

On the economic relevance of the principle of gratuitousness

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Abstract: In this paper, the principle of gratuitousness and its relationships with other principles which motivate behaviour, such as those inspired by reciprocity, is analysed. The basic premise is that gratuitousness is a feature acquired by an action by virtue of the intentions that inspire the action itself. In this respect, the search for gratuitousness may require to discriminate among aesthetically equivalent actions on the basis of the psychological disposition of the actor. The main claim of the paper is that in economically relevant situations gratuitousness is to be conceived as a modality of cooperation, emerging as the outcome of a team reasoning perspective and motivating such a perspective without any need for reciprocity. This claim is analysed with regard to blood donations and, more generally, with regard to the voluntary provision of goods.

Keywords: gratuitousness; reciprocity; team reasoning.

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1 Introduction

The essence of a market economy is that something has to be given up to get something back in exchange. Under appropriate conditions, a satisfactory degree of coordination among traders and some efficiency in the allocation of societal resources may emerge.

In the respectable perspective starting with the marginal revolution, interaction among traders come about prevalently – if not exclusively – through the market. In such perspective social interaction is necessarily characterised by reciprocity only. It is fair to say, however, that besides reciprocity other principles motivate human action.

In this short essay, I analyse the principle of gratuitousness and its relationships with other principles motivating behaviour. As I shall emphasise, the most distinctive feature of any action inspired by gratuitousness is that the benefits it may generate for the performer are an unintentional consequence of the action itself. In this respect, gratuitousness is nothing but a feature of a given action by virtue of the intentions that inspire the action itself. Therefore, the search for gratuitousness may require to discriminate among aesthetically equivalent actions on the basis of the psychological disposition of the actor¹: a gift may be instrumental to achieve a given goal (something that can be judged as particularly reprehensible) or it may be the expression of gratuitousness; individuals may understand the intentions behind a given act, conditioning their behaviour to such intentions.

Practices of gift-giving are popularly interpreted as typical instances of gratuitousness. However, as far as gift-giving is concerned, economists have generally accepted the conclusion of anthropologist Mauss (1925) that such practices are basically motivated by the expectation of reciprocity and play an important role in improving the allocation of resources in markets characterised by informational asymmetries, e.g., Schotter (1979) and Akerlof (1982). The gift-giving as agapic love paradigm² has not gained much popularity among economists, despite the evidence that gift-giving can also qualify as an expression of gratuitousness. This is why, in this article, I do not use the words gratuitousness and gift as synonyms. Rather I conceive gratuitousness in very general terms, as a feature that a given action, hence also gift-giving, may possess or not.

A preliminary issue to tackle before proceeding any further is why economists should be interested in gratuitousness.

In a positive perspective, neglecting gratuitousness means neglecting a force that, besides *self-love*, provides adequate motivation to economically relevant action and therefore contributes to the allocation of societal resources. Until now economists have simply focused on what they believed to be instances of gratuitousness, such as tipping for example (Schotter, 1979). Gratuitousness is however a much more crucial force than what the analysis of tipping suggests (Arrow, 1972). Grounded in a team reasoning perspective and possibly motivating it, gratuitousness is crucial in explaining some puzzles in individuals' behaviour, such as the voluntary contribution to public goods or charitable ventures, that standard theories of reciprocity, based on individually instrumental rationality, do not explain satisfactorily. In a normative perspective, reflection on gratuitousness might positively contribute to the discussion on what makes a society really prosperous; on what contributes to make a society a flourishing network of relationships.

The article is organised as follows. In Section 2, a general framework for the analysis of reciprocity will be introduced. This framework will prove useful both to define gratuitousness and to understand its nexus with reciprocity. In Section 3, a definition of gratuitousness will be given. Basically gratuitousness will be conceived as a feature acquired by a given action by virtue of the intentions that inspire the action itself. The basic claim of the paper, i.e., that in economically relevant situations gratuitousness is to be conceived as a modality of cooperation, possibly emerging as the outcome of a

team reasoning perspective and motivating it without any need for reciprocity, will be discussed in Section 4, with regard to blood donations and voluntary contributions to the provision of goods generating public benefits. Section 5 concludes.

2 Reciprocity: an evolutionary framework

In this section, I briefly illustrate the framework usually employed to analyse reciprocity. The analysis that follows is based on it.

2.1 Basic assumptions

I consider an evolutionary setting populated by a set $I \equiv \{1, \dots, i, \dots, n\}$ of individuals with the option of helping one another. I suppose that at any time $t \in N$, g random pairs of individuals are chosen, one as a potential donor of some altruistic act, the other as a potential recipient. I denote by D_t and R_t the set of donors and recipients at t respectively, with typical elements $k \in D_t$ and $j \in R_t$. As it is common, I also suppose that the altruistic act implies a cost c to the donor, but confers a benefit b to the recipient, ($b > c$). Refusing help implies zero payoffs both for the donor and the recipient. When an individual is selected as a donor at t , she must perform an action $a_{it} \in \{H, NH\}$, where H stands for help (cooperation) and NH for not help (defection).

As shown in Figure 1, assuming that both players may act simultaneously as donor of each other, the interaction displays the structure of a Prisoner's Dilemma game, where $-d$ is the loss of being cheated.

Figure 1 Payoff matrix for social dilemma games

		H	NH
H		$(b - c, b - c)$	$(-d, b)$
NH		$(b, -d)$	$(0, 0)$

$b > d > c > 0$

Whenever it is assumed that all the individuals have the opportunity of donating, at any t , either in favour of a randomly chosen j , or in favour of the community, the game exhibits the structure of the *mutual-aid game* (Sugden, 1986) or the *public good game* (e.g., Bowles and Gintis, 2010) respectively.

Models of direct reciprocity assume that the individual who is affected by a_{kt} has the chance of reciprocating at $t + m$, $m > 0$, possibly rewarding pro-social behaviour with help and punishing selfishness by not providing help. In models of indirect reciprocity it is assumed that reciprocation is carried on by a third party.

In both types of models it is then assumed that an agent h who may (direct reciprocity) or may not (indirect reciprocity) correspond to the individual who is affected by a_{kt} , observes the recipient's status, which depends both on the recipient's past choices and on the rules Γ governing the evolution of status within the community, and makes her decision relative to providing help or not contingent on such status (taking into account that her decision will affect her own status according to Γ). In models of both direct and indirect reciprocity, a strategy is then a rule contingent on the

status of the recipient, i.e., a rule of the following type $\gamma_k : \sigma_t \rightarrow a_{kt} \in \{C, D\}$, where $\sigma_t = [\sigma_{1t}, \dots, \sigma_{nt}]$ is the current status profile.

2.2 Conventions of reciprocity

In evolutionary environments the set of available strategies is not fixed. New strategies continuously emerge (either because of random mutations occurring in the genome of the individual organisms, or because the individuals experiment new behaviour) and are selected according to material payoffs.

Despite the differences existing with non-evolutionary environments, any equilibrium must still possess the Nash equilibrium properties. Therefore an equilibrium is still a set $\{\gamma_i^*\}$ of strategies, one for each individual, such that no one would have any incentive to deviate from the prescribed behaviour³.

As in evolutionary settings a huge amount of diversity is produced, it is required that an equilibrium behaviour be somewhat resistant against invasion. The notion of evolutionary stability can be seen as a refinement of the Nash equilibrium concept that takes this need into account. It requires that individuals belonging to a small group playing a new strategy will do worse than the incumbents if they try to enter a population⁴. The notion of evolutionary stability can be associated with the notion of convention. A convention can indeed be thought as corresponding to one evolutionarily stable strategy in a context in which there are at least two different strategies (i.e., behaviour) enjoying such property (Sugden, 1986).

Both the rules governing the evolution of the status within the community and the way individuals make their behaviour contingent on such status are of a conventional nature. Thus they can be conceived as evolutionarily stable strategies, i.e., conventions. Conventions of reciprocity can evolve and sustain an acceptable level of cooperation (Trivers, 1971; Axelrod and Hamilton, 1981; Sugden, 1986; Nowak and Sigmund, 1998; Bowles and Gintis, 2011).

It is important to notice that cooperation does not evolve *because* the individuals are aware that it is in their interest to be cooperative. The motivation behind cooperation needs not be personal interest. What standard analysis indeed shows is that cooperative individuals are not necessarily at a disadvantage, for their behaviour is rewarded by virtue of (some form of) reciprocity (Nowak, 2006). Selection pressure do not work against cooperators then (a belief that constituted a puzzle for Darwin himself), but may favour them.

Indeed, it is easy to show how a too strict reading of reciprocity-based cooperation would be fairly naive: suppose j falls into a river and k has the opportunity of providing help; does k provide help because she expect that on future occasions either j herself or a third party h will provide help to her by virtue of reciprocity? It seems more realistic to suppose that help is given in exchange of a *generalised obligation of reciprocity* on the part of “fellow men to help in other circumstances if needed” (Arrow, 1972). However, the statement that individuals may act providing help on the expectation of a generalised obligation of reciprocity on the part of fellow men is problematic from an evolutionary perspective, for it implies for every one a generalised obligation of providing help, even to strangers. Indeed, in their attempt to find out how a cooperative behaviour could have started in the first place, i.e., how cooperation can evolve in a world of defectors, Axelrod and Hamilton (1981) referred either to the hypothesis that cooperation first evolved thanks to the close relatedness of interactants (kinship),

which in their words solely permits *pure altruism*, or to the hypothesis of clustering. In both cases the presumption is that individuals cooperate only if any of them deems the opponent sufficiently close to her along a given dimension. It is a puzzle to be explained then how a generalised obligation of reciprocity may emerge and persist in an evolutionary environment.

3 Gratuitousness and intentions

In this section, a definition of gratuitousness is offered. Basically gratuitousness will be conceived as a trait of a given action. Such a trait characterises the action because of the intentions that inspire the action itself. As far as the problem of cooperation is concerned, gratuitousness can also be conceived as a modality of cooperation in a sense specified later.

Definition 1 (Gratuitousness): An action a performed by individual k is characterised by gratuitousness if: it is costly to k ; it provides benefits Δ to j in circumstances X ; k is aware of this; the benefits Δ' that k may receive in circumstances Y as a consequence of providing benefits Δ to j in circumstances X , are an unintentional consequence of action a .

Let me discuss such definition. First, it posits that an action a performed by k is characterised by gratuitousness (or it is an act of gratuitousness) if it provides benefits to j in circumstances X . It is not required that such benefits come about as an immediate consequence of the action. All that is required is that in circumstances X , j would have not obtained Δ had a not been performed by k . Circumstances X can therefore be far in time from the moment in which a is performed; furthermore it can be uncertain whether circumstances X will come about. In other words, it might be uncertain whether and when circumstances X will get established (*incertus an, incertus quando*).

Even if it is uncertain whether circumstances X will come about and when, k must be aware that her action will provide benefits Δ to j in such circumstances. This is important, for intentionality matters for gratuitousness. Let us suppose that walking down the street where she lives, a paper sticks to k 's shoes and that she takes it off and puts it into a bin without pursuing any other aim than making her shoes free from the paper. This is an act providing benefits to any other j also living there. However this is not an act characterised by gratuitousness, according to the definition given above, for gratuitousness requires that k intentionally provides benefits Δ to j in circumstances X . In this example, intentionality requires that in cleaning up the street where she lives, k is being motivated by the will of providing benefits Δ (a clean road) to, for example, any individual j who decides to walk down that street (circumstances X).

The benefits that k directly obtains from her own action do not necessarily exclude gratuitousness. This is instead excluded if benefits to the others are provided unintentionally and the action qualifies as a form of *mutualism*, i.e., apparently unselfish behaviour, underpinning much of the observed cooperation in animal societies⁵.

Indeed, the third condition requires that benefits Δ' obtained by k for performing a must be an unintentional consequence of her action. Action a in other words must not be instrumental to achieve benefits Δ' in circumstances Y .

It is important to notice that, according to the definition given above, the action needs to be costly to k . This helps to discriminate between what is given by virtue of gratuitousness and what is given for free because has no value whatsoever (Bruni, 2008).

To conclude this section, notice only that an act of gratuitousness might be an act which is individually instrumental, but only *unawarely so*. This seems to be an oxymor, but it is not. To see this, go back to the framework introduced in Section 2 above, and suppose that in circumstances X , k plays the game as a donor, whereas j plays it as a recipient. If k provides help because she expects that either j or a third party h will reward her in the future, her action a is not characterised by gratuitousness in the sense specified above. This however does not exclude that although the act is inspired by the principle of gratuitousness, it provides benefits to k , even though k did not aim to reap such benefits in making her choices. Whether or not k 's cooperative behaviour is inspired by gratuitousness in many cases cannot be easily understood, for the action that k takes might be aesthetically equivalent to the one k would take if she decided to provide help for entirely instrumental reason.

4 Blood donations, voluntary contributions to the lifeboat service and the like

The problem of blood donations can be usefully interpreted using the framework introduced in Section 2 above. At time t , any individual selected as a donor has to decide whether to provide help (donate) or not. Assuming that donations confer no benefits to the donor (which is plausible in large populations), entail a cost to her and are the result of a decision taken by the donor as if she had the whole community as opponent, the blood donation game has the same payoff structure of the PD game described in Figure 1. In this game any individual has an obvious best strategy dictating to defect at any t .

The blood donation game shares the same characteristics of the *lifeboat service game* (Sugden, 1993) or of any strategic choice situation involving voluntary contribution to public goods⁶.

Theories of (individually) instrumental rationality are very pessimistic about the outcome of such games; the classical prediction is that individuals would not voluntarily contribute, unless incentives of some sort are given, i.e., unless the payoff structure of the game changes. There are reasons to argue that such pessimism may depend on the fact that theories of (individually) instrumental reasoning commonly neglect a crucial aspect of choice, which is related to how the individuals *understand* the game itself. The most obvious interpretation for this is that individuals may plausibly frame a game either as *a problem for me* or as *a problem for us*, e.g., Sugden (1993, 2003, 2011), Tuomela (1995), Hollis (1998) and Bacharach (1999, 2006).

Grounding on this intuition, in this section I try to answer to the following question: can blood donations (or other acts involving voluntary contribution) be considered as acts inspired by the principle of gratuitousness?

To answer this question let us go back to the definition of gratuitousness given in Section 3 above. A blood donation is costly to k ; it provides benefits Δ to j in circumstances X ; k is aware of this. In large population, where donations are anonymous, the benefits Δ' that k may receive in circumstances Y are an unintentional consequence of her donation. Indeed, as in such populations there does not exist any privilege for individuals who perform a blood donation to be served first should they

have a need for blood, no one can realistically believe that the benefits individuals may get in circumstances Y are a more or less direct consequence of their donations. The only benefit that k might indeed receive would be to increase the probability of getting a blood transfusion (benefits Δ') should she have a need for that (circumstances Y). As this is clearly negligible, the donation cannot be conceived as instrumental and the motivation behind this practice cannot be seen as underpinned by some form of reciprocity.

Why do individuals donate then?

In a very famous article, Arrow (1972) casts many doubts on Titmuss' (1971) analysis of gifts relationships. He especially criticizes Titmuss' claim that the creation of a market for blood negatively affects blood donations. At the hearth of Titmuss' (1971) perspective there is the belief that blood donations contribute in shaping valuable social relationships among the members of a given society, as witnessed by the following passage quoted by Arrow himself:

“In not asking for or expecting any payment of money, these donors signify their belief in the willingness of other men to act altruistically in the future, and to combine together to make a gift freely available should they have a need for it.”
(p.239)

There are some aspects of this quotation which are worth considering. First, on Titmuss account, blood donors display confidence in the fact that others will behave in the same manner. So blood donors have an expectation based on trust. This expectation is not, however, such as to make one's own behaviour *conditional* to others'. Any donor does not wait for the others to move first. Nor it is said that a donor would stop contributing whenever she does not observe that other *men act altruistically*. Second, a blood donor acts as if she followed a concerted plan, doing her part in a cooperative enterprise whose aim is to make a good freely available, so that everyone can have access to it whenever in need.

Drawing from it all the logical consequences, Titmuss' perspective looks extraordinarily close to the one taken by theories of *Team agency* which focus on modes of reasoning used by individuals who identify with a group. In what follows I rely on Gold and Sugden (2007) – who have represented team reasoning explicitly, as a distinctive mode of behaviour – to catch the main intuitions behind Titmuss' view. Then I try to tackle the problem of gratuitousness within a schema of practical reasoning grounded in a frame of we-rationality.

4.1 Team-reasoning

Following Gold and Sugden (2007), I consider a (weak) subset of I , G , with typical element i . I denote by $A \equiv \{a_{it}\}_{\forall i \in G}$ the action profile at t , and by $U : A \rightarrow \mathfrak{R}$ a payoff function assigning a numerical value to any action profile. I define common knowledge as it is usually done: a proposition p is common knowledge in G if:

- 1 p is true
- 2 any $i \in G$ knows p
- 3 for any $i, h \in G$, i knows that h knows p
- 4 for any $i, h, z \in G$, i knows that h knows that z knows p ; and so on.

In their work, Gold and Sugden (2007) provide schemata exemplifying principles of practical reasoning, i.e., reasoning that leads to conclusions about what an agent *should* do, inferred from premises that the agent believes to be true and using a rule of inference that she believes to be valid⁷. Here is a schema deriving a principle of practical reason (what they call *simple team reasoning*) starting from premises which identify the group as the unit of agency.

Schema 1. Simple team reasoning (Gold and Sugden, 2007):

Suppose that the following propositions are common knowledge in a set G of individuals with typical element i :

P1 (*mutual recognition*): any $i \in G$ conceives of G as a unit of agency, i.e., any $i \in G$ identifies with G

P2 (*common aim*): any $i \in G$ wants to maximise the same payoff function U

P3 (*selection of the best alternative*): the payoff profile \hat{A} uniquely maximises U .

[P1–P3] \rightarrow Any i should choose her component of \hat{A} .

Notice that, on this account, the expectation that any other individual in G cooperates *to combine together to make a gift freely available*, to use Titmuss' words, can well be interpreted as a consequence of a team reasoning perspective. Indeed, it would be simple to show that also the following proposition is a direct consequence of [P1–P3]:

P4 (*mutual reassurance*): any $i \in G$ expects any other $h \in G$ to choose her component of \hat{A} .

Thus, on this account, whenever a team reasoning perspective is adopted by a set of individuals, such individuals constitute a group whose internal ties are strengthened by the expectation of mutual cooperation. Notice that the conclusion inferred from P1–P3 above dictates an individual to choose her component of \hat{A} in situations where rationality also suggests to any other member of G to do the same, and this is common knowledge, as proposition P4 suggests. An expectation of reciprocity is therefore present (at least in this version of team reasoning); indeed, any individual $i \in G$ performs her part on the understanding that any other $h \in G$ will perform hers.

How does this can be conciled with the explanation of blood donations or other voluntary contributions in which one's actions are not necessarily conditional on reciprocity?

My answer is that, although the motivation behind we-rationality is necessarily unique (i.e., achieving something which is good *for us*), on practical grounds there are different ways in which this motivation is translated into a concrete behavioural code, which necessarily adapts to perceived changes in the strategic situation.

To better clarify this point, let me consider the strategic situation described by the HI-LO game, e.g., Bacharach (2006). In this game, any player has to choose an item from the same finite set of alternatives. To any alternative is associated a prize. One alternative's prize is greater than all the others. The rules of the game are such that players get the same prize if they choose the same alternative, they get nothing

otherwise. It is clear that in a game like HI-LO, any individual adopting team reasoning must have an expectation of reciprocity.

Consider indeed a two-player HI-LO game. Suppose it is $\{HIGH, LOW\}$ the choice set and that the highest prize is associated with the outcome (HIGH, HIGH). If i does not expect j to play HIGH, there is no point for i to play HIGH. Similarly, if i does not expect j to play LOW, there is no point for i to play LOW. Individuals are in the same situation in which the best-reply reasoning would place them. Only in the case in which any of the players has a reasonable expectation that also the other considers as the main dilemma, and is ready to do her part to promote, what is *best for us*, the two options $\{HIGH, LOW\}$ differ. A notion of reciprocity is in this case clearly involved.

In the case of voluntary contribution to the provision of goods generating public benefits, a notion of reciprocity is not necessarily involved, for, I believe, coordination among players is not strictly necessary to motivate behaviour.

In some situations, a group $G \subset I$, of individuals may coordinate their actions - despite being aware that non-G individuals would not coordinate theirs' with them - conditional on there being a sufficient number τ of individuals in the group to motivate a team perspective. In some other situations an individual might be motivated by a team perspective, acting *as if* the other individuals were motivated in the same way. I believe this happens whenever one realises that her own contribution, taken in isolation, is a worth activity ⁸.

Hollis (1998, p.147) brilliantly clarifies the point:

“There is a logic of ‘enough’, I submit, which can overcome the dominance of defection, provided that a sense of membership is in play. Donors cooperate if confident that enough blood is being provided by enough members. Thus, public goods which depend on creative altruism are a matter both of a large enough total to secure the good and of enough contributors for mutual reassurance that contributing is a worthy activity. Enough is then enough.”

To specify what I have in mind by means of a schema of practical reasoning, I suppose that any individual in G acknowledges U as her objective, which is a milder requirement than that presupposing that any individual in T *wants* to maximise U . I then show how the behaviour generated by this schema of practical reasoning is consistent with the principle of gratuitousness.

Schema 2. Normative team reasoning

Suppose the following propositions are group conditional common knowledge in a subset of individuals G , $\emptyset \neq G \subset I \equiv \{1, \dots, i, \dots, n\}$, with typical element j :

- P1T (*mutual recognition*): any $j \in G$ identifies with I
- P2T (*normative disposition and conditionality*): any $j \in G$ acknowledges U as the objective of I , conditional on $|G| \geq \tau_j$
- P3T (*critical mass requirement*): for any $j \in G$, $|G| \geq \tau_j$
- P4T (*selection of the best alternative*): the action profile \hat{A}_G uniquely maximises U , given the actions of non-members of G , i.e., \hat{A}_{I-G} .

[P1T–P4T] $\rightarrow j$ should follow her component of \hat{A}_G .

There are three things worth noticing. First, the critical mass requirement $|G| \geq \tau_j$ can be such that $\tau_j = 0$. In my view this corresponds to situations in which an individual believes that contributing is a worthy activity even if no other contributions are provided. Contrary to Hollis, I think that one's decision to donate blood is not necessarily conditional on others doing the same, for this is really a case in which any donation, singularly considered, is a worthy action. Second, any individual in G has to be motivated by a normative disposition which induces her to acknowledge U as the objective of I , on the grounds that U is *best for us*, where *us* is here a universe of individuals larger than the one affiliated to G . Third, the notion of reciprocity involved in this schema of practical reason – ‘cooperate whenever $|G| \geq \tau_j$ ’ – is not the usual one. No member of G expects a benefit accruing to her by virtue of reciprocation. In other words, differently from more standard theories, reciprocity does not reward a cooperative disposition, even though it makes a cooperative disposition something worthy.

I believe that it is this schema of practical reasons that stays behind any action inspired by the principle of gratuitousness as I have defined it. In this respect, gratuitousness, conceived as grounded in a team reasoning perspective and possibly motivating it, is crucial in explaining apparently irrational behaviour, such as the voluntary contribution to public goods or charitable ventures, whenever standard theories of reciprocity, based on individually instrumental rationality, do not apply.

5 Concluding remarks

The fact that so little attention has been given to gratuitousness is not surprising, given the persistence of a widespread cultural bias which neglects the role of purely non-selfish motivations.

The discussion above should have made clear that some practices of gift-giving, such as tipping for example, are not necessarily inspired by gratuitousness. This conclusion is consistent, I believe, with the basic premise that gratuitousness is a feature acquired by an action by virtue of the intentions that inspire the action itself. An act of gratuitousness might be an act which is individually instrumental, but only *unawarely so*. In the sense specified above, gratuitousness is a modality of cooperation emerging as the outcome of a team reasoning perspective and motivating such a perspective without any need for reciprocity. As far as the ability of assuming this perspective benefits the individuals endowed with it – also by virtue of reciprocity – gratuitousness cannot be conceived as *irrational*, an error in a world regulated by evolutionary forces.

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References

- Akerlof, G.A. (1982) ‘Labor contracts as partial gift exchange’, *The Quarterly Journal of Economics*, MIT Press, Vol. 97, No. 4, pp.543–569.

- Arrow, K.J. (1972) 'Gifts and exchanges', *Philosophy Public Affairs*, Vol. 1, No. 3, pp.343–362.
- Axelrod, R. and Hamilton, W.D. (1981) 'The evolution of cooperation', *Science*, Vol. 211, No. 489, pp.1390–1396.
- Bacharach, M. (1999) 'Interactive team reasoning: a contribution to the theory of co-operation', *Research in Economics*, Vol. 53, No. 2, pp.117–147.
- Bacharach, M. (2006) in Gold, N. and Sugden, R. (Eds.): *Beyond Individual Choice: Teams and Frames in Game Theory*, Princeton University Press, Princeton.
- Belk, R.W. and Coon, G.S. (1993) 'Gift giving as agapic love: an alternative to the exchange paradigm based on dating experiences', *Journal of Consumer Research*, Vol. 20, No. 3, pp.393–417.
- Bowles, S. and Gintis, H. (2011) *A Cooperative Species: Human Reciprocity and its Evolution*, Princeton University Press, Princeton.
- Bruni, L. (2008) *Reciprocity, Altruism and the Civil Society*, Routledge, New York.
- Clutton-Brock, T. H. (2009) 'Cooperation between non-kin in animal societies', *Nature*, Vol. 462, No. 7269, pp.51–57.
- Gallagher, H.L., Jack, A.I., Roepstorff, A. and Frith, C.D. (2002) 'Imaging the intentional stance', *Neuroimage*, Vol. 11, No. 3, pp.814–821.
- Gold, N. and Sugden, R. (2007) 'Theories of team agency', in Peter, F. and Schmid, H.B. (Eds.): *Rationality and Commitment*, Oxford University Press, Oxford.
- Hollis, M. (1998) *Trust Within Reason*, Cambridge University Press, Cambridge.
- Laffont, J-J. (1975) 'Macroeconomic constraints, economic efficiency and ethics: an introduction to Kantian economics', *Economica*, Vol. 42, No. 168, pp.430–437.
- Mauss, M. (1925) *The Gift: Form and Functions of Exchange in Archaic Societies*, Norton, New York.
- Nowak, M.A. (2006) 'Five rules for the evolution of cooperation', *Science*, Vol. 314, No. 5805, pp.1560–1563.
- Nowak, M.A. and Sigmund, K. (1998) 'The dynamics of indirect reciprocity', *Journal of Theoretical Biology*, Vol. 194, No. 4, pp.561–574.
- Schotter, A. (1979) *The Economics of Tipping and Gratuities: An Essay in Institution Assisted Micro-Economics*, Technical report.
- Singer, T. and Tusche, A. (2014) 'Understanding others: brain mechanisms of theory of mind and empathy', in Glimcher, P.W. and Fehr, E. (Eds.): *Neuroeconomics: Decision making and the Brain*, Academic Press, London.
- Sugden, R. (1986) *The Economics of Right, Cooperation and Welfare*, Palgrave Macmillan, Basingstoke.
- Sugden, R. (1993) 'Thinking as a team: towards an explanation of nonselfish behaviour', *Social Philosophy and Policy*, Vol. 10, No. 1, pp.69–89.
- Sugden, R. (2003) 'The logic of team reasoning', *Philosophical Explorations*, Vol. 6, No. 3, pp.165–181.
- Sugden, R. (2011) 'Mutual advantage, conventions and team reasoning', *International Review of Economics*, Vol. 58, No. 1, pp.9–20.
- Titmuss, R.M. (1971) *The Gift Relationship: From Human Blood to Social Policy*, Pantheon Books, New York.
- Trivers, R. (1971) 'The evolution of reciprocal altruism', *Quarterly Review of Biology*, Vol. 46, No. 1, pp.35–57.
- Tuomela, R. (1995) *The Importance of Us: A philosophical Study of Basic Social Notions*, Stanford University Press, Stanford.

Notes

- 1 This is a job that human beings perform fairly well, as everyday experience and the evidence collected so far show, e.g., Gallagher et al. (2002) and Singer and Tusche (2014).
- 2 Differently from the view that gift giving has to be solely interpreted as instrumental to achieve a given goal, the agapic love paradigm valorises expressive altruistic gifts that reveal and celebrate emotions, e.g., Belk and Coon (1993).
- 3 In formal terms, for any strategy available to i , $\gamma'_i \neq \gamma_i^*$, it must be that $V_i(\gamma_i^*, \gamma_{-i}^*) \geq V_i(\gamma'_i, \gamma_{-i}^*)$, where $V_i(\gamma_i^*, \gamma_{-i}^*)$ is i 's payoff (fitness) when she plays γ_i^* and the strategy profile of her opponents is γ_{-i}^* .
- 4 A strategy γ^* is said to be evolutionarily stable, iff for any conceivable alternative strategy γ' , either $V_i(\gamma^*, \gamma^*) > V_i(\gamma', \gamma^*)$, or $V_i(\gamma^*, \gamma^*) = V_i(\gamma', \gamma^*)$ and $V_i(\gamma^*, \gamma') > V_i(\gamma', \gamma')$.
- 5 Some apparently cooperative behaviours are forms of mutualism, in which any individual maximises its own fitness and any effect on the fitness of others is coincidental, e.g., Clutton-Brock (2009).
- 6 Clearly, this is not to say that blood has the characteristics of a public good in the standard sense, but that the strategical structure of the game is that of a public good game. As for the lifeboat service, in Britain it is entirely financed by voluntary contributions. Notice that, from a theoretical perspective, contributions to charitable ventures also raise problems similar to the ones discussed in this section.
- 7 For my purposes I can skip the problems related to the *objective* validity of both the premises and the inference rule. On this, Sugden (2003).
- 8 This kind of *Kantian* perspective can be grounded in the principle of gratuitousness, and is different from other self-interested perspectives grounded on apparently equal principles, e.g., Laffont (1975).