical procedure.[11]

The paradoxicality is, of course, not due to any paradox in the logical sense. It is an instance of the general problem which was probably for the first time clearly presented in the theory of state in Hobbes' *Leviathan*; Menger puts the problem as follows:

> How can it be that institutions which serve the common welfare and are extremely significant for its development come into being without a *common will* directed toward establishing them?[12]

The essential part of the solution of the problem of a spontaneous emergence of money is the mutual knowledge among the agents that some goods generally are demanded. If an agent cannot change his goods immediately for other goods which would satisfy his needs, he will change them for any goods which are easily transported and durable, provided that he *knows* that he will be able to exchange them again in the future. No kind of explicit acknowledgement of the goods as money is necessary.[13]

A sample from modern economic textbooks shows that the Mengerian conception is nowadays implicitly accepted. The definition of money is functional: 'Money is whatever is generally accepted in exchange'.[14] Textbooks do recognize the role of the mutual knowledge: 'you trust money because I do, and I trust money because you do (. . .). As long as the convention holds and the money is generally acceptable to everyone, it retains its usefulness'.[15] The legal status of a means of exchange is insignificant: 'Though the State may give its sanction, or "fiat" to a particular kind of legal tender, this will not function as money unless it is generally accepted'.[16]

II

The main intention of this essay is to analyze money as a special case of those social institutions which could be treated as *solutions to social games.* In this respect, my analysis is an application of the simple formal apparatus used by David Gauthier to the Hobbesian dilemma,[17] by W. G. Runciman and A. K. Sen to the concept of 'general will' in Rousseau,[18] by David Lewis to the explication of the conventionality of language,[19] or by Edna Ullman-Margalit to the classification of various social institutions.[20] The fundamental question is: what kind of game is suitable as an explication of the Mengerian conception of money as a spontaneously emerging agreement among rational agents?

Firstly, it should be noticed that money, like, e.g., the legal system, could be considered a public good. As ordinary public good, money

(1) satisfies a common interest of the members of a society,
(2) is non-excludable,
(3) the control of it is typically delegated to the State in modern societies.

On the other hand, money is *not* like ordinary public goods, because

(4) it does not impose any apparent costs for individual members,
(5) it does not necessitate any established system of sanctions,
(6) it has no necessary properties besides its general acceptability (cf. the functional definition of money as an accepted means of exchange),
(7) the process of a breakdown of the institution (e.g., through hyperinflation) has its special characteristics. In the game-theoretical tradition, laws and public goods are usually related to the Prisoner's Dilemma (PD)-games.[21] The familiar matrix of the two-person game is the following:

	C	D
C	a, a	d, c
D	c, d	b, b

C stands for cooperation and D for noncooperation; the preference ordering of the players characterizes the game: $c \succ a \succ b \succ d$. This game is a dilemma, because for any single player, the rational strategy is to play noncooperatively, disregarding the strategies of the other players, but the result is, then,

Pareto-suboptimal. The standard non-analytic solution of the dilemma is a contract which can be enforced by sanctions. As Ullman-Margalit has noticed, this kind of contract fulfils the criteria of a social norm of obligation given by H. L. Hart:[22] the contract is generally beneficial (because it leads to a Pareto-optimal situation), it can conflict with the desires of individuals, and a serious social pressure is directed towards those who try to deviate from the contract. The cooperative result produced by a contract is unstable (in intuitive sense), and it is dependent from the severity of related sanctions and/or the internalization of the contract as a moral duty. Various political crises can be described as failures in enforcing contracts in situations which have a structure of a PD-game.

The other interesting type of games are games of pure coordination. In these games, there is always a coordination equilibrium, a combination of choices in which no player would be better off had any other player alone acted otherwise, either himself or someone else. The fundamental psychological difference between PD- and pure coordination games is the absence of *temptation* (which can be defined as the utility difference $u(c)-u(a)$) to deviate from a cooperative solution in the latter type of game: there is no need to alter preference orderings by introducing sanctions. In the simplest case, the characteristic ordering is $a \sim b \succ c \sim d$. However, there can still be problems in reaching a cooperative solution, if the number of equally good equilibria and/or the number of players is great, and there are searching costs.

In his pioneering work, Thomas C. Schelling showed the fundamental role of *mutual expectations* among the players of coordination games.[23] The non-formal solution of coordination games is, according to David Lewis, a *convention*; a rule R is a convention in a pure coordination game iff

(i) every player conforms R,

(ii) every player expects everyone to conform R, and

(iii) every player prefers to conform R on condition that others do, since the conforming R by everyone leads to a coordination equilibrium.[24]

An equilibrium produced by convention is arbitrary: there could be many, even infinitely many equally good alternative equilibria in a game. A convention could be reached through a spontaneous trial-and-error learning process, or it could be introduced by an authority. The justification of an authoritative intervention in a pure coordination situation is that it can

reduce searching costs. All natural symbol systems could be interpreted as examples of spontaneously produced conventions; an artificial symbol system like the system of traffic signs or Morse code is a convention with explicit authorization.

Following Ullman-Margalit,[25] we can summarize the analyses of various authors: We have two fundamental types of social institutions,

(A) Institutions which are related to PD-games. They are based on enforceable, often explicit contracts, and are relatively unstable. Paradigmatic examples are legal systems and the State.

(B) Institutions which are related to pure coordination games. These are based on arbitrary conventions, and they are generally more stable and more spontaneous than institutions of the (A)-type. Paradigmatic examples are symbol systems such as languages.

These analyses can be interpreted as precisions and further developments of the contractarian ideas on the nature of the State and language in the works of classical social thinkers. A game-theoretical treatment of money would be a natural continuation of this treatment.

Is money simply a social institution of the (A)-type. The state-centered theories of Medieval thinkers or Knapp refer to this direction, and so do, I think, theories based on an explicit contract like that of Locke. The related game is, then, a PD-game, and the 'paradox' of money noticed by Menger is a Prisoner's Dilemma, as Hillel Steiner[26] has recently tried to show. In the list of fundamental characteristics of money presented before (p. 4), properties (1)–(3) do conform this analysis. However, properties (4)–(7) are disconforming to it. What is more important, money as a generally accepted institution is not dependent on any sanctions. There is no need to enforce the cooperative situation, in which money is generally accepted as a means of exchange, because there is no temptation to deviate from it. Money is not based on a norm of social obligation in the Hartian sense. (Usually there are norms of social obligation *related* to the institution of money, e.g., norms which forbid counterfeiting of money. The existence of these norms does not implicate that the institution itself is based on norms of social obligation; the prohibition of lying is a social obligation, but the rules of language are based on conventions.) Moreover, dramatic breakdowns of monetary institutions, like those in Germany after both

world wars are not caused by failures in applying sanctions to 'free-rider'-players.

According to Menger, mutual expectations among transacting agents keep monetary institutions stable. This refers to pure coordination games: money should, then, be analyzed as a pure convention, as a symbol.

But it should be noticed, that equilibria related with money *can* break down. (Symbol systems like language have not had any serious breakdowns since the affair of the Tower of Babel.) And following a cooperative strategy, e.g., keeping savings in cash, could produce serious losses for players under conditions in which the monetary system is really breaking down. An agent acts rationally when accepting money as a payment for his goods if and only if he has reasons to expect that he could buy new goods with them, goods which would give him at least as much satisfaction as those he sold. Shortly, using money presupposes *trust* between transacting agents. This leads to the following preference ordering for a single player:

(a) the player accepts money, and others accept too,
(b) the player does not accept money, nor do others,
(c) the player does not accept, but others do accept,
(d) the player accepts, but others do not accept.

This preference ordering defines a game called *Assurance Game* by Amartya K. Sen.[27] It is less problematic than PD-game: it does not include a real conflict of interests and enforceable contracts are not necessary for a co-operative solution. However players of the most pessimistic type, following the maximin-strategy, end to a suboptimal result. Players using the maximum expected utility strategy do cooperate iff

$$pu(a) + (1-p)u(d) > pu(c) + (1-p)u(b).$$

In this formula, p measures the trust, which is fundamental in the Assurance Game, because $u(a) + u(d)$ is always greater than $u(c) + u(b)$. This trust parameter is, of course, dependent on the expectations concerning the actions of other players.

If this analysis is sound, there is a third fundamental type of social institutions, namely,

(C) Institutions related to Assurance Games. The cooperative solution in an Assurance Game does not presuppose enforceable contracts, so, using

Steiner's phrase, we can say that these institutions are based on social contracts which could be signed by an invisible hand. On the other hand, following a cooperative strategy can lead to losses, so players must trust each other more than in a pure coordination game. Regarding stability and spontaneity of the cooperative solution, institutions of this type are in some sense intermediate between institutions of (A) and (B)-types. A paradigmatic example is money.

My thesis is, that types (A), (B), and (C) are fundamental for our *social ontology*. State, language, and money are examples of the three main types of large-scale cooperation in human societies, and they can be distinguished in terms of preference structures of participating agents. Carl Menger was the first social thinker who clearly noticed the peculiar nature of institutions of the third type.

Some further developments of the Assurance Game model of money are possible. The role of the State in modern monetary systems could be introduced to the model by supposing that the trust parameter p is dependent on (i) expectations concerning the strategies of other players, and on (ii) their resources. When the State commits itself to a stabilizing monetary policy, e.g., by convertibility of national currency, it engages into a cooperative strategy. This commitment of the most powerful player maximizes the mutual trust among individual players.

Another possible direction is to connect expectations concerning the future value of money to our model, which leads us to the center of one of the hottest discussions in the modern economic theory of inflation. However, I am not claiming that my simple analytical model could be explanatory in the strict sense. It is rather obvious that in situations of a rapid inflation, there prevails a mutually reinforcing lack of trust among players, but its ultimate causes are exogenic in our model, and they must be explained in terms of empirical economics.

NOTES

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[1] *Ethica Nicomachea*, V.5.1133[a]. (*The Works of Aristotle*, ed. W. D. Ross, Oxford UP, 1954.)

[2] See A. E. Monroe, *Monetary Theory before Adam Smith*, Harvard University Press, Cambridge (Mass.), 1923, p. 27.
[3] John Locke, *Second Treatise of Civil Government*, Henry Regnery Co., Chicago, 1971, pp. 35–39.
[4] J. V. Tallqvist, *Merkantilistiska banksedelteorier*, Acta Academiae Aboensis, Åbo, 1920.
[5] Howard S. Ellis, *German Monetary Theory 1905–1933*, Harvard University Press, Cambridge (Mass.), 1934.
[6] *Ibid.*, pp. 13–14.
[7] *Ibid.*, p. 21.
[8] Carl Menger, *Problems of Economics and Sociology*, trans. by Francis J. Nock, University of Illinois Press, Urbana, 1963. (Untersuchungen über die Methode der Sozialwissenschaften und der Politischen Ökonomie inbesonderen, 1883.)
[9] *Ibid.*, pp. 179–192.
[10] See, e.g., Ludwig von Mises; *Human Action. A Treatise on Economics*, William Hodge & Co., London, 1949, pp. 402–405.
[11] Menger, *op. cit.*, p. 152.
[12] *Ibid.*, p. 146.
[13] *Ibid.*, p. 154.
[14] R. Dornbusch and S. Fischer, *Macroeconomics*, McGraw-Hill, New York, 1978, p. 208.
[15] A. S. Stonier and D. C. Hague, *A Textbook of Economic Theory*, Longman, London 1973, p. 405.
[16] *Ibid.*, p. 404.
[17] David Gauthier, *The Logic of Leviathan*, Oxford University Press, Oxford, 1969.
[18] W. G. Runciman and A. K. Sen, 'Games, Justice and the General Will', *Mind* **LXXIV** (1965), pp. 554–562.
[19] David Lewis, *Convention*, Harvard University Press, Cambridge (Mass.), 1969.
[20] Edna Ullman-Margalit, *The Emergence of Norms*, Clarendon Press, Oxford, 1977.
[21] Hannu Nurmi, *Rationality and Public Goods: Essays in Analytic Political Theory*, Commentationes Scientiarum Socialium 9/1977.
[22] H. L. Hart, *The Concept of Law*, Oxford University Press, Oxford, 1961, pp. 84–85.
[23] Thomas C. Schelling, *The Strategy of Conflict*, Harvard University Press, New York, 1960.
[24] Lewis, *op. cit.*, p. 42.
[25] Ullman-Margalit, *op. cit.*, p. 13. Here I omit the third type of institutions mentioned by Ullman-Margalit: institutions preserving *inequalities*.
[26] Hillel Steiner, 'Can a Social Contract be Signed by an Invisible Hand?', in *Democracy, Consensus and Social Contract*, eds. P. Birnbaum, J. Lively and G. Parry, Sage Publications, London, 1978.
[27] Amartya K. Sen, 'Isolation, Assurance and the Social Rate of Discount', *Quarterly Journal of Economics* 81 (1967), pp. 112–124.

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