

On the notion of altruism

Eline van der Heijden¹

September, 1994

Abstract

Recently, it seems that unselfish aspects such as altruism and fairness receive more attention in the economic literature. In this paper some historical opinions on the notion of altruism are presented. Particularly, the views of Spencer and Edgeworth are discussed. Moreover, an effort is made to develop some links into modern issues.

1 Introduction

One of the most universal assumptions of economics concerns that of self-interested individuals. Or, as Edgeworth formulates it: "The first principle of Economics is that every agent is actuated only by self-interest"². Most economists in the past and in the present have supported this view. However, recently economic literature pays more attention to unselfish aspects such as altruism and fairness (see e.g. Palfrey and Rosenthal (1988) and Bolton (1991)), whereas usually this type of research had been confined to the psychological literature³. One of the reasons for the increased interest in these aspects in economics might be found in the increasing use of experiments. Contrary to other social sciences such as sociology and psychology, the use of experiments in economics has not been very common. However, in the last decades economists seem to have discovered the advantages of experimental methods more and more⁴ so that nowadays economic problems are often studied by means of experiments. Although most experiments concern

¹Department of Economics and CentER, Tilburg University. Mailing address: Tilburg University, Department of Economics, P.O. Box 90153, 5000 LE Tilburg, The Netherlands. E-mail: Eline.vanderHeijden@kub.nl. Useful comments and suggestions by Corine Brienen, Hugo Keuzenkamp, Mary Morgan and Harrie Verbon are gratefully acknowledged. This research was sponsored by the Centre for Population Studies (CEPOP) which is part of the Netherlands' Organization for Scientific Research (NWO).

²See Mathematical Psychics, page 16.

³Of course, people considered unselfish issues before. See e.g. Sen (1976-7), the social welfare function of Harsanyi (1977), and Hochman and Rodgers (1969) who include agents x 's utility in agent y 's utility function.

⁴Probably most important is the possibility of controlling the research environment to a large extent, so that e.g. *ceteris paribus* conditions can be established (approximately).

game theoretic issues, e.g. the establishment of Nash equilibria, some experiments investigate the possible presence of altruism or unselfishness⁵. The lively interest for these social feelings in the current literature raises the question of the role these feelings played in earlier literature. Some famous historical writers examined feelings other than selfishness. In this essay, an attempt is made to represent their views. Particularly, it tries to indicate what the position of altruism was in the work of Spencer and Edgeworth⁶. The organization is as follows. Section 2 presents some classical views on altruism. The view of Spencer on altruism and egoism, as expressed in his famous book "The Data on Ethics", is discussed in Section 3. Section 4 attempts to review the contribution of Edgeworth's book "Mathematical Psychics" to the notion of altruism. The last section consists of a comparison between the views of Spencer and Edgeworth. Some conclusions are also drawn in that section. Finally, some links with recent issues, particularly results from experiments, are discussed.

Some expressions occur rather frequently throughout this essay. To ensure that the meaning is clear, these notions are explained first. According to the Concise Oxford dictionary, altruism is defined as: "regard for others as a principle of action; unselfishness". Another rather common definition of altruism is "to attach a positive value to pay-offs to others (e.g. Becker (1981)). Egoism, on the other hand, is defined (in the Oxford Concise dictionary) as: "ethical theory that treats self-interest as foundation of morality; systematic selfishness", where consequently selfish is defined as: "deficient in considerations for others, thinking chiefly of one's own personal profit or pleasure, actuated by self-interest". Finally, the term utilitarianism⁷ is often used. This means: "doctrine that greatest happiness of greatest number should be the guiding principle of conduct"⁸.

⁵In Section 5 the results of some of these experiments are discussed.

⁶I emphasize the contributions of these two authors because their thoughts on altruism are very interesting but at the same time relatively unknown.

⁷The notion of utilitarianism was already developed by J. Bentham at the end of the 18th century. The Benthamite tradition still plays a role in modern economics, however.

⁸Note, however, that not all writers are pleased with this definition. Both Edgeworth and Spencer criticize this definition, particularly the part of the greatest number. Sidgwick's definition reads: greatest possible product of number \times average happiness. Edgeworth supports this (see Section 4) but Spencer challenges the idea of utilitarianism (see Section 3). See also footnote 35 for Sidgwick's ideas.

2 Classical views on altruism

Before turning to Spencer and Edgeworth, the opinions of several other authors are briefly described in order to show the involvement with the topic in the course of time. In the 18th century, great philosophers and economists pay attention to the question of whether the assumption of egoistic or altruistic conduct is correct. The answers differ largely, however. For instance Hume does not agree with the assumption of self-interested individuals: "So far from thinking that men have no affection for anything beyond themselves, I am of opinion, that though it be rare to meet one, who loves any single person better than himself; yet 'tis rare to meet with one in whom all the kind affections taken together, do not overbalance all the selfishness"⁹. Concerning Smith, most people think that he endorses another viewpoint, that is to say, that he advocates egoism. In later work he indeed did (although also not completely¹⁰), but his conviction has not always been so strong. The next two quotations illustrate this changed view. In his earlier work he gives unselfishness some room, for instance in the opening sentence of "The Theory of Moral Sentiments": "How selfish soever man may be supposed, there are evidently some principles in his nature, which interest him in the fortune of others, and render their happiness necessary to him, though he derives nothing from it except the pleasure of seeing it"¹¹. In later work, however, he is convinced that the public interest is rather unimportant as can be seen by the following famous passage: "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"¹².

In the 19th century, also many papers about egoism and altruism have been written. For instance, J.S. Mill has strong ideas about utilitarianism and altruism. He states, among other things, that people should have a certain degree of altruism. Along with others, for instance Spencer, he clearly believes in the progress of society. Moreover, he thinks that this progress will make the individual behave according to the required altruism: "Mankind are capable of a far greater amount of public spirit the present age is accustomed to

⁹See Hume (1736), page 487. The quotations of Hume, Mill and Smith are taken from Collard (1978), since many historical books were not available in our library.

¹⁰See e.g. Skinnners' introduction (1986) to "The Wealth of Nations".

¹¹See Smith (1759), page 47.

¹²See Smith (1776).

suppose possible"¹³. J.N. Keynes remarks that the 'economic man' ought not to be described as a pure egoist¹⁴. However, he believes people to be mainly influenced by a desire for wealth¹⁵, although non-pecuniary motives may have an impact too. Finally, in "The Methods of Ethics" (1874), Sidgwick states that the ultimate end of utilitarianism should be the aim of the greatest sum of (general) happiness. Obviously, he considers altruism important¹⁶.

3 The view of Spencer

This section discusses Spencer's "The Data of Ethics". The attention is focused on the (four) chapters that deal with egoism and altruism. By reading the book one gains a clear insight into Spencer's thinking and gradually his idea of due egoism becomes obvious.

In the first chapter discussed here, Egoism versus Altruism, Spencer states that egoism has to come before altruism. The reason is that a creature must live before it can act. Self-care is needed to prevent death. Besides, with dying the possibility of caring for others ends. This is clearly a view in favour of egoism. Moreover, Spencer continues to warn for inadequate egoism. Egoistic conduct has to meet certain constraints. As Spencer formulates it: "The pursuit of individual happiness within those limits prescribed by social conditions is the first requisite to the attainment of the greatest general happiness"¹⁷. Here, the first refinement in the direction of due egoism has been made. The importance of due self-regard is stressed again by noting: "Diminutions of general happiness are produced by inadequate egoism in several ways"¹⁸. He elucidates his warning for inadequate egoistic behaviour by giving some very nice examples. I will briefly mention some of them¹⁹. Consider a mother, who in spite of her bad health insists on suckling her baby, because she believes that natural milk is the best. Eventually she becomes ill, neglects the other children and causes financial problems. Or consider an overworked clerk

¹³See Mill (1848).

¹⁴See Keynes (1891).

¹⁵This is not necessarily own wealth, however.

¹⁶In Sections 4 and 5 more attention is paid to his view.

¹⁷See page 220.

¹⁸Page 221.

¹⁹Unfortunately, it would lead me too far afield to discuss the examples extensively. This part of the book is certainly worth reading, however.

who, attacked by "scrivener's palsy", sinks with his family into poverty. Due self-regard is important to avoid these situations. The conclusion of the chapter is that an individual with a well-conserved life is by his mere existence a source of pleasure to all around. Moreover, this individual maintains the ability to increase their happiness by altruistic actions.

The second chapter is called Altruism versus Egoism. Spencer starts this chapter by recognizing that egoism is not more important than altruism: "If we define altruism as being all action which in the usual course of things, benefits others instead of benefiting self, ..., altruism has been no less essential than egoism"²⁰. Several forms of altruism are distinguished, varying from primitive natural forms such as parental altruism to a higher kind of altruism called social altruism, which implies a care for society. It is argued that the well-being of each is related to the well-being of all. Moreover, in a corollary the contribution of altruism to happiness is established: "Pure egoism is less successfully egoistic than is the egoism duly qualified by altruism which, besides achieving additional pleasures, achieves also, through raised vitality, a greater capacity for pleasures in general"²¹. The conclusion of this chapter is that egoism and altruism has been dependent on each other.

The next chapter, Trial and Comprise, tries to give a verdict on the conflict raised in the previous two chapters. The question asked is which of the two, pure egoism or pure altruism, is correct. Spencer claims that neither of the two is; only a compromise is possibly. He proves his claim in an indirect way. Suppose that the statement of pure egoism or selfishness is valid. According to Spencer this is impossible because absolute disregard of all other beings would cause social dissolution, which is not realistic. Consequently, he attacks the possibility that pure altruism is valid. First, he argues that the pursuit of the greatest general happiness is one form of pure altruism. Second, Spencer shows in various ways that pure altruism commits its adherents to various absurdities. The exposition is extensive and it is illustrated by several arguments and examples. I will mention only some of the arguments that impressed me most. One of Spencers' arguments

²⁰Page 231.

²¹Page 243.

states that pure altruism would lead to persons with split personality: on the one hand extremely unegoistic and on the other hand extremely egoistic. The reason being that sacrifices in the case of pure altruism imply that everyone is a receiver and a giver. Irrespective of how you look at it, some opposing forces are at work here: you harm yourself (e.g. by working) in benefitting others, but at the same time you are selfish by accepting benefits others have worked for. The second argument mentioned here concerns the problem of the division of happiness, e.g. much of the happiness is self-generated and hard to redistribute. In this respect Spencer draws the comparison with several other pleasures of achievement people can experience that are not transferable e.g. the inventor who has devised a new machine, the man of science who has discovered a truth. These kind of pleasures are enjoyed privately. Therefore, pure altruism is also not valid and the conclusion is that egoism and altruism are coessential. Spencer is clear about what form the compromise between egoism and altruism should take: "General happiness is to be achieved mainly through the adequate pursuit of their own happiness by individuals; while reciprocally the happinesses of individuals are to be achieved in part by their pursuit of the general happiness"²². Furthermore he stresses that by the progress of society, beliefs and behaviour have been changed. Spencer formulates this as follows: "The more distinct assertions of individual claims and more rigorous apportioning of personal enjoyments to efforts expended, has gone hand in hand with growth of that negative altruism shown in equitable conduct and that positive altruism shown in gratuitous aid"²³. In my view he means that the process of an advancing society implies two kinds of changes. First, people insist completely on the own benefits, that is to say, the proceeds of their own activities. At the same time, however, care as well as sympathy and respect for others increases as civilization advances²⁴.

In chapter 14, titled Conciliation, the effects of the progress of civilization on the compromise between egoism and altruism are stressed. In Spencer's picture the society will move to a state in which people prefer higher instead of lower egoistic satisfactions.

²²Page 267. This follows from the statement that most of the happiness must be pursued indirectly instead of directly.

²³Page 268.

²⁴As usual, the pessimistic expectations of Spencer are accompanied by some bright spots.

These higher satisfactions are reached by altruistic activities in which the others' happiness is taken account of. To reach this state, the development of sympathy is important. Sympathy, on its part, consists of pleasures and pains²⁵. When society progresses, various causes of unhappiness (e.g. militant regime, deficiencies of self-control) diminish and therefore sympathy can become greater. Additionally, Spencer expects the agencies, through which the sympathy is excited, to become more efficient. He anticipates an increase in the power of interpreting visible and audible signs of feeling. This increases the chances of recognition, and correspondingly sympathy may rise. Eventually, "sympathetic pleasures will be spontaneously pursued to the fullest extent advantageous to each and all"²⁶. This implies for the relation between egoism and altruism that "the conciliation .. such that though the altruistic pleasure, as being part of the consciousness of one who experiences it, can never be other than egoistic, it will not be consciously egoistic"²⁷. Spencer allocates three (remaining) roles to altruism in the future: family-life, pursuit of harmonious social welfare (which role will further decrease as the need for regulative actions diminishes by the civilization process), and cases of accidents, diseases and misfortune in general. Spencer clearly expects a complete process of adjustment when human nature progresses. Moreover, he expects the opposition between claim for self and claim for others to disappear. At page 284 he describes it so clearly that it is worth quoting at length: "The conciliation will be such that the individual will not have to balance between self-regarding impulses and other-regarding impulses; but, instead, those satisfactions of other-regarding impulses which involve self-sacrifice, becoming rare and much prized, will be so unhesitatingly preferred that the competition of self-regarding impulses with them will scarcely be felt". The motive of altruistic action will be the security of others' pleasures. Here, Spencer advocates explicitly his ideas about due egoism and a rational utilitarian moral theory. The passage proceeds: "Though each, no longer needing to maintain his egoistic claims, will tend rather when occasion offers to surrender them, yet others, similarly natured, will not permit him in any large measure to do this; and that fulfilment of personal desires required for completion of his life will thus

²⁵Spencer's idea on sympathy is largely similar to Smith's.

²⁶Page 278.

²⁷Page 279. Here, Spencer makes an illuminating comparison with the process of saving money. In this process, the aim is usually at the money and the means of getting it; in the meantime, however, pleasure derived from possession is incidentally experienced.

be secured to him: though not now egoistic in the ordinary sense, yet the effects of due egoism will be achieved". With respect to the process several stages can be distinguished. According to Spencer, the process goes via a stage with egoistic competition to a final stage with altruistic competition in which the opportunities for altruistic satisfactions are guaranteed by others.

4 The view of Edgeworth

Edgeworth is mainly known for his theory of the application of mathematics to economics, particularly in the field of contract and exchange theory²⁸. His thoughts about egoism and altruism are not so well-known²⁹. However, I was really impressed by the clearness and representation of his arguments. In this essay, mathematical issues are not considered³⁰. On the contrary, I only focus on his contributions to the notion of altruism³¹. Edgeworth's discussion of altruism in his "Mathematical Psychics" starts when the Calculus of Pleasure is introduced. This calculus may be subdivided into two fields: Economical Calculus and Utilitarian Calculus. The first part, Economical Calculus, investigates the equilibrium of a system of hedonic forces each tending to maximum individual utility. This is in agreement with the standard economic theory of utility maximizing individuals and profit maximizing firms. However, as already mentioned in the introduction of this paper, Edgeworth does not agree with the principle of self-interested man. This pronounced belief influences all of his analyses. Even in Economical Calculus, which should be aimed at individual utility³², the assumption of economic agents is not supported: "if we suppose our contractors to be .. *not* economic agents, but actuated .. by a sympathy with each others' interests .., we might suppose that the object

²⁸Every economist has heard of the Edgeworth-box.

²⁹It is known that Edgeworth's ideas about altruism and utilitarianism have, to some extent, been influenced by Sidgwick. In "Mathematical Psychics", Edgeworth refers many times to Sidgwick. See also Section 5.

³⁰However, I would recommend reading the book completely since only then the total value of his contribution can be seen, e.g. to the consequences for the exchange theory and for the adjustments in the Edgeworth-box.

³¹Collard (1975) presents a very interesting discussion on Edgeworth's propositions on altruism and the implications for contract curves.

³²At least, according to Edgeworth's own introduction of Economical Calculus versus Utilitarian Calculus.

which X^{33} (whose own utility is P), tends -in a calm, effective moment- to maximise, is not P but $P + \lambda \Pi$; where λ is a *coefficient of effective sympathy*"³⁴. Apparently, in Edgeworth's view, Economical Calculus leads more or less automatically to (a form of) Utilitarian Calculus. The degree of utilitarianism depends on λ : when the altruistic coefficient increases, utilitarianism changes from an impure form towards a more pure one.

The Utilitarian Calculus investigates the equilibrium of a system in which each and all tend to maximum universal utility. Edgeworth roughly agrees with the distinction between (pure) egoism and (pure) utilitarianism made by Sidgwick³⁵. However, he believes that an addition to Sidgwick has to be made. He does this in the following passage, which appeals highly to my imagination³⁶: "But it has not been observed that between these two extremes, between the frozen pole of egoism and the tropical expanse of utilitarianism, there has been granted to imperfectly-evolved mortals an intermediate temperate region; the position of one for whom in a calm moment his neighbour's happiness as compared with his own neither counts for nothing, nor yet 'counts for one,' but counts for a fraction"³⁷. Edgeworth is very specific in his statements; he is convinced that this is the practical truth. Moreover, he thinks that it is also feasible from a mathematical point of view. He therefore proceeds by indicating how the idea should be incorporated in the mathematical framework: "We must modify the utilitarian integral as defined above (Appendix III) by multiplying each pleasure, except the pleasures of the agent himself, by a fraction-a factor doubtless diminishing with what may be called the social distance between the individual agent and those of whose pleasures he takes account"³⁸. Notice that Edgeworth does not state that each individual should always behave altruistically. It is not even necessary that one is always conscious of the altruism and the pursuit of the

³³The 'economy' consists of two agents, X and Y , and Π represents the utility of agent Y .

³⁴Page 53.

³⁵Sidgwick states that "we should aim at Happiness generally as our ultimate end, and so consider the happiness of any one individual as equally important with the general happiness of any others, as an element of this total: and should distribute our kindness so as to make this total as great as possible".

³⁶Appendix IV, page 102.

³⁷That is to say $\lambda < 1$.

³⁸Appendix IV, page 102-103.

general good. No, the judgement can only be given by observing the behaviour of an individual in a calm or cool moment and examining whether one is prepared to sacrifice happiness to that of others at that particular moment. Edgeworth believes that the 19th century man is for the most part an impure egoist, a mixed utilitarian. With respect to the future, he suggests that mixed utilitarianism can be transformed to pure utilitarianism, or in other words, $\lambda \rightarrow 1$.

5 Discussion

Even from the limited overview above it becomes clear that several writers have been touched by the opposition between egoism and altruism. Many of them believe that feelings of altruism effect people's behaviour. This view seems to be supported by the results of an increasing number of economic experiments, run to examine whether people actually act as predicted by economic theory. This paper gives the historical ideas of several authors. In the first instance, some opinions have been indicated briefly, after which the attention has been focused on respectively Spencer and Edgeworth. What remains to be done in this section is a comparison between their views. First I will compare their global ideas. In the last part of this section I try to link the discussion on the work of Spencer and Edgeworth to some modern issues.

At first sight, there seems to be a large difference between the ideas of the two of them. For instance as Spencer puts it, he has tried the utilitarianism of Sidgwick and condemned it³⁹. Edgeworth, on the other hand, roughly agrees with Sidgwick. However, in my view, if one takes a closer look at both views, it can be seen that the actual differences are not so large as they seem to be at first sight. Certainly, I think that Edgeworth was more in favour of altruism than Spencer, but Spencer did not agree with the assumption of self-interested, egoistic man either. He supports a world consisting of humanistic egoists, in which some space for altruistic actions has been kept. His theory could be captured by the expression 'rational utilitarianism': actions should reap benefits, but they can do so only if rationally guided. Edgeworth, on the other hand, is convinced that individuals are impure

³⁹See footnote 35 for Sidgwick's ideas. However, as Edgeworth correctly remarks, Spencer particularly rejects the idea of general happiness of the greatest number but that has not been contained in the definition given by Sidgwick.

egoists or mixed utilitarians. He believes that altruistic feelings and corresponding behaviour are required to attain the greatest general happiness. Perhaps their views of the degree of altruism of the present individuals are not so different but their expectations about the future developments of the egoistic or altruistic individual differ to a larger extent. Both agree (and who does not) that society progresses but the impact of the foreseen progress varies. Spencer describes thoroughly what his expectations about the future are. He roughly believes that the form of altruism will change over time: pleasure derived from altruism may increase (intensity) but the frequency will decrease when nature evolves. Edgeworth's description is much more limited, just as the rest of the book compared to Spencer's. Edgeworth thinks that ideally a transformation from a mixed utilitarian into a pure utilitarian can be realized, so that altruism remains more important in his view than in Spencer's. All in all, from the discussion above it can be concluded that both Spencer and Edgeworth believe that human beings are a mixture of egoists and altruists. In spite of the fact that personally I believe more in altruism than Spencer does, I have to admit that the strength of some of his arguments exerted some influence on my belief⁴⁰. Edgeworth's view, which coincides more with mine, is founded less clearly than Spencers', although some of his passages are appealing too. With regard to future expectations, it is rather surprising that both have such strong ideas about coming developments⁴¹. It is a century later now and I do not know what their society looked like. However, I can hardly imagine that their expectations have come true. Perhaps they will, but I do not think that feelings of altruism are subject to very large changes. However, it would be interesting to hear what Spencer and Edgeworth would say about the possible role of altruism in our present society.

More specific, I would like to confront their views with the outcomes of some recent experiments on aspects of altruism and fairness. Let me explain what I mean. Nowadays, many economic experiments are run. Probably most experiments concern bargaining situations. A specific sort of (simple) experiments within this class are the so-called ultimatum games experiments. In an ultimatum game, two players have to divide a certain

⁴⁰Particularly, I found the arguments in Chapter 14 rather convincing.

⁴¹It is not exactly clear, however, what period of time they have in mind when they talk about the future.

amount of money, say c . One player (proposer) has to make a proposal and the other player can accept or reject this. From a game theoretic point of view the proposal "keep the total amount c (or slightly less)" is predicted. In experiments, however, a lot of proposals consist of more or less equal splits, i.e. $0.5c$. Very few players act in accordance with the rule predicted by game theory (see e.g. Prasnikar and Roth (1991) and Güth (1993)). Their behaviour, however, is consistent with Edgeworth's ideas as in his view the happiness, i.e. the monetary reward, of others also counts. Whether it fits in Spencer's view is less clear: the game does not belong to one of the categories to which Spencer would assign a role of altruism (see Section 3), although the happiness of others is involved in a direct way. Therefore, the degree of the altruism as indicated by the actual behaviour of the players would probably not have been expected by Spencer.

Finally I would have liked to discuss (with them) the possible effect of altruism on the provision of public goods and the development of social security programs. Experiments on public goods⁴² indicate that people do not always act selfishly when they can make decisions about the provision of public goods (see e.g. Palfrey and Rosenthal (1988)). Moreover, since the end of the 19th century, when both authors lived, the provision of public goods increased considerably and several social security programs have been established. What would Edgeworth and Spencer think of these developments? Again, I believe that the developments do not conflict with Edgeworth's predictions. As a first reaction to Spencer I am inclined to say that he might have been surprised since he thinks that the progress of society implies that the need for altruism decreases. One might argue that the establishment of several social security systems indicates that the need for altruism has not decreased apparently⁴³. As mentioned before, however, only Edgeworth and Spencer themselves would have been capable to evaluate the presence of altruism and the need for (further) altruism in our present society according to their definitions and their views.

⁴²I am not familiar with results of experiments on social security systems. Some possible experiments on pensions are described in Van der Heijden (1994); we will soon start running some of them.

⁴³On the other hand, however, one might argue that by this establishment some aspects of altruism, sympathy, and solidarity are introduced in the society automatically; people have hardly anything to choose after the introduction. Spencer could then argue that the need for further altruism indeed decreases.

References

- Becker, G. 1981, *A Treatise on the Family*, Harvard University Press, Cambridge and London.
- Bentham, J. 1970, *Principles of Morals and Legislation (1789)*, edited by Burns, J.H. and H.L.A. Hart, London University.
- Bolton, G.E. 1991, A comparative model of bargaining; theory and evidence, *American Economic Review*, 81:5, pp. 1096-1136.
- Collard, D. 1975, Edgeworth's Propositions on Altruism, *The Economic Journal*, June, pp. 355-360.
- Collard, D. 1978, *Altruism and Economy, a study in non-selfish economics*, Martin Robertson, Oxford.
- Edgeworth, F.Y. 1967, *Mathematical Physics, an essay on the application of mathematics to the moral sciences (1881)*, Reprints of Economic Classics, Augustus M. Kelley Publishers.
- Güth, W. 1993, On Ultimatum Bargaining Experiments - A Personal Review -, CentER Discussion Paper No. 9317, CentER, Tilburg University, Tilburg.
- Harsanyi, J.C. 1977, *Rational Behavior and Bargaining Equilibrium in Games and Social Situations*, Cambridge University Press, Cambridge.
- Van der Heijden, E.C.M. 1994, The Establishment of Pension Systems; experimental designs, mimeo, Tilburg University, Tilburg.
- Hochman, H.M. and J.D. Rodgers 1969, Pareto Optimal Redistribution, *American Economic Review*, 59, September, pp. 542-57.
- Hume, D. 1736, *Treatise of Human Nature*.
- Keynes, J.N. 1891, *Scope and Method of Political Economy*.
- Mill, J.S. 1848, *Principles of Political Economy*, Parker.
- Palfrey, T.R., and H. Rosenthal 1988, Private Incentives in Social Dilemmas, *Journal of Public Economics*, Vol. 35, pp. 309-332.
- Prasnikar, V. and A.E. Roth 1991, Considerations of Fairness and Strategy: experimental data from sequential games, *Quarterly Journal of Economics*, pp. 866-888.
- Sen, A.K. 1976-7, Rational Fools: a critique of the behavioural foundations of economic theory, *Philosophy and Public Affairs*, 6, pp. 317-44.
- Sidgwick, H. 1874, *The Methods of Ethics*, Macmillan.
- Smith, A. 1976, *The Theory of Moral Sentiments (1759)*, Liberty Classics, Liberty Fund Inc., Indianapolis.
- Smith, A. 1986, *The Wealth of Nations (1776)*, Penguin Classics, Penguin Books Ltd, London, England.
- Spencer, H. 1978, *The Principle of Ethics (1897)*, Liberty Classics, Liberty Fund Inc., Indianapolis.