

INVISIBLE HAND EXPLANATIONS:

THE CASE OF MENGER'S EXPLANATION OF THE 'ORIGIN OF MONEY'



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Introduction

It is argued that the most significant sociological contribution made by the Scottish philosophers (like David Hume, Adam Smith, Adam Ferguson, Dugald Stewart etc.) is the notion of spontaneously generated orders¹. Roughly the 'theory of spontaneous order' asserts that social institutions and patterns - which are highly complex - are the *unintended consequences* of numerous individual actions. Subject of this paper is the problem of *explaining* the unintended consequences of human actions, particularly explaining the emergence and maintenance of such social orders.

The notions of 'unintended consequences of human action' and 'spontaneous order' are closely related with the idea of the '*invisible hand*'. The 'invisible hand' denotes the '*invisibility*' in the process that, somehow, aggregates the dispersed actions of individuals and brings about an orderly social phenomenon (social pattern or institution), which was not intended by the individuals. It indicates that the mechanism was *invisible* to the individuals. It is the task of the social scientist to explicate this mechanism and to demonstrate the mechanism. The 'invisible hand explanation' is the name given to such an exposition. 'Invisible hand explanations' try to show the *process* that brings about the 'unintended consequences of human action'.

'*Invisible Hand Explanations*' explains the emergence or maintenance of these special kind of social phenomena, namely the social institutions and patterns, which are the (unintended) consequences of human action but not the results of human design. Or as Nozick (1974: 19) formulates "an invisible hand explanation explains what looks to be the product of someone's *intentional design*, as not being brought about by anyone's intentions".

The insight that is provided by the theory of spontaneous order is implicit in invisible hand explanations: a common sense approach would associate a complex order with *design*; but invisible hand explanations are supposed to go beyond this, and tell us *how it is possible* that these patterns and institutions are the unintended consequences of human action.

It is needless to say that many explanations in social sciences employ the notion of 'invisible hand'--implicitly or explicitly. Given the widespread usage of the notion of 'invisible hand', 'invisible hand explanations' is an interesting subject for the philosophy of social science. However, only little attention was paid to 'invisible hand explanations' in philosophy of social science literature. An important question is "the nature of invisible hand explanations". What is the essence of an invisible hand explanation? Or what makes an explanation an 'invisible hand explanation'? The other questions follow from these: How 'invisible hand explanations' differ from other types of explanation? What are our criteria for a *good* invisible hand explanation?

¹ For example see Hamowy (1987)

In this paper I have the objective to *start* thinking about these questions. To answer these questions a critical examination of the paradigmatic examples of the invisible hand explanations is necessary. These include i) origin of the media of exchange (Menger, 1892); ii) Thomas Schelling's (1969) model of residential segregation; iii) creation of money in the banking system (Samuelson, 1958, Ch. 15); iv) Nozick's account of the so-called minimal state (Nozick, 1974, part I); v) Ludwig von Mises's (1949) discussion of how economic calculation is accomplished by markets; vi) The Austrian Theory of trade cycle (See Ebeling, 1978); and others²

As mentioned earlier, in this paper I try to undertake the task of examining Menger's explanation of the emergence of the medium of exchange. This exercise, with the examination of some other paradigmatic examples, will help us in clarifying the notion of 'invisible hand explanations'. The proposed method for understanding 'invisible hand explanations' is as follows. Examine the philosophical literature on 'invisible hand explanations'; report and clarify the problems, ambiguities; examine the paradigmatic examples of 'invisible hand explanations'; clarify the features of these explanations; and use this clarification to solve the problems in the philosophical literature. Thus, this paper can be considered as a part of this research project.

The plan of the paper is as follows. The second section introduces the literature on "invisible hand explanations". The third section examines Menger's explanation of 'the origin of money'. (Section 3.1 introduces some remarks about the organism metaphor in Menger; 3.2 tries to clarify the meaning of "unintended consequences of human action"; 3.3 summarizes Menger's notion of 'Organic Explanation'; 3.4 examines his explanation of the emergence of the money universal.) The fourth section summarizes the implications of my analysis of Menger's explanation. Finally the fifth section concludes the paper.

1. Invisible Hand Explanations

The Idea of explaining the unintended consequences of human action finds its roots in the writings of eighteenth century Scottish thinkers. However, the idea can be traced back further to Bernard Mandeville. In his *Fable of the Bees* (1714), Mandeville thought that the growth of social institutions, advancement of knowledge, laws, prohibitions, ordinances, restrictions and the language could be considered as the unintended consequences of human action. But he did not, as Ullmann-Margalit (1998) argues, consider 'how'. Scottish thinkers, on the other hand, tried to explain the phenomena that they thought to be the unintended consequences of human action. In the *Treatise of Human Nature* (1740) David Hume examined the rules of Justice, Property Rights, Money³ and Language. In the *History of Civil Society* (1767), and

² Nozick (1974: 20-21) gives sixteen examples for invisible hand explanations.

³ "In the like manner do gold and silver become the common measures of exchange, and are esteemed sufficient payment for what is of a hundred times their value" Hume, *Treatise* [III.ii.2]

Principles of Moral and Practical Science (1792), Adam Ferguson considered the private property and language. And Adam Smith, in his *Theory of Moral Sentiments* (1759) and *Wealth of Nations* (1776), examined the laws of morality, changes in principle means by which wealth is produced, division of labour and the market⁴. Moreover, Smith introduced the 'invisible hand' metaphor when he was examining these phenomena, which are the unintended consequences of human action⁵.

As Vaughn (1989: 168) argues Smith used the invisible hand metaphor to describe the principle by which a beneficial social order emerged as the unintended consequences of individual human action. Later, the notion of 'invisible hand explanations' became the generally accepted title for the type of explanations that Smith and others were after.

As mentioned before, the ideas of 'spontaneous order' and 'unintended results of human action' are closely linked with invisible hand explanations. The notion was introduced by Nozick (1974), and the classical piece on the notion is Ullmann-Margalit's 1978 article. A very brief history of the IHEs is as follows. Scottish thinkers introduced the notions of 'unintended consequences of human action' and 'spontaneous order'. In the meanwhile, Smith came with the 'invisible hand' metaphor for these notions. Menger (1883) introduced 'organic explanations' which he thought to be appropriate to examine the 'unintended consequences of human action and the spontaneous order. Later, Nozick refined the idea of organic explanations and called them *invisible hand explanations* referring to Smith's metaphor.

As I have argued in my introduction, I think that to have a philosophically sophisticated account of invisible hand explanations, we must first deal with the paradigmatic examples of invisible hand explanations. For this reason, I will not

⁴ Also he tried to explain destruction of the power of the medieval church (actual), Historical development of the administration of justice in England (actual).

⁵ "...in spite of their natural selfishness and rapacity, though they mean only their own conveniency, though the sole end which they propose from the labours of all the thousands whom they employ be the gratification of their own vain and insatiable desires, they divide with the poor the produce of all their improvements. They are led by an *invisible hand* to make nearly the same distribution of the necessaries of life which would have been made had the earth been divided into equal portions among all its inhabitants: and thus, without intending it, without making it, advance the interest of the society, and afford means to the multiplication of the species." (Smith, 1759, IV, 1. 304-5, emphasis added)

"As every individual, therefore, endeavours as much as he can both to employ his capital in the support of domestic industry, and so to direct that industry that its produce may be of the greatest value; every individual necessarily labours to render the annual revenue of the society as great as he can. He generally, indeed, *neither intends to promote the public interest, nor knows how much he is promoting it*. By preferring the support of domestic to that of foreign industry, he intends only his own security; and by directing that industry in such a manner as its produce may be of the greatest value, he intends only his own gain, and he is in this, as in many other cases, *led by an invisible hand to promote an end which was no part of his intention*." (Smith, 1776, IV, ii, 456, emphasis added)

review the literature on invisible hand explanations here, rather I will only focus on Menger's explanation of the emergence of the medium of exchange.

First, let's look closely to the phenomena that invisible hand explanations want to explain. The traditional distinction about phenomena is the distinction between the natural and the artificial phenomena. Natural phenomena are independent from human action / design and artificial phenomena are the results of human action / design. Under the heading of artificial phenomena, in which human agency is essential, we can place a subgroup that covers the "consequences of human action but not human design" (Hayek, 1960, 1967). This realm, which Ullmann-Margalit (1978: 263) defines as the *social realm*⁶, is the subject of the theory of spontaneous order. Thus, here we are confronted with the *unintended consequences of human action*.

As I have argued before, *explanandum* of an invisible hand explanation is the emergence or maintenance of such unintended consequences of human action⁷. However, 'unintended consequences of human action' is a vague notion. Consider the following quote from Popper:

"The main task of the theoretical social sciences is to trace the *unintended consequences* of *intentional* human actions" Popper (1962: 342, original italics deleted and emphasis added)

"Unintended results of intended actions" can mean anything, and it is crucial for us to find out what unintended consequences of human action mean from the viewpoint of invisible hand explanations⁸.

Second, it is important to ask 'when we can say that an explanation increases our understanding. According to Salmon (1989: 135) we can find three viable answers to this question in the literature: Our understanding is increased

- i. when we obtain the knowledge of the hidden mechanisms, causal or other, that produce the phenomenon we seek to explain;
- ii. when our knowledge of the world is so organized that we can comprehend what we know under a smaller number of assumptions than previously;

⁶ I find this classification misleading. Social realm should cover the results of human action, but also human design.

⁷ Here I must introduce the distinction between the two *explananda* of invisible hand explanations: i) *emergence* of unintended consequences of human action and ii) *maintenance* of unintended consequences of human action⁷. Ullmann-Margalit (1978: 283) argues that basic questions addressed different for each *explanandum*. For the first one, question is: "how did it - or how could it have - come about?" For the latter question is: "why is it in existence?"⁷ Please note that my example of invisible hand explanations ('Origin of Money') is an explanation of emergence. So I will not deal with the difficulties about explaining maintenance.

⁸ A detailed analysis of the "unintended consequences" can be found in Aydinonat (forthcoming, June 2000).

- iii. when we supply missing bits of descriptive knowledge that answer why-questions and remove us from particular sorts of intellectual predicaments.

Of course other criteria for increased understanding can be supplied. But simply let us test invisible hand explanations - particularly Menger's explanation - against these criteria.

Third, if we accept the idea that

"scientific explanation is primarily an attempt to reveal some essential relationships in the real world. Explanation is a matter of genuine theory with successful reference to and representation of some apparently non-obvious real grounds for occurrences in the world. Thus theories are essential for explaining phenomena." (Mäki 1990a: 319)

we can check if invisible hand explanations are successful at exposing the real relations in the world, and how they do this.

Fourth, the relation of 'invisible hand explanations' with other types of explanations is an important point of focus for our study. Although one example would not be enough to assess this relationship, I will try to introduce some ideas in conclusion.

Other points of focus can be introduced, but it is this paper's task to deal with ones mentioned above. Of course, when I am examining Menger's explanation, I will touch upon other important issues about invisible hand explanations. Now let's proceed to Menger.

2. Origin Of Money

In this section, I will try to introduce the details of Menger's explanation of the "emergence of money" as a paradigmatic example of invisible hand explanations. Menger characterizes his explanation as an "*organic explanation*". In *Investigations* Menger gives a detailed account of "organic explanations." Organic explanation is an explanation given to the so-called organic social phenomena. Hence, to understand 'organic explanations', we have to have a clear understanding of Menger's definition of 'organic social phenomena'.

Menger (1883:130) thinks that there is an analogy between social life and organisms. However, he argues that the analogy between the social life and organism is a limited but a useful one. There are two kinds of similarities: one between '*nature and function of natural organisms*,' and '*social structures*,' and the other between the results of a '*natural process*' and the '*unintended results of historical development*'. Moreover, he states two limitations for this analogy: First, only a part of social phenomena exhibits analogy to natural organisms—that is the phenomena which are the unintended consequences of human action. Second, this analogy is not a complete one - that is; the analogy does not allow us to use exactly the same methods of explaining natural organisms. It is clear from Menger's introduction of the analogy between social life and natural organisms, that 'organic explanations' are only appropriate for the 'unintended consequences of human action'.

2.1. Notes about Menger's 'Organism Metaphor'

It is possible to find a variety of uses of the organism metaphor in the history of the social sciences, and particularly in economics. As Hutter (1994: 291) notes, highly complex "bodies" with obvious, yet unintelligible structures, when found, invited the attempt of being interpreted as organisms in any area of research. Hutter gives Kant's definition of an organism as an example;

1. The idea of the whole determines form and connection of the parts;
2. The parts determine themselves mutually;
3. The organic whole reproduces itself in totality;

to show that this type of definitions may be applicable to a wide variety of phenomena (see Hutter, 1994). However, as I mentioned above, Menger uses the analogy quite cautiously. First, it can only be applied to a specific part of the social realm. Second, analogy is far from being perfect. I will deal with the first part of the limitations later in this paper.

For the imperfect nature of the analogy Menger notes:

"[...] it is not an analogy that covers the entire nature of the phenomena concerned, but only partial aspects of them. In this respect it is again only a partial analogy" Menger (1883: 131)

For example Menger (1883: 133) refuses the idea of mutual causation between the whole and its parts, he thinks that this is a vague idea and it is inadequate for our laws of thinking. More importantly he argues that forces acting in nature are different than the ones in social realm. In nature purely mechanical forces are working, but the social realm is dominated by intentional activities⁹. "They are, rather, the result of human efforts, the efforts of thinking, feeling, acting human beings." (Menger 1883: 133)

Menger's arguments, about the limitations of the 'organism analogy', is one reason for not considering him as a member of the organic school. Another reason, which is related to this position, is his individualistic approach. As Hutter (1994: 305) argues he "defends the 'atomistic' paradigm against the dominating historical and organic paradigms". Thus, he is not using the 'analogy' in its generally accepted form, for what he defends - 'atomistic' paradigm - can be considered as opposite to organism metaphor. He uses the organism metaphor, however he also elaborates the "study of individual atoms who enter into the equilibrium system" (Stark, 1962: 176) as an economic approach.

⁹ I think he is not clear about the nature of forces acting in the social realm. I will not deal with this issue in this paper.

"The acknowledgement of a number of social phenomena as 'organisms' is in no way in contradiction to the aspiration for exact (atomistic!) understanding of them." Menger (1883: 141, emphasis in original)

From the above argument, it should be clear that even though Menger thinks that *origin* and *function* of the unintended results of human action resemble that of organisms', he does not argue that they should be examined in a collectivist way. And since he uses the analogy in his own way, it is important for us to have a clear grasp of where the analogy is applicable - that is, we have to understand what he means by the "unintended consequences".

2.2. *Unintended Consequences?*

There are several reasons to examine the "unintended consequences of human action" from a general point of view. First, as noted earlier, 'unintended consequences of human action' is a very vague notion, for it covers all unintended consequences of all types of actions. Second, although it is evident that people use this notion to indicate a particular subset of the all possible unintended consequences of human action, it is hard to find a good classification of the unintended consequences of human action. Last, but not the least, the concept is used incautiously in the literature--that is sometimes it is not clear which subset is under examination. Thus, before examining Menger's text and demonstrating his understanding of the 'unintended consequences', it is a good idea to approach the subject matter from a general point of view. However, in what follows I will not do this. For this paper it is enough for us to see Menger's conception of the "unintended consequences".

Let's start with the famous Mengerian question:

"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? [...] What is the nature of all the above social phenomena [...] and how can we arrive at a full understanding of their nature?" " Menger (1883: 146, 147)

To answer these questions, Menger (1883) makes a distinction between two types of 'social patterns and institutions': those resulting from the *purposeful* activity of human beings and unintended results of historical development. This distinction needs two clarifications: one about the meaning of the 'purposeful activity' and the other about the meaning of 'unintended results'.

'Purposeful activity' can have different meanings according to the 'target' of this activity. Simply we can distinguish between targets that are located at the individual level and social level. If the individual(s) is (are) intentionally acting to create a social pattern or institution, we can say that target of the activity is at the social level. But if the individual(s) is (are) intentionally acting to reach their individual goals without having any intention to create or change a social pattern or institution, then the target of the activity is at the individual level.

To understand what Menger means, let's look at another phrasing of this distinction in the same text:

"This is that some social phenomena are the results of a *common will* directed toward their establishment (agreement, positive legislation, etc.), while others are the unintended result of human efforts aimed at attaining essentially *individual* goals (the unintended results of these)." Menger (1883: 133, emphasis in original)

Apparently, this wording looks less confusing. But it does not fit into the distinction I have made above. It is evident from the text that Menger does not want to rule out "individual planners". So not only the results of a 'common will', but also the results of an 'individual will' aimed at the social level are different from the unintended results of human action. So if we talk in intentional terms: Social patterns or institutions that are the results of *we-intention* or *I-intention* are different from the unintended results of human action¹⁰. To understand the concept of 'unintended results of human action' one can distinguish between individual and collective goals¹¹. However, both individual and collective goals can be directed to the individual or social level. So I recommend focusing on the level of the targets - individual or social - only.

To clear the meaning of 'unintended results', Mäki (1990c) introduces the notion of sphere of intendedness, "which denotes the set of states of affairs that an acting agent intended to bring about by his or her act, irrespective of he or she was successful in the effort" (Mäki, 1990b: 302). Thus all of the consequences which does not belong to this sphere of intendedness are unintended consequences of that particular activity. However, it is clear that Menger's 'unintended consequences' are a subset of this broad definition. Depending on what he say, let me list the constraints that Menger impose on this definition. Or in other words, for a consequence to be considered as an 'organic social phenomena' following conditions must be satisfied:

1. 'Consequence' must be an 'unintended consequence'.
2. Individual intentions must be directed to the *individual level*
3. The 'unintended consequences' must be located at the *social level*¹².
4. There must be more than one individual. And, 'unintended consequence' must be dependent on the existence of many individuals¹³.

Fourth constraint can be justified as follows: Menger uses the analogy of an organism for the 'unintended consequences' of human action. And he argues that the society is

¹⁰ I use the terms, *we-intention* and *I-intention*, in the simple sense, respectively indicating the existence and non-existence of a common will.

¹¹ Further distinctions about individual and collective goal can be made, but they are not useful for our purposes.

¹² Menger is not interested with the 'unintended results', which have nothing to do with the social patterns or institutions.

¹³ Please note the difference between Merton's 'unintended consequences' and Menger's notion of unintended consequences: Merton seems to be covering the whole spectrum of the unintended consequences, while Menger's notion is a fairly narrow one. See Hamowy (1987: 4)

like an organism in the sense that the parts of the society (organism) are required for the functioning and changing of the society (organism). Because Menger thinks that the analogy is imperfect, his remarks about 'society being a unity' must be read with caution. He thinks that organic relation is only between the 'unintended consequences of human action' - these are social patterns and institutions - and the individuals. This means that individuals are required for the functioning and changing of the social patterns and institutions. Thus there must be more than one individual. And, 'unintended consequence' must be dependent on the existence of many individuals.

Nevertheless, it is possible to derive a fifth constraint from the Menger's starting question: "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?" From this passage, we understand that he is interested in 'unintended consequences' that are *beneficial* for the members of the society.

5. 'Consequence' must be beneficial for the members of the society.

This is important because it implies that the process that brings about the 'unintended consequences' is in 'order' like the natural processes - according to Menger. Thus one can argue that the fifth condition is a necessary part of Menger's notion of 'unintended consequences'. However, I think that it is also plausible to argue that the fifth condition is not a necessary condition for being an 'unintended consequence of human action'. It can be considered as part of Menger's formulation of the *explanandum question*. He is only interested in the beneficial unintended results of human action.

This implies that even under this smaller subset of unintended consequences one can deal with different issues. Menger is interested in socially desirable unintended consequences, but there might be (indeed, there are) others who are trying to explain the emergence or persistence of a socially *undesirable* outcomes. It is, thus, important to clarify what 'unintended consequence' means for every single example we examine. Here we have seen what it means for Menger. Now we can concentrate on how he explains these 'unintended consequences'.

2.3. *Organic Explanation*

Since 'organic explanation' explains the 'organic social phenomena', these conditions are also the necessary conditions to give an 'organic explanation'. But an 'organic explanation' in Menger's sense needs an additional constraint:

Organic explanation explains either the *origin* or the *function* of the social patterns or institutions that are the unintended consequences of human action¹⁴.

¹⁴ "It tries, rather, to explain the origin and the functions of these unified structures in an exact way, to explain how these 'real unities' have come about and how they function." Menger (p. 143)

Explaining the 'origin' means merely the explaining the 'emergence'. It is an account of how a social institution or pattern *could have* emerged. 'Organic explanation' is not always the true description of the process that brought about the social institution or pattern, but it helps us in *understanding* the emergence of the social institution or pattern. So we can argue that there is an *explicatory* import in the explanation. Menger (1883: 155) argues that 'organic explanation' is an imperfect explanation. But because there is no other way of finding out how these social patterns or institutions did come into existence, this *theoretical reconstruction* makes the process of emergence *intelligible*. Hayek (1967: 75-76) was also aware of this explicatory import in Menger's explanation. He argues that Menger realized that "existence of the structures with which the theory of complex phenomena is concerned can be made *intelligible* only by what the physicists would call cosmology, that is a theory of *evolution*". However, nothing is said about evolution and evolutionary forces (selection, mutation etc.) in Menger's account of organic explanation.

Arguments about the explanation of the function of the social patterns or institutions, hardly take place in Menger's approach. But I think it is not hard to derive them from his arguments about the analogy:

"In natural organisms we can observe a complexity almost incalculable in detail, and especially a great variety of their parts (single organs). All this variety, however, is helpful in the preservation, development, and the propagation of the organisms as *units*. Each part of them has its specific function in respect to this result. The disturbance of this function, according to its intensity or the significance of the organ concerned, results in a more or less intensive disturbance of the function of the whole organism, or of the other organs. Conversely a disturbance of the connection of the organs forming a higher unit of an organism are thus conditioned by those of its parts; the latter in turn are conditioned by the connection of the parts to form a higher unit; and finally the normal function and development of each single organ are conditioned by those of the remaining organs.

We can make an observation similar in many respects in reference to a series of social phenomena in general and human economy in particular." Menger (1883: 129 - 130)

Keeping the limitations of this analogy (and the cautions in the previous subsection) in mind we can argue that, 'organic explanation' of functions is what we call 'functional analysis'. Roughly, in functional analysis, functions of the components of a system are defined referring to the task they are accomplishing within that system. To repeat, *explanandum* of functional analysis is some property or capacity of a system (for a detailed account see Aydinonat, 1999). Thus, it is not possible to derive from Menger's arguments that 'organic explanation' explains the *persistence* of a system (social pattern or institution) referring to the function it serves. Rather, it explains the

"What the exact orientation of research strives for is on the one hand the clarification of the special nature of the 'unity' of those structures which are designed as social organisms. On the other, it strives for the exact explanation of their origin and function "Menger (p. 143)

Remember from the previous subsection that his notion of 'unity' must be read cautiously.

function of the system (social pattern or institution) referring to the functions of the parts of the system¹⁵.

Thus the above constraint on 'organic explanations' dissolves into the following:

'Organic explanation'

1.1. Explains how a social pattern or institution *could have* emerged,

1.1.2. Is an account of the *process* that brings about the social pattern or institution ('unintended consequences' of human action.), or

1.2. Explains a function (or a property) of the social pattern or institution.

I have tried to list the constraints for being an 'organic social phenomena', and to give an organic explanation. No other conditions can be deduced from Menger's *Investigations*. But since he introduces an example of organic explanations, the best way to proceed is to look at the example and try to find out other conditions.

2.4. Emergence of Money

First of all, I think, it is important to detect Menger's question. He is trying to explain the emergence of money. However he is not trying to explain the emergence of particular coins and banknotes. Explanandum here is the "*emergence of the generally acceptable media of exchange*"¹⁶.

"There is a phenomenon which has from of old and in a peculiar degree attracted the attention of social philosophers and practical economists, the fact of certain commodities (these being in advanced civilizations coined pieces of gold and silver, together subsequently with documents representing those coins) becoming *universally acceptable media of exchange*." Menger (1892: 239, emphasis added)

It needs to be explained, because it is apparently contrary to the common sense¹⁷: Why should one "be ready to exchange his goods for little metal disks apparently useless as such"(Menger, 1892: 239)? Menger argues that although it looks like a product of an intentional design, it is not, and gives us his story for the emergence of the generally acceptable medium of exchange.

One of the fundamental constituents of this explanation is the 'difference in the saleableness of goods':

¹⁵ One can, of course, explain the persistence of a system, referring to the functions of the part constituting the system. But there is nothing that implies this in Menger's argument.

¹⁶ For an excellent interpretation of the explanation of the 'money universal' see Mäki (1990b). "Its capacity to function in the role of a generally accepted medium of exchange constitutes its essential economic property that defines its nominal essence." Mäki (1990b: 305)

¹⁷ Mäki (1990b, 1997) argues that this is one of the reasons to consider Menger as a 'scientific realist'. See Mäki (1990b, 1997) for the argument.

"Men have been led, with increasing knowledge of their individual interests, each by his own economic interests, without convention, without legal compulsion, nay, even without any regard to the common interest, to exchange goods destined for exchange (their "wares") for other goods equally destined for exchange, but more saleable."
Menger (1892: 247)

It is important to note here that he *presupposes* theory of the saleableness of goods. Reader can find the constituents of the theory of the saleableness of goods in *Appendix*. In this theory Menger gives us the list of possible causes and conditions for the differences in the saleableness of goods. But he does not specify which ones were the actual forces in the process of the emergence of money.

Given the differences in the saleableness of goods how could a generally accepted medium of exchange emerge? To answer this question Menger tells us the details of the *process* that brought about the generally accepted medium of exchange.

First of all Menger defines the *initial conditions* for the process to start. Initial conditions are defined by the existence of barter (direct exchange) and intentions of the individuals to exchange goods for good(s), which they have immediate need. It is generally argued that Menger's analysis starts with *pure barter*¹⁸. However, it is important to note that Menger is talking about *market dependent* individuals. These individuals need to exchange goods at the market place to survive. It follows from this that people are uncomfortable with barter (direct exchange); Menger assumes that existence of barter makes it hard to exchange the goods they want at the market place. Thus, Menger tries to define some behavioral patterns, private beliefs and interests for the initial conditions: He also defines the contrasts between individuals interests and acting environment.

Let X_1, \dots, X_n be the goods exchanged in the market; and assume that X_1 represents the most saleable good and X_n represents the less saleable good. Let SX_i define the saleability of the goods. Then some of the initial conditions can be defined like this:

1. X_1, \dots, X_n are exchanged directly in the market.
2. There is no definite exchange relation between goods.
3. $SX_1 > SX_2 > \dots > SX_n$, thus owners of the more saleable goods exchange their goods more easily than owners of the less saleable goods.

Note that SX_i (saleability of the goods) differs from place to place and from one time to the other (see *Appendix*). So actually there could have been competing goods with close degree of saleability. But remember that he is not trying to explain the emergence of particular coins or banknotes. He is trying to explain the emergence of the medium of exchange. Thus, particular goods (like gold or silver) which were selected is not important from his standpoint.

One of the conditions for the process to proceed is the increased market traffic:

¹⁸ For example see Mäki (1990c: 165)

"With the extension of traffic in space and with the expansion over ever longer intervals of time of prevision for satisfying material needs, each individual would learn, from his own economic interests, to take good heed that he bartered his less saleable goods for those special commodities which displayed, beside the attraction of being highly saleable in the particular locality, a wide range of saleableness both in time and place. These wares would be qualified by their costliness, easy transportability, and fitness for preservation (in connection with the circumstance of their corresponding to a steady and widely distributed demand), to ensure to the possessor a power, not only 'here' and 'now' but as nearly as possible unlimited in space and time generally, over all other market-goods at economic prices." Menger (1892: 247)

Then as the market traffic increases possibility 'of individuals to detect effects and advantages of the more saleable goods (in exchange)' will increase. Thus Menger specifies a condition which implies the increase in needs, gains and losses of individuals¹⁹. Only after this it is useful for him to define driving forces in the process.

The most significant force in the process is the 'individuals who are engaged in economizing actions'. Menger's individual, **a**, is capable of the following:

- **a** can observe the conditions in the market
- **a** observes that there is **x** in the market
- **a** realizes that in case of **x** it is for his interest to do **y**
- **a** does **y**
- every individual will do the same

I think, here, Menger defines a 'rational individual'. Although, his definition is independent from the market conditions, he argues that the *tendency* to behave rationally (to economize) increases as the intensity of exchange increases.

The last part of this definition is quite interesting. As individual capacities of 'realizing' facts can differ, this will take time and this process will involve *imitation* (see Kuniński, 1992 and Horwitz 1999). So the process can also be considered as a discovery (or learning) process. More specifically the process goes as follows:

- **a** will observe the greater demand for certain wares and greater saleability of certain wares / **a** will realize that if you have more saleable goods, you can easily exchange them for the goods you want / **a** will exchange his/her goods for more saleable ones / every individual will do the same / **a** observes that "exchange of less saleable wares for those greater marketability, durability, divisibility, etc., is in the interest of every individual"²⁰ / **a** realizes (maybe as one of the innovators) that for the sake of these characteristics it will be advantageous to him/her to accept an item

¹⁹ When there are more goods to exchange the trouble of bringing it to the market, the loss resulting from no-exchange or exchange for the goods that are not demanded immediately, and the gain from selling the goods will increase.

²⁰ Menger (p. 155)

which per se is perhaps utterly useless to him/her in barter / ever individual will do the same

Given the high level of market transactions and economic dependency of the individuals on market transactions²¹, individuals try to minimize their transaction costs by using more saleable goods in their exchange. When considered with the theory of the saleability of goods, in this process some of the goods are *filtered* as nominees for generally medium of exchange. Although individuals intentionally prefer some goods to others for exchange, no individual in the process has the intention of bringing about a generally accepted medium of exchange.

There is also a positive *feedback* in the process, which keeps the process going on:

"When the relatively most saleable commodities have become 'money', the great event has in the first place the effect of substantially increasing their originally high saleableness. Every economic subject bringing less saleable wares to market, to acquire goods of another sort, has thenceforth a stronger interest in converting what he has in the first instance into the wares which have become money." Menger (1892: 248)

Thus both the range and relative ranking of the goods (according to their saleability) are changing in the process. Also the circumstances they are exchanged in are changing.

End stage in Menger's explanation is *emergence* of the generally accepted medium of exchange. This is an institution that serves to common welfare, as the result of a process in which "rational" individuals show self-interested behaviors.

I think it is plausible to argue that Menger gives a very detailed picture of the process that brings about the "unintended consequences"²². It is important to note that the driving forces of the process and the possible causes (and conditions) for the saleability of goods are almost fully introduced in the explanation. Following from this we can argue that one mold of Menger's 'organic explanations' are specific explanations (explains the emergence) of specific phenomena (organic social phenomena) which involves a detailed account of the process of emergence. The other mold of Menger's organic explanations is not very clear. But as I have argued it can be considered as an example of functional analysis.

3. Lessons from Menger

Lets turn back to our points of focus. I have tried clarify the notion of "unintended consequences of human action" in the previous section. So I will proceed to the second point, which was related with the increase in our understanding.

²¹ See Dalton (1965, 1971) for a detailed information about the uses of money in primitive cultures and definition of a market economy.

²² See Mäki (1990) for a realist interpretation of this explanation.

Although Menger's explanation is not related with political theory, I want to start with Nozick's account of *fundamental* explanation in political realm. Nozick (1974: 6) defines the fundamental explanations in the political realm as the ones that explain fully in terms of non-political. And argues:

"A theory of state of nature that begins with fundamental general descriptions of morally permissible and impermissible actions, and of deeply based reasons why some persons in any society would violate these moral constraints, and goes on to describe how a state would arise from that state of nature will serve our explanatory purposes, *even if no actual state ever arose that way*." Nozick (1974: 7, emphasis in original)

Here Nozick touches upon one of the important characteristics of Menger's explanation. Menger's explanation *does not refer to actual events*. He just gives the possible causes, conditions and the driving forces in the process that brings about the generally accepted medium of exchange. It is not an explanation of a concrete event. Thus, to explain which particular good (gold or silver or etc.) was selected as money in a specific place and time, one would need to specify which of the possible causes and conditions were actually present²³.

Related with this Ullmann-Margalit (1978: 276) argues that "regardless of whether or not an invisible hand explanation is the correct account of how the pattern in question actually emerged, I contend that it is of value as an (at least partial) explication of the associated concept." Thus, as I have argued before, there is an explicatory import in Menger's explanation. It makes us *understand* how it is possible that the 'generally accepted medium of exchange' can emerge without anyone intending to bring it about. Menger's explanation provides us the 'invisible' mechanisms that produce the phenomenon he seeks to explain. It also supplies the descriptive knowledge about the mechanism, which, in turn, enables us to use it in our explanations of the concrete events.

The 'invisible hand explanations' makes us remember the old concept '*conjectural history*'. Stewart (1971: 33) argues that to answer the questions about the 'unintended consequences of human action, "one can not expect to glean much information from history, which means that we are forced to fill 'the place of fact by conjecture'. Although it is impossible for us to reconstruct the process by which a certain phenomenon *has been produced*, as Stewart goes on to say, it is often important to show *how it could have been produced*" (Keller, 1994: 36 emphasis in original).

Mäki (1990c:171) argues that an 'invisible hand consequence' is contingent upon social conditions. However, we have seen that Menger does not define the real or actual conditions for the emergence of the money phenomenon, he uses a highly abstract model, which has no reference to real events in history. So how can we say that he explained something, or we increased our understanding about the emergence of the money phenomenon?

²³ See Marimon, McGrattan and Sargent (1990) and Young (1998) for an examination of this selection process.

We know that barter and market depended economies - with direct exchange - existed or might exist. We know that when people are dependent on the market, they might be willing to search for easier methods for acquiring what they want. We can see that in such and such conditions using a more saleable commodity looks like to be first thing that would come into mind. We can also understand that when people exchange more easily there might be an increase in the market traffic, which in turn enforces the use of the more saleable goods for exchange. We understand that the saleability of these goods depend on many things, and in different places and at different times it is possible to find a different set of the goods of highest saleability. We know that if people tend to use these goods when they exchange goods this set of goods will be the goods that would be expected for exchange at the market place. Thus we can understand that a set of goods might be chosen as the mediums of exchange without a common-will.

So according to Salmon's criteria we can say that we have increased our understanding about the emergence of the money with Menger's explanation. Although Menger's explanation does not refer to concrete events, he is talking about real (causal) mechanisms behind the emergence of 'money'. However, it is not clear if Menger's explanation satisfies Salmon's second constraint. We can not say confidently that it provides us the knowledge that would make us comprehend what we know under a smaller number of assumptions than previously. But we can say that it explains the emergence of the medium of exchange with a small number of concepts and assumptions. This brings us to our third point.

Menger argues that economics is an 'exact science' that studies 'exact types' and exact laws'. According to Mäki (1990b: 295) this can be interpreted like the following: "Economics as an exact science, then, is a theoretical study of universals".

Universals are features (properties, kinds, relations) shared by many particular objects²⁴. "Money particulars have many powers and capacities, such as those of enabling purchases of goods in the market, measuring and preserving value..." (Mäki, 1990b: 299). Thus, Menger's explanandum phenomenon seems to represent one particular common feature (or function) of the particular instances of money (coins, banknotes, etc.), namely being a medium of exchange. So, Menger's explanandum phenomenon can be considered as a universal. The economizing individual, which is the main driving force in the process that brings about the money universal, is another abstraction from the reality.

We can say that, if the explanandum phenomenon is a universal and its explanantia includes universals, then it can be characterized as an abstract explanation - or as an explanation which embodies an abstract representation of the reality. Menger's explanation is an attempt to reveal the *essential relationships* in the real world. It is not an explanation about the concrete events. The process that brings about the explanandum phenomenon is characterized with an abstract mechanism (invisible

²⁴ For a detailed analysis of universals in relation with Menger and Austrian explanation see: Mäki (1990ab, 1997)

hand mechanism), which represents what is thought to be the essential relationships in reality. Theory of the saleableness of goods demonstrates the possible causes and conditions for the differences in the saleableness of goods²⁵. His theory of the invisible hand mechanisms, that *links* the economizing action to the emergence of the money universal, sets the *conditions* (like existence of market dependent economy and barter, differences in the saleability of goods) for mechanism to work. Thus, explanation of the emergence of the generally accepted medium of exchange seems to be successful at representing what Menger thinks to be the real world relations²⁶.

Before going to our fourth point of focus (that is to the concluding remarks), let me make some remarks about Menger's explanation in relation to invisible hand explanations²⁷.

First, one of the essential features of invisible hand explanations is the nature of the *explanandum* phenomenon. Explanandum phenomenon is the unintended consequence of human actions in a special sense²⁸. Recall Menger's conception of the unintended consequences, the first four constraints can apply to invisible hand explanations in general.

Second reference to an invisible hand process is essential for an invisible hand explanation. In the explanation, there must be a process that links the explanandum phenomenon to individual actions. Some clarification is in line:

The nature of the explanandum phenomenon (being an unintended consequence) implies that there must be something linking the actions of individuals whose intentions are directed to the individual level to the unintended consequence. Without providing this link an invisible hand explanation can not go beyond its presupposition that 'social entities are the unintended consequence of human actions'.

Remember that *invisibility* comes from the unintendedness of the consequence, or differently, from the invisibility of the mechanism that brings about the unintended consequences. As I have noted before the explicatory import of invisible hand explanations comes from explicating this mechanism and showing that what is thought to be a consequence of design is an unintended consequence of the dispersed actions of individuals.

²⁵ Which includes the differences in the saleableness of the same good at different places and times.

²⁶ Menger can be considered as an essential realist. For arguments see Mäki (1990b, 1997)

²⁷ These are provisional remarks, since I did not examine the other paradigmatic examples in this paper. However, I think these remarks are necessary to relate this paper to the existing literature. For more details see Aydinonat (forthcoming, June 2000)

²⁸ This is coherent with the philosophical literature - of course: One of the essential features of invisible hand explanations is that its *explananda* is an outcome of a *decentralized* and *non-intentional* process. See Ullmann-Margalit (1978), Brennan & Pettit (1993), Ylikoski (1995).

Because of this reason, I think that it is only plausible to argue that an invisible hand explanation explains the *emergence* or *maintenance* of its explanandum phenomenon. Any other type of explanatory act would possibly not explicate the mechanism at work. Remember that Menger does not talk about 'maintenance', but functioning. Thus, I think the 'functional' part of Menger's 'organic explanations' can not be considered as an invisible hand explanation.

Given these two essential features we can define constraints for being an invisible hand explanation:

1. Explanandum phenomenon of the explanation must be an 'unintended consequence' in the sense that
 - 1.1. Individual intentions must be directed to the *individual level*
 - 1.2. 'Unintended consequence' must be located at the *social level*.
 - 1.3. There must be more than one individual. And, 'unintended consequence' must be dependent on the existence of many individuals.
2. Explanandum phenomenon must be a social pattern or institution - that constitutes a coordinated or self-coordinating order (see Mäki, 1990ac).
3. Explanation must explicate the mechanism / process that brings about the 'unintended consequence'.
4. Explanation explains the emergence or maintenance of the explanandum phenomenon.

Reader may wonder why I did not use one of the criteria that I have introduced for Menger's 'unintended consequences', namely the criterion that the consequence must be beneficial. I have reasons for this. Lets look at Brennan and Pettit's remarks about the invisible hand mechanism to proceed:

"Spontaneous ordering mechanism usually described as the *invisible hand* (or *backhand*) can be usefully characterized by the behavioral controls that it deploys: it is any sort of mechanism which mainly supports the order in question by means of controls that are decentralized and, as we shall say, contingently non-intentional." Brennan & Pettit (1993: 192)

There are two notions in this characterization: *invisible hand* and *invisible backhand*. Generally first one is associated with *beneficial* results and the latter with socially undesirable outcomes. Pettit (1998: 257) argues that one of the main features of the notion of "invisible hand" is its desirability²⁹. This is what Menger would understand from an 'invisible hand'. But there is an other mechanism, that works essentially the same way as 'invisible hand mechanism' does, and has socially undesirable results. This mechanism is named as the 'invisible backhand' (Hardin (1982), Nozick (1994), Brennan & Pettit (1993)).

Connotations of the '*invisible hand*' [in 'invisible hand explanation'] create a tendency to consider the invisible hand explanations as explanations of beneficial social patterns and institutions³⁰. Roughly, the distinction between the invisible hand and

²⁹ Other two is non-intentionality and explanatory power. (Pettit, 1998:257)

³⁰ For example see Carey (1998:431-432) or Elster (1979)

invisible backhand is the reason for the misconception about invisible hand explanations. However, the desirability of the outcome is not an essential component of an invisible hand explanation, because what is thought as *invisible* is the mechanism that works. To repeat, from the viewpoint of invisible hand explanations it does not matter which side of the invisible hand is at work³¹. An essential property of an invisible hand explanation is making the 'invisible' mechanism visible and the process explicit.

³¹ Remember that Schelling's (1967) explanation residential segregation is considered as a paradigmatic example of invisible hand explanations.

4. Concluding remarks

Are invisible hand explanations different from other types of explanations? Answer depends on what we mean by 'different' and 'types of explanation'. Before answering the question let me make a couple of observations.

First, invisible hand explanations are generally thought to be the examples of Hempel's (1965) *genetic explanations* (see Ullmann-Margalit, 1978). I think it is misleading to say so. In a genetic explanation steps in the *concrete* event must be explicit, but in an invisible hand explanation the *theoretical reconstruction* of the process is important. For example Menger's explanation seems to be a *causal account* of the emergence of the medium of exchange--although it does not make reference to particular causes.

Second, other mold of invisible hand explanations which explains the maintenance of a social pattern or institution looks like *functional explanations* or *equilibrium explanations* (see Ullmann-Margalit, 1978). Here we should also remember Kincaid's (1996) remark that proper functional explanations are *causal explanations*.

Thus, it is possible to characterize invisible hand explanations as covering causal, functional, equilibrium and (for some) genetic explanations--if you call this a characterization. It seems that as long as we explicate the invisible hand process in a proper way it does not matter on the kind of explanation we give.

However, there are reasons for us to reserve this specific name (invisible hand explanations) for these explanations. First, they explain in a very "doubtful" way; namely they depend on *conjectures* rather than detailed (historical) facts. So, although they are causal accounts (explanations) of general facts, they do their job in an essentially different way.

Second, all invisible hand explanations can be gathered under a simple *explanatory question*: How it is possible that a social (dis)order emerges or persists without the conscious intervention of individuals. Technically speaking, they are different because of their '*contrast space*' definition (How it is possible that it is the unintended consequence of human actions rather than being a product of design?). Moreover, this specific explanatory question has a *heuristic role* for the researchers, which makes them explain in similar ways:

To conclude, I want to direct your attention to the fact that philosophers of social science paid little attention to the very common practice of explaining with conjectures (and nowadays with computer simulations). I think that understanding and appraising these explanations is a very important task for the philosophers of social science.

5. References

- AUSPITZ, J. L. *et al* (ed.) (1992) *Praxiologies and the Philosophy of Economics*, London: Transaction Publishers.
- AYDINONAT, N. E. (1999) "Function ascriptions and Functional Explanation", *Faculty of Political Sciences, Ankara University (Ankara, Turkey) Discussion Papers, no. 20*.
- AYDINONAT, N. E. (2000) "Conjectures as explanations: Notes on Schelling's Model of Residential Segregation", *forthcoming*: to be presented at the History of Economics Society (HES) Annual Conference, June 30 - July 3, 2000 Vancouver, Canada.
- BOETTKE, P. J. (ed.) (1994) *The Edgar Companion to Austrian Economics*, Edward Elgar
- BRENNAN, G. AND PETTIT, P. (1993) "Hands Invisible and Intangible", *Synthese*, 94, 191-225.
- CALDWELL, B. & BOHEM, S. B. (ed.) (1992) *Austrian Economics: Tensions and New Directions*, Kluwer Publishers.
- CALDWELL, B. (ed.) (1990) *Carl Menger and His Legacy in Economics*, Durham and London: Duke University Press.
- CAREY, T. V. (1998) "The Invisible Hand of Natural Selection", *Biology and Philosophy* 13, pp. 427 - 442.
- CUMMINNS, R. (1975) "Functional Analysis", *Journal of Philosophy* 72, p.741-765
- Curren, R. (1987) "Invisible-Hand Explanations Reconsidered", *Humanities Working Paper 120, California Institute of Technology*.
- DALTON, G. (1965) "Primitive Money" *American Anthropologist*, 67: p. 44 - 65, reprinted in Dalton, G. (1971: p. 167 - 192)
- DALTON, G. (1971) *Economic Anthropology and Development: Essays on Tribal and Peasant Economies*; London: Basic Books.
- DAVIS, J. B., HANDS, D. W. AND MÄKI, U. (1998) *The Handbook of Economic Methodology*, Edward Elgar.
- EBELING, R. M. (ed.) (1978) *The Austrian Theory of Trade Cycle and Other Essays*, Occasional Papers Series #8, New York: Center for Libertarian Studies.

- ELSTER, J. (1979) *The Ulysses and the Sirens*, Cambridge: Cambridge University Press
- FERGUSON, A. (1767) *History of Social Society*, London.
- GRIEF, A. (1993) "Contract Eforceability and Economic Institutions in Early Trade: The Maghribi Traders Coalition", *AER* 111: p. 507 - 48.
- HAMOWY, R. (1987) *The Scottish Enlightenment ant the Theory of Spontaneous Order*, (The Journal of the History of Philosophy Monograph Series), Carbondale and Edwardsville: Southern Illinois University Press.
- HARDIN, R. (1982) *Collective Action*, London: Johns Hopkins University Press.
- HAYEK, F.A. (1960) *The Constitution of Liberty*, Gateway edition, Chicago
- HAYEK, F.A. (1967) "The Results of Human Action but not Human Design" in HAYEK, F.A. (1967) *Studies in Philosophy, Politics and Economics*, Routledge and Kegan Paul, London, pp. 96 - 105
- HEMPEL, C. (1959) Functional Explanation, in Hempel (1965: 297-331)
- HEMPEL, C. (1965) *Aspects of Scientific Explanation: An other Essays in the Philosophy of Science*, New York: Free Press
- HUTTER, M. (1994) Organism as a metaphor in German Economic Thought, in Mirowski (1994: p. 289 - 321)
- KINCAID, H. (1996) *Philosophical Foundations of the Social Sciences: Analyzing Controversies in Social Research*, Cambridge: Cambridge University Press.
- KITCHER, P. & SALMON, W. C. (ed.) (1989) *Scientific Explanation: Minnesota Studies in the Philosophy of Science Vol. XII*, Minneapolis: University of Minnesota Press
- KOPPL, R. (1992) "Invisible Hand Explanations and Neoclassical Economics: Toward a Post Marginalist Economics", *Journal of Institutional and Theoretical Economics*, 148 (2), p. 292-313
- KOPPL, R. (1994) "'Invisible Hand' Explanations" in Boettke (1994: 192-197)

- KÜHNE, U. (1997) "Wie erklärt man mit unsichtbaren Händen?" GAP3 conference in Munich (15 - 18 Sep.1997).
- KUNIŃSKI, M. (1992) "Freidrich A. von Hayek's Theory of Spontaneous Order: Between 'Versthen' and 'Invisible Hand Explanation'", in *AUSPITZ, J. L. et al (1992: 347-367)*.
- LAVOIE, D. (ed.) (1990) *Economics and Hermeneutics*, London: Routledge & Kegan Paul.
- MÄKI, U. (1990a) "Scientific Realism and Austrian Explanation", *Review of Political Economy* 2, p. 310-344
- MÄKI, U. (1990b) "Mengerian Economics in Realist Perspective" in Caldwell (1990: p. 289 - 310)
- MÄKI, U. (1990c) "Practical Syllogism, Entrepreneurship, and the Invisible Hand", in Lavoie (1990: p. 149 - 176)
- MÄKI, U. (1992) "Market as an Isolated Causal Process: A Metaphysical Ground For Realism", in Caldwell & Bohem (1992: 35-59)
- MÄKI, U. (1996) "Scientific Realism and Some Peculiarities of Economics", *Boston Studies in the Philosophy of Science*, Vol.169, p. 425-445
- MÄKI, U. (1997) "Universals and the *Methodenstreit*: a Re-examination og Carl Menger's Conception of Economics as an Exact Science" *Studies in History and Philosophy of Science* 28 (3), pp. 475 - 495.
- MÄKI, U. (1998) "Explanatory Unification: Double and Doubtful", Forthcoming in *Revue Internationale De Philosophie*
- MARIMON, R., MCGRATTAN, E. AND SARGENT, T. J. (1990) "Money as a Medium of Exchange in an Economy with Artificially Intelligent Agents", *Journal of Economic Dynamics and Control* 14: pp. 329-73.
- MENGER, C. (1883 [1985]) *Investigations into the Method of the Social Sciences, with Special Reference to Economics*, New York and London: New York University Press.
- MENGER, C. (1892) "On the Origins of Money", *Economic Journal* 2, p. 239-255.
- MERTON, R K. (1968) *Social Theory and Social Structure*, New York: Free Press

- MIROWSKI, P. (ed.) (1994) *Natural Images in Economic Thought*, Cambridge: Cambridge University Press.
- MISES, L. von (1949) *Human Action - A Treatise in Economics*, New Haven: Yale University Press.
- NADEAU, R. (1998) "Spontaneous Order" in *Davis, Hands and Mäki (1998: 477-484)*
- NORTH, D. C. (1990) *Institutions, Institutional Change and Economic Performance*, New York: Cambridge University Press.
- NOZICK, R (1974) *Anarchy, State and Utopia*, Blackwell, Oxford, (Basic Books, New York)
- NOZICK, R (1994) "Invisible-Hand Explanations", *American Economic Review* 84 (2) p.314-318
- PETTIT, P. (1993) *The Common Mind: An Essay on Psychology, Society and Politics*, New York: Oxford University Press.
- PETTIT, P. (1998) The Invisible Hand, in *Davis, Hands and Mäki (1998: 256-259)*
- POPPER, K. (1962) *Conjectures and Refutations: The Growth of Scientific Knowledge*, New York: Basic Books.
- SALMON, W (1989) Four Decades of Scientific Explanation, in *Kitcher & Salmon (1989: 3-220)*
- SAMUELSON, P. A. (1958) *Economics*, McGraw-Hill, 4th edition, New York
- SCHELLING, T. (1969) "Models of Segregation" *American Economic Review*, 59, pp. 488-493.
- SMITH, A. (1759) *The Theory of Moral Sentiments*, London.
- SMITH, A. (1776) *The Wealth of Nations*, London.
- SOBER, E. (1983) "Equilibrium Explanation", *Philosophical Studies* 43: 201-210.
- STARK, W. (1962) *Fundamental Forms of Social Thought*, London: Routledge & Kegan Paul
- STEWART, DUGALD (1858/1971) *The Collected Works of Dugald Stewart*, ESQ.,F.R.SS., vol. X, ed. Sir William Hamilton, Bart., Boston, Mass., republ. Farnborough UK 1971

- SUGDEN, R. (1986) *The Evolution of Rights, Cooperation and Welfare*, New York: Basil Blackwell.
- ULLMANN-MARGALIT, E. (1978) "Invisible Hand Explanations", *Synthese* 39 (20) p. 263-91
- ULLMANN-MARGALIT, E. (1997) "The Invisible Hand and the Cunning of Reason", *Social Research* 64 (2) p. 181 - 198
- VROMEN, J. (1995) *Economic Evolution*, London: Routledge
- WRIGHT, L. (1973) "Functions", *Philosophical Review* 82, p. 139-168
- YLIKOSKI, P. (1995) "The Invisible Hand and Science" *Science Studies* 8: 32-43.
- YOUNG, H. PEYTON (1993a) "The Evolution of Conventions", *Econometrica* 61, p. 57 - 84
- YOUNG, H. PEYTON (1993b) "An Evolutionary Model of Bargaining", *Journal of Economic Theory* 59, p. 145 - 68
- YOUNG, H. PEYTON (1996) "Economics of Convention", *Journal of Economic Perspectives* 10 (2), p. 105 - 122
- YOUNG, H. PEYTON (1998) *Individual Strategy and Social Structure : An Evolutionary Theory of Institutions*, Princeton University Press.

6. Appendix I

"Concerning the Causes of the Different Degrees of Saleableness in Commodities

The degree to which a commodity is found by experience to command a sale, at a given market, at any time, at prices corresponding to the economic situation (economic prices), depends upon the following circumstances.

1. Upon the number of persons who are still in want of the commodity in question, and upon the extent and intensity of that want, which is unsupplied, or is constantly recurring.
2. Upon the purchasing power of those persons.
3. Upon the available quantity of the commodity in relation to the yet unsupplied (total) want of it.
4. Upon the divisibility of the commodity, and any other ways in which it may be adjusted to the needs of individual customers.
5. Upon the development of the market, and of speculation in particular. And finally.
6. Upon the number and nature of the limitations imposed politically and socially upon exchange and consumption with respect to the commodity in question.

We may proceed, in the same way in which we considered the degree of the saleableness in commodities at definite markets and definite points of time, to set out the spatial and temporal limits of their saleableness. In these respects also we observe in our markets some commodities, the saleableness of which is almost unlimited by place or time, and others the sale of which is more or less limited.

The spatial limits of the saleableness of commodities are mainly conditioned --

1. By the degree to which the want of the commodities is disturbed in space.
2. By the degree to which the goods lend themselves to transport, and the cost of transport incurred in proportion to their value.
3. By the extent to which the means of transport and of commerce generally are developed with respect to different classes of commodities.
4. By the local extension of organised markets and their inter-communication by 'arbitrage'.
5. By the differences in the restrictions imposed upon commercial inter-communication with respect to different goods, to interlocal and, in particular, in international trade.

The time limits to the saleableness of commodities are mainly conditioned --

1. By permanence in the need of them (their independence of fluctuation in the same).
2. Their durability, i.e. their suitability for preservation.
3. The cost of preserving and storing them.
4. The rate of interest.
5. The periodicity of a market for the same.
6. The development of speculation and in particular of time-bargains in connection with the same.
7. The restrictions imposed politically and socially on their being transferred from one period of time to another.

All these circumstances, on which depend the different degrees of, and the different local and temporal limits to, the saleableness of commodities, explain why it is that certain commodities can be disposed of with ease and certainty in definite markets, i.e. within local and temporal limits, at any time and in practically any quantities, at prices corresponding to the general economic situation, while the saleableness of other commodities is confined within narrow spatial, and again, temporal, limits: and even within these the disposal of the commodities in question is difficult, and, in so far as the demand cannot be waited for, is not to be brought about without a more or less sensible diminution in price." Menger (1892)