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Varieties of Trust Games

Economics and the Bet on Human Nature

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ABSTRACT

The concepts of trust and game have contributed to a reformulation of fundamental assumptions of economic theory. While game theory broadened the scope of economic analysis to encompass an evolutionary perspective, experiments on trustful behaviour served to empirically challenge the assumption of an exclusively self-interested rational actor. In our paper, we examine the contrasting concepts of economic actors and acting as a betting game between economic theorists. Whereas neo-classical and institutional economics posit the invariance of human nature, behavioural economics and commons research assume the existence of diverse types of economic actors and a variability in their playing modes. From the perspective of practical philosophy, trust is an indispensable practice that enables the actors involved to communicate, learn from each other, and establish evolving relationships. To trust is to engage in a game that is open and innovative, with the rules subject to constant renegotiation.

KEYWORDS

Trust, Game Theory, Economic Theory, Commons, Behavioral Economics, Philosophy

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1. Economics and the trustworthiness of man

1 What exactly do we mean when we think or say that we trust someone? Is trust an attitude rooted in our feelings, or is it the result of our cognitive or rational evaluation of a person, a situation or an interaction? Translated into the realm of games, the answer to this question implies two modes of play: a strategic one and an intuitive one. When we play the game of trust, it seems at first that we have to choose between one of the approaches. But is this really the case?

2 In our paper, we outline and compare different accounts of trust as characteristic of different approaches to economic action. Addressing the topic from a historical-philosophical perspective, we argue that the different conceptions of trust, or trustworthiness, and their importance for economic action are closely related to the respective ideas of game and play. The conceptual relationship between 'trust' and 'game' links the different economic approaches to the roots of economics as a branch of moral philosophy. As we walk through the history of economic theory, we imagine a game about the moral dimension of humanity being played by economists of different eras and schools. Depending on the theoretical basis or the methodology developed and applied by these schools, the respective assessment of moral or ethical aspects varies considerably.

3 Taking the position of contemporary practical philosophy, we assume that trust, not so much as an emotional or cognitive attitude, but as a collective practice, is linked to an essential openness which is difficult for classical economics to accept, but which is a necessary condition for innovation, learning and development in economic and social contexts. Conceiving of trust as a collective practice allows us to approach it to the realm of game and play. What does it mean to conceive of trust as a collective practice? As the verb indicates, 'to trust' is to do something, i.e. to engage in a social interaction, while the noun 'trust' refers to an atmosphere, or a collective state, that is created, developed, damaged, or destroyed by the actions and interactions of the people involved in trusting relationships (Baier 1991, Hartmann 2011). When we trust, we are engaging in a complex series of interactions, feelings, reflections, and judgments about other people, their capabilities, and our relationship with them. We trust others by requesting that they assume responsibility for a task, concern, or valuable object that is significant within a cooperative, transactional, or relational context. We entrust them with the completion of a task (the delivery of a service) or the care of a concern or valuable object by allowing them discretion and judgement in determining both the task's or concern's or object's completion and the way it is completed. In this sense, all actions, cognitive evaluations and affective reactions in the context of the unfolding interac-

tion create (or damage) an atmosphere of trust that can serve as a basis for further interaction or, in the negative case, challenge or hinder it.

4 If we conceptualise trust from a philosophical perspective as a social practice, are we justified in defining or describing what we do when we trust as a game, as our paper title suggests? One might argue that when we engage in trusting others or being trusted by them, we are being serious. Consequently, we do not engage in the type of strategic manipulation of others' intentions and expectations, which is commonly understood as 'playing games'. Conversely, the act of trusting another individual carries with it the potential for disappointment. In a trusting relationship, it is impossible to be certain about the other person's behaviour. If anything, this seems to be a basic requirement or rule of trusting as a *language game* or *form of life* (Wittgenstein 1953). By demanding certainty concerning the outcome in a trusting relationship, we would not leave any discretion to our interaction partner. In the strict sense of the term, we would not be able to describe the relationship as one of trust. Rather, we would be more accurately describing it as one of command or delegation, in which the other party is required to execute a task without the need for significant input from us. It can be argued that trust is not truly trust if it does not encompass a certain vulnerability (Baier 1991, Hartmann 2011). In this sense, trust is a game with stakes. It can have harmful consequences for those involved in the trusting relationship. When we place our trust in another, we run the risk of being wounded by that trust being betrayed.

5 From a philosophical perspective, trust must be considered a practice based on irreducible openness, a relationship in which development is possible only because there is no rule to be followed that determines the way trusters and trustees interact and shape their relationship (Baier 1991, Solomon and Flores 2001). In other words, there is no guarantee for not being disappointed and wounded. This conception of trust appears to be at odds with the view of economic sciences, which seems to view any type of interaction and relationship as starting and ending with calculus and rational analysis. Nevertheless, these disciplines have been engaged with the concepts of trust and game for a considerable period of time. The question of the 'trust game' from the perspective of economics can be formulated as follows: What motivates humans to engage in economic interactions or transactions, such as the production and exchange of goods and services, trading, and investing, if they cannot be sure of the other party's willingness to cooperate in an honest manner? Why do they assume the risk of trusting in relationships of cooperation, competition, and exchange when they cannot quantify the type of risk associated with trust in figures?

6 In this context, it is therefore necessary to consider what is at stake when economic science considers the concepts of 'trust' and 'game'. The overarching hypothesis of this paper is that the various strands of economic history have engaged in a game of their own, one that involves wagering on the 'nature' of the human being. The question of whether humans are innately trustworthy or not, and the implications of this for economic action, are significant. In order to contextualise this question, it is necessary to bear in mind that economic science emerged in the 18th century as a branch of moral philosophy – and especially a moral philosophy that contemplates 'human nature' from an empirical point of view (Hume 1739/40, Hutcheson 1742). It is possible that economics, despite its current distance from its ethical origins, continues to seek answers to the fundamental question of human nature as it develops models of human agency and behaviour.

7 While the classical and neoclassical economic approaches to human nature define it as fundamentally invariant, in recent history, there has been a theoretical turn based on empirical findings towards a higher variability regarding the motifs and modes of economic engagement. This concept of variability (Gould, 1996) has its roots in a shift in evolutionary theory that values the role of cooperation over that of competition and selection as a guiding principle of progress (Gintis and Bowles, 2011, Nowak and Highfield 2011). Furthermore, it is based on the insight that if humans are considered to be invariant in their nature, they are denied the capacity to learn, to develop and to evolve. In light of these significant revisions to the foundations of economic action, we posit that the concept of trust has enabled economics to integrate issues such as learning and development into its purview. This is because it allows to conceptualize economic action in general as a social practice, as something that is done with others based on openness and a mutual attempt to understand each other.

2. From playing Robinson to Rational Games: Classical and Institutional Economics

8 The long-standing denial by economic theory of the essential interactionist nature of economic action, even in competitive settings (Baier 1997), has been challenged. In other words, trust was not considered a variable for defining economic action. In light of this, it is necessary to consider what classical economic theory is attempting to prove about human nature.

9 In the view of its founding fathers, such as Mandeville and Adam Smith, classical economics suggests that we should not concern ourselves with the alleged goodness or

trustworthiness of others. This indicates that, when each individual prioritises their own self-interest, collective welfare is best served. The game to be played in accordance with this rule is called the 'free market'. For a considerable period, economists did not consider the market to be a game, but rather a mechanism. This was because there was no need to consider the intentions or needs of others to explain the equilibrium function of markets. Furthermore, from the neoclassical perspective, individual rational economic behaviour does not depend on interaction with others; rather, it consists in the allocation of scarce resources to alternative ends according to given preferences (Becker 1976).

10 It can be argued that the concept of collectiveness is introduced into the field of economic thought through the lens of the 'game'. The observation that one cannot engage in games in isolation prompted a profound re-evaluation and restructuring of the concept of 'acting' within economics. The introduction of game theory into economic sciences by von Neumann and Morgenstern (1944) marked the end of the 'Robinson on his island'-like conceptions of economic acting. Nevertheless, the concept of game in this sense is inherently formal and, historically, represents only one approach to addressing the problem of integrating or embedding other players' strategies, interests, and aims in one's own decisions and actions. This introduces greater variability into the process of decision-making, in contrast to the classical conception of economic rationality, which assumes that actors (or players) are unable to adapt their strategies in response to their partners' actions. Informed by the game-theoretical approach, actors may begin to conceptualise the act of playing with others in terms of *cooperation* rather than *competition*. Nevertheless, the underlying assumption of human nature remains unchanged, assuming an egocentric actor (player) that has become more sophisticated by recognizing the advantage of considering the interests of others in order to advance their own interests. From a game-theoretical perspective, the interests of others are perceived as rational intentions, rather than merely as functions of an overarching mechanism referred to as the market. This brings economics closer to understanding games as a *form of life* (Wittgenstein 1953), i.e. an interaction embedded in a social context. However, this does not imply the assumption that economic actors behave in a trustful or trustworthy manner deliberately. To overcome what is known as the collective action dilemma – that is, the alignment of diverging interests for the sake of the common good – economics developed a theory of institutions that are capable of containing defective behaviour and guaranteeing effective and efficient actions and transactions (Williamson 1985). In order to guarantee fair conditions for cooperation and competition, it is necessary to design and enforce laws and sanctions by external institutions such as legislation and justice courts. At the very least, trust appears to be a beneficial attitude, shared by all players, towards these institutions. Is it therefore too

risky, from an economic standpoint, to engage in types of interaction that are characterised by a certain openness? Is the variability of human behaviour unbearably incalculable and therefore uneconomic, as the language of economics is ultimately based on calculus?

11 However, in both economics and games, the objective is to win, and this implies that taking risks is an integral part of the respective activities. It is not coincidental that some of the most popular games are simulations of economic activities, such as Monopoly or Catan. If economics addresses the topic of risk, it usually links it to issues such as innovation, entrepreneurship, or financial speculation. All of these activities can be trained or simulated in the form of games. In both simulations and real life, the objective is that an idea, effort, or investment will eventually yield a return. Otherwise, the risk is not worth taking, and the initial investment may be lost.

12 However, when we conceive of as trust a social practice, we encounter a different and more radical type of risk and unpredictability. This is exemplified by the risk that not only expectations be disappointed, but that relationships be damaged. It is possible that this damage or loss could be quantified in monetary terms, but this would only capture one aspect of the disillusionment. As previously stated, trust entails accepting vulnerability. This is the 'price' of openness in a relationship based on trust, a price that cannot be adequately translated into figures. If we were able to quantify it, trust would cease to exist, and its place would be taken by reliability, which is a distinct type of attitude (Baier 1991, Hartmann 2011, Solomon and Flores, 2001).

13 We argue that the assumption of greater variability in human behaviour in economic action (i.e. the acceptance of openness with respect to human nature) does not detract from the theoretical foundations of economics. Conversely, this has led to the design of innovative experiments with the objective of better understanding the evolution of collective norms or the integration of moral judgments and attitudes into economic decision-making, whether at the individual or collective level. The question is not whether humans are rational utility maximisers, nor whether trust can therefore be part of the economic game. In the past, several authors have demonstrated that the theoretical assumptions of neo-classical economics are inadequate and, in some cases, misleading (Sen 1977, Hirschman 1984). The question that must be addressed in this context is the extent to which different conceptions of trust underpin the diverse approaches to economic action. In other words, the question is not whether trust can be integrated into economic theory and practice, but rather how it can be done. This entails designing the various trust games in question.

14 The remainder of this paper will demonstrate that more sophisticated and diverse conceptualisations of human nature, such as those proposed by behavioural economics and the theory of the commons, recognise the importance of trust as a key factor in overcoming collective action dilemmas. From the perspective of classical and neoclassical theory, collective action is perceived as a dilemma that can only be resolved through external intervention or regulation, as it is unlikely that individual rational utility maximisers will contribute to the creation and maintenance of common goods. Given that all players are assumed to be self-interested by nature, they are considered incapable of transforming the game. In contrast, experimental and theoretical research has demonstrated that these dilemmas can be transformed into occasions for collective learning and development (Ostrom, 2000). The integration of learning and development into the concept of economic interaction also necessitates a re-evaluation of the role of institutions. Rather than being regarded as external frameworks designed to discourage undesirable behaviour, they are viewed as internal arrangements that facilitate collective action. In addition to pursuing their own self-interest, various types of players act for the common good, which they foster and protect by developing and changing the rules of the game.

15 Nevertheless, the entirety of this learning and development cannot be comprehensible without a reconsideration of the concept of trust, as initially postulated. The act of trusting involves engaging with others and, as a consequence, establishing a relationship (Baier 1997; Solomon and Flores 2001). In other words, trust is the process of overcoming a lack of communication and obstacles to achieve sustainable cooperation with the aim of learning from each other. This practice is based on shared values and interests, rendering it well-suited to navigate the inherent openness that it entails. While this lack of predictability may appear disadvantageous in terms of the security of economic outcomes, it serves as the foundation for innovation and sustainable development that cannot be achieved without embracing the openness of these processes.

3. ‘Split or steal’: interacting with others in economic games

16 As previously stated, an inquiry central to economists concerns the question of why individuals engage in cooperative and trusting behaviours in various societal, organisational, and communal settings, even when such actions may not align with their immediate material self-interest. How can economic science account for types of behaviour that appear to deviate from, or contradict, its basic theoretical assumptions? Against the background of insights from game theory, psychology and evolutionary theory, economists resort to conducting laboratory experiments to scrutinise deci-

sion-making processes in scenarios involving risk, social interactions, and social preferences. These experiments, commonly referred to as 'games', entail the observation of human decision-making within controlled settings, with financial stakes corresponding to the choices made.

17 While laboratory experiments have yielded valuable insights into our understanding of human cooperation, they are not without limitations. Primarily, this is due to the relatively small stakes involved and the generalisation of findings. One potential solution to this issue is to conduct similar experiments in field settings in low-income countries. This approach could provide insights into cultural differences that may not be evident in laboratory experiments. Another strategy involves the study of cooperative behaviour in televised game shows featuring substantial stakes. In contrast to laboratory experiments, game shows differ significantly in terms of participant selection, yet they adhere to well-defined and strictly enforced rules. Analysing the decisions made in these settings allows researchers to explore the robustness of existing laboratory findings.

18 The British game show 'Golden Balls', which aired for 287 episodes between June 2007 and December 2009, provides an illustrative example. In the concluding stage of the show, players are presented with a pivotal decision regarding cooperation. In particular, the two final contestants are presented with the option of either 'split' or 'steal' with regard to the distribution of the jackpot. If both contestants select the option of 'split', the jackpot is divided evenly between them. If one contestant selects the option of 'split' while the other selects 'steal', the latter will receive the entirety of the jackpot, leaving the former with no compensation. In the event that both contestants select the option to 'steal', both will be left with nothing.

19 In accordance with neo-classical economic theory, each player should be solely concerned with maximizing their immediate financial payoff. Classical economists typically argue that as the stakes increase, individuals will tend to behave in a manner that is consistent with their rational self-interest (e.g., Rabin 1993, Telser 1995, Levitt and List 2007). However, empirical research indicates that players exhibit social preferences in their utility function, as outlined by Fehr and Schmidt (1999), Bolton and Ockenfels (2000), Charness and Rabin (2002), and others. Furthermore, players consider their reputation, particularly given the substantial television audience that desires to witness cooperative behaviour. It is noteworthy that prior to making their actual decisions, contestants have a brief window of opportunity for discussion. During this phase of the game, they may engage in non-binding promises, inquire about intentions, or seek assurances of cooperative behaviour. This final round is referred to by

economists as 'cheap talk'. It is important to note that the players have not met prior to the game and are unable to enter into any form of collusive agreement before or during the programme.

20

21 In their analysis of all 287 final rounds, van den Assem, van Dolder, and Thaler (2012) discovered that, on average, players choose to cooperate 53% of the time by opting to split the jackpot. This outcome is consistent with the findings of other experiments, such as that conducted by Sally (1995). In particular, the analysis revealed that in 31% of cases, both players split the jackpot. In 44% of instances, one player splits while the other player steals. Finally, in 25% of cases, both players choose to steal. It is noteworthy that the rate of cooperation is remarkably high when the stakes are relatively low. The data indicates that when the stakes are relatively low, often referred to as 'peanuts', players tend to cooperate more in order to project a positive image, while cooperation decreases for higher stakes. An intriguing observation is that the 'small' stakes on the show, amounting to several hundred points, are quite substantial in comparison to the stakes in most experimental settings.

22 The final round, which includes interaction and discussion phases, is of particular interest in investigating the role of communication, especially promises, in such situations. During the discussions preceding the decision to either split or steal, numerous players explicitly stated their intention to split or made definitive statements about their intentions. In this context, the act of lying appears to be accepted, akin to the practice of bluffing in poker. It can be observed that players do not appear to be more likely to trust if their opponent is expected to trust, as was observed in preceding rounds. Another outcome is that young males are more likely to engage in cooperative or trusting behaviours than young females, suggesting that there are demographic differences in behaviour.

3.1 Variability of Games in Behavioural Economics

23 The variability observed in experimental designs developed by behavioural economists extends beyond the behaviours performed by players to encompass the nature of the interaction itself. Consequently, behavioural economics has established a typology of distinct 'games' with the objective of elucidating the role of trust in economic exchange. In this manner, disparate scenarios serve as a framework for testing the hypothesis that trust is not merely a risky and therefore disadvantageous attitude but can evolve even under unequal conditions.

3.1.1 Dictator Game

24 This type of game involves two players who are unable to see or communicate with each other. Each player is required to make a single decision, and they are initially endowed with 100 €. The question posed is as follows: as the sender, how much of this endowment would you hand over to the unknown player?

25 In the 'Dictator Game', one of the players is designated as the 'proposer'. If the player is solely motivated by self-interest, they would allocate the entire amount to themselves. However, empirical findings indicate that, on average, individuals in the role of proposers, often referred to as 'dictators' in experimental settings, offer approximately 30% of their endowment. It is notable that demographic factors play a significant role in shaping these decisions. For example, women tend to offer a greater proportion of their endowment, with an average increase of over 6%. In contrast, students, as a demographic group, are inclined to offer a smaller proportion, with a decrease of approximately 15%. These variations demonstrate the influence of individual characteristics on decision-making in the various types of trust game.

3.1.2 Ultimatum Game

26 The 'Ultimatum Game' is a scenario in which two players are unable to see or communicate with each other. The following scenario unfolds: Player 1, who is initially endowed with 100 €, is then required to determine the amount to offer to Player 2. Subsequently, Player 2 has the option to either accept or reject the offer made by Player 1. Two key questions arise in this game:

a. What amount would Player 1, as the sender, be willing to transfer to the unknown Player 2?
b. What amount would Player 2, as the receiver, be willing to return to Player 1?

27 In this game, the two players assume distinct roles: the proposer and the responder. Classical economic theory posits that the responder should accept any offer exceeding zero. Empirical findings indicate that, on average, the proposer allocates approximately 40 to 50% of the money to the responder. Conversely, the responder is more likely to reject offers that are lower than 30% of the proposer's money. This asymmetry in behaviour between the proposer and responder is a notable aspect of the 'Ultimatum Game'.

3.1.3 Trust Game

28 In the 'Trust Game', participants are confronted with pivotal questions.

1. Please indicate the division of € 100 that you would propose as the sender.
2. At which division would you decline to accept as the recipient?
3. What are the underlying causes of this behaviour?
4. What would be your decision as the sender?

29 The questions are designed to ascertain the extent to which the sender (Se) would be willing to transfer funds to the unknown player and the extent to which the receiver (Re) would be prepared to return funds to the sender. Theoretical predictions based on game theory suggest that the sender and receiver will receive payoffs, which are denoted as $(\pi\_Se, \pi\_Re) = (10\text{-}i+r, 3\cdot i\text{-}r)$, where i represents the proposed amount. These predictions are based on a rational approach that does not consider social preferences, assuming that the other player will adopt the same approach. In contrast to the theoretical predictions, the empirical results indicate that the sender invests 50% of their endowment, while the receiver returns 37% of the tripled amount. The interpretation of these findings suggests that as a sender (trust), individuals demonstrate self-interest coupled with trust in reciprocity, risk-seeking behaviour, and altruism. Conversely, as a receiver (trustworthiness), individuals exhibit reciprocity, inequality aversion, and altruism. These findings provide insight into the complex interplay of self-interest, trust, and reciprocity in the 'Trust Game'.

30 It is important to note that the various types of games, their framing, and the observed behaviour indicate that the integration of trust as an attitude and as an asset to economic interaction in behavioural economics has been driven by the variability of human nature. It is evident that individuals do not always act in accordance with their purported self-interest. Instead, they conceptualise economic action as a form of interaction. In other words, they assume that economic acting is a serious game in which different types and combinations of self-interest or altruistic behaviour can occur. It is therefore of great importance to gain an understanding of the aims, intentions, and

strategies of those with whom one is interacting. This understanding should then be used to inform one's own actions and interactions.

3.2 Conclusions Behavioural economics draws upon game experiments

31 As early as the 1950s, Herbert A. Simon demonstrated that humans, due to their limited information processing capacity, are typically unable to make decisions in accordance with the classical model of perfect rationality. Since the 1970s, scholars such as Kahneman (2011) and Tversky have extended this strand of research, which links psychology, cognitive science and economics. Behavioural economics has since developed further differentiations with respect to the reasons and motifs of economic acting. By designing and conducting game experiments, these researchers demonstrate that individuals are driven by a desire for fairness and justice, as well as self-interest. Moreover, individuals exhibit differences in their evaluation of outcomes pertaining to themselves and others. The notion that preferences are fixed and unchanging, as espoused by classical economic theory, is untenable. Rather, they are dynamic and contingent upon the context, framing, and interaction dynamics. In addition to individual preferences, social preferences can be modelled by the weights people assign to self-interest, inequality aversion, and social welfare (Fehr and Schmidt 1999, Bolton and Ockenfels 2000, Charness and Rabin 2002).

32 The disparate findings of behavioural economics consistently demonstrate systematic divergences from the expectations derived from the classical model of rational decision-making. These results can be summarized in five points. Firstly, it is evident that individuals are unable to make decisions that can be considered perfectly rational, as they lack the necessary prerequisites to do so (Simon 1957, Kahneman 2011). Furthermore, they lack the requisite information, and their objectives (preferences) are not static. In their decisions, they are guided by heuristics that have been tested and proven to deviate significantly from the model of rational decision-making (Gigerenzer, Selten 2001). Such everyday heuristics are oriented towards satisfactory alternatives instead of optimal ones (satisficing), salient features (representativeness), following different schemes, anchor situations, accepting distortions in the chances of winning or simply avoiding losses.

33 Secondly, it is evident that individuals do not solely pursue advantages; they frequently demonstrate a profound sense of fairness or justice. A number of heuristics can be cited as examples of this phenomenon. One such heuristic is the tendency of people to want to harm others as little as possible (no harm). Additionally, individuals tend to prioritize short-term benefits that can be attained expeditiously over those that ac-

crue over time (fixed pie). They also exhibit a proclivity for aligning themselves with the conventional (status quo). Furthermore, they exhibit reservations about strangers and consider their subjective well-being to be more legitimate than those of others. Furthermore, thirdly, individuals possess only a limited degree of self-control. Consequently, due to their inclination towards hedonism, they are constrained in their capacity to plan for a longer period and make rational decisions. Fourthly, individuals act in a conformist manner because they compare their own behaviour to that of others and wish to align themselves with the prevailing norms. This demonstrates that, fifthly, they also pursue goals other than those based on rationality and occasionally act in accordance with intrinsic motivations, such as social esteem, rather than rational motivations.

4. Trust as an Open Institutional Game

4.1 The Commons Game: How to Build Institutions on Trust

34 Another strand of economic research places the common good at the centre of the debate. Additionally, it has its origins in game theory, and it presents both empirical and theoretical challenges to the so-called zero contribution thesis, which was first proposed by Mancur Olson (1965) and Garrett Hardin (1968). Against the evidence of numerous examples, especially in agriculture, of how to sustainably manage common pool resources such as pasture, fishing grounds or water for irrigation, these authors claim that, due to the invariably self-interested nature of human beings, it is not possible to regulate the use of common goods without there being an external actor able to enforce rules and sanction their violation. In contrast to this perspective, researchers have conducted experiments in line with those presented above, using behavioural economics, which have demonstrated that people are willing to cooperate and care for the common good in a variety of contexts. As a result of her lifelong research on this topic, Elinor Ostrom developed a theoretical framework for 'Governing the Commons' (1990).

35 Similarly, common good research assumes a variability of interaction modes between individuals and their environment, in a manner analogous to behavioural economics. For instance, in a paper entitled 'Collective Action and the Evolution of Social Norms' (2000), Ostrom identifies distinct types of players emerging from a diverse array of experiments designed to elucidate how individuals interact when the common good is at stake. By integrating game theory with evolutionary theory, she posits that the willingness to cooperate, or actual cooperation, can evolve effectively in these games, in

accordance with the evolution of trust. The findings indicate that individuals are more inclined to base their decisions on trust from the outset than classical economic theory would predict. Furthermore, they adapt their strategies and decisions throughout the course of the game. In numerous instances, repeated rounds of contributing or refusing to contribute to the common good result in the establishment of a trusting relationship between the players. Nevertheless, they do not trust indiscriminately. Rather, they observe the moves of their interaction partners and adapt their strategies accordingly. Ostrom defines this type of player as a 'conditional cooperator'.

36 "Conditional cooperators will tend to trust others and be trustworthy in sequential prisoner's dilemma games as long as the proportion of others who return trust is relatively high. Conditional cooperators tend to vary, however, in their tolerance for free riding. Some are easily disappointed if others do not contribute, so they begin to reduce their own contributions. As they reduce their contributions, they discourage other conditional cooperators from further contributions. Without communication or institutional mechanisms to stop the downward cascade, eventually only the most determined conditional cooperators continue to make positive contributions in the final rounds." (Ostrom 2000: 142)

37 Consequently, this type of player exhibits a certain degree of variability, as Ostrom also describes other types, such as the 'willing punisher'. This encompasses individuals who are more inclined to maintain their cooperative attitude, as well as those who are reluctant to contribute to the common good at an earlier stage. Nevertheless, the latter do not merely safeguard their own interests; they also appear to prioritise the collective interest. This is evidenced by their actions, which suggest that it is disadvantageous for the game to continue to trust those who exhibit defective behaviour. In conclusion, this type of behaviour, namely the capacity to cooperate under certain conditions and to adapt one's strategy to the actions of others, is in accordance with the findings presented by Axelrod (1984) in his renowned work on the evolution of cooperation. In numerous instances, cooperative conduct emerges as a 'tit for tat' game, wherein participants align themselves with the tenet of reciprocity.

38 The variability of player types observed in the game experiments and the empirical field research on communities that successfully manage common pool resources led to the formulation of a framework of rules and practices that underpin those communities. This framework shifts the perspective on collective action from the assumption that individuals inevitably face a dilemma when coordinating their

interests with others to the assumption that cooperation for the common good can be designed, developed, and therefore trained. In contrast to the conventional wisdom that cooperation deteriorates over time, research indicates that the quality of cooperation can improve when individuals trust each other and learn to cooperate. The rules for collective action encompass

- the establishment of parameters concerning membership and resources,
- the allocation and distribution of resources,
- the involvement of users in decision-making processes,
- the monitoring of resource allocation and distribution,
- the implementation of graduated sanctions,
- conflict resolution mechanisms, and other pertinent matters (Ostrom 2009, 422).

39 These rules facilitate communication between individual users of common pool resources and between the community and its environment. The objective of these rules is to enhance the capacity for self-organization and, as a consequence, facilitate collective learning processes. This contrasts with the traditional approach of safeguarding the individual's interests in opposition to those of their interaction partners. We can therefore say that the set of rules established by commons research has a certain affinity with Wittgenstein's (1953) conception of rules and rule-following, since these rules amount to a description of a concrete *form of life*, i.e. a social practice in which trust, without recourse to an external authority, represents an important basis. Rather, the patterns that emerge from social interaction are translated into a *normative perspective* that is inherent to the practice and shaped by the (collective or individual) actors involved. Consequently, trust can be incorporated into governance practices, or institutionalised.

40 Nevertheless, the theoretical approach to trust adopted by researchers engaged in the study of commons differs fundamentally from that taken by classical economists and institutional economists. In the latter cases, trust is often replaced or circumvented by institutional mechanisms designed to prevent or deter the occurrence of undesirable behaviours. It is not assumed that humans are inherently trustworthy. In contrast, the design principles established by commons research integrate trust as a social practice, as part of economic action and interaction. The empirical fieldwork and the theory derived from this research emphasise the significance of communication, as well as the capacity of individuals and groups to learn to cooperate, to create rules and establish sanction mechanisms. In other words, the management of common pool resources necessitates the capacity to engage in a game of trust. This game comprises, on the one hand, the communication, observation and learning from each other, and, on the other hand, the translation of this communication, observation and learning into institutional arrangements and practices.

4.2 Varieties of Trust Games: It's not about mechanics

41 As previously stated, several moral philosophers describe trust as a shared practice rather than an emotional state or cognitive attitude (Baier 1991, Hartmann 2011). It is therefore insufficient to define it as a substitute for rational decision-making in the sense of the classical economy. The lack of information or certainty about another person's intentions is not the sole reason for our lack of trust. Rather, our trust is often founded upon values that reflect an interest in the perpetuation of the shared practice, rather than a sole focus on self-interest. The establishment and continuous evolution of rules and institutions within trustful relationships serve to illustrate the dynamic and creative nature of trust as a collective activity.

42 The key elements of trust, conceived of as a social practice, include a common history of the actors involved and a relationship in becoming, based on openness and the evolution of connections over time. Furthermore, voluntariness, scope for judgement and expertise play a pivotal role in fostering an environment of care and a sense of accepted vulnerability. When we entrust others with a task, we relinquish control over the manner in which they fulfil it. Only in this way can the other party demonstrate their expertise and creativity. It is possible that they may not fulfil our expectations, but this is an inherent aspect of engaging in a trusting relationship.

43 Consequently, the act of trusting involves the establishment of relationships based on a form of openness that cannot be expressed in the language of calculus. It is evident that in the context of economic cooperation and exchange, it is possible to calculate risks and estimate potential future outcomes. It is possible to make calculations and to act in a rational manner based on past decisions and events that have proven to be erroneous or disadvantageous. Nevertheless, in trust-based relationships, also in the context of economic transactions, a more fundamental degree of openness is required. This openness is essential for the creation of interaction spaces, for learning, and for development. Otherwise, collective action for the common good or for innovating cannot occur. Although trust must be strengthened and fostered by rules and institutions, these rules and institutions must not be crafted and implemented in a mechanical way. To trust is to engage in a serious game, but one that is open and innovative, with the rules of the game subject to constant renegotiation. The absence of predefined rules for the game of trust does not imply a lack of guidance. Rather, it suggests the necessity to integrate rulemaking into the game itself (Baier 1991), and this, as mentioned above, resonates with Wittgenstein's concept of language games as *forms of life*, which are rule-based but at the same time rule-producing or rule-breaking types of social interaction. It is inevitable that any attempt to predict the nature of human beings will result in the

necessity to deal with rules and institutional arrangements within the game itself, not from outside.

5. Conclusion: The results of wagering on human trustworthiness

44 In this article, we sought to examine the relationship between two key concepts in economic theory: the notion of 'game' and the concept of 'trust'. Our hypothesis was that the relationship between the diverging strands of economic thought can be understood as a game in which the trustworthiness of humans is wagered upon. While classical and neo-classical economics are based on the assumption of an invariably self-interested human being, more recent strands such as behavioural economics and commons research have identified an essential variability of modes and motifs in economic action. With the latter approaches, which are in line with conceptions on cooperation that draw on evolutionary theory (Axelrod 1984, Gintis and Bowles 2011, Nowak and Highfield 2011), it is possible to understand how trust, as a social practice, can be part of economic contexts, despite not being a rational attitude according to the classical approach. It is intriguing to observe how diverse conceptualisations of the 'game' have facilitated the emergence of a novel field of empirical research, which has subsequently led to the re-evaluation of fundamental theoretical assumptions pertaining to economic action, interest, the common good, and so forth.

45 The table below provides a synopsis of the various theories and their respective stances regarding human nature, gaming, and trust.

Theory	Bet on Human Nature	Approach to 'Game'	Approach to 'Trust'
(Neo-) Classical Economy	Invariant: Self-interested, rational decision making, stable preferences.	Economic action is not a game, but a mechanism of resource allocation. The mechanism works if everyone acts rationally and supposes that the others do so as well.	Trust, like other moral principles, is an obstacle to the unfolding of the free market economy; collective welfare is best served by individuals pursuing their own interest.
Game Theory/ Institutional Economics	Invariant, but able to learn and adapt to given situations.	Economic action is a game in that it is understood as *inter*action. To overcome collective action dilemmas, intentions and interests must be coordinated by external institutions (law) and actors (state).	While free market needs an institutional framework, individuals keep acting based on rational, self-interested decisions. Trust is an attitude or general atmosphere that results from the functioning of external institutions, as well as it fosters their functioning.
Behavioral Economics	Variable, capable of development, learning, and of integrating moral viewpoints like justice and altruism in economic interactions.	Game experiments are a method to test basic assumptions of neo-classical economy. They reveal a variety of player types as well as a variety of playing modes.	In game experiments, i.e., simulations, people act in a more trustful way than the model of neoclassical economy predicts. This leads to a reformulation of the concept of economic acting.
Common Good Research	Variable, capable of developing, learning, and of crafting institutions apt to manage common pool resources.	Integrates evolutionary theory into the concept of economic acting. Different types of players and modes of playing evolve according to the principle of cooperation. By that, they overcome collective action dilemmas and create the institutions necessary to manage their resources.	Trust becomes 'part of the game' in that it is necessary to build up trust-based relationships that are the basis of communication and interaction forms that allow for the creation and maintenance of institutions for governing the common good.
Philosophy of Trust	Variable, capable of learning, judging, and integrating moral principles. Humans are relational beings and cannot be reduced to self-interested individuals.	To play the game of trust means to accept being vulnerable. In this sense, it is a serious game that must be constantly reflected upon and redesigned. It is not possible to establish definite rules or mechanisms that guarantee trust. Rather, to play the game is to open a relationship that develops by interacting and communicating with each other.	Trust is a social practice, based on values. It unfolds within relationships and necessarily comprises accepted vulnerability. Trust is an indispensable element of human cooperation and implies the design and development of interaction spaces that enable people to build and renegotiate rules and institutions apt to foster trust.

47 A comparison of the various conceptualisations of 'trust' and 'game' in economic research with certain positions in contemporary practical philosophy that have developed a concept of trust as a social practice (Hartmann 2011) suggests a potential reapproach of economic science to moral philosophy. To be sure, it is evident that in numerous contexts of contemporary economic life, the fundamental tenets of neoclassical economics are effective in elucidating the dynamics of production, consumption, innovation, trade and investment, as well as the exchange of goods and the delivery of services. In globalised anonymous markets, price is the most important signal for orienting decisions on resource allocation. Rational utility maximisation is a valuable behavioural model for this purpose. Nevertheless, there are numerous areas of interest in which the establishment of a sustainable practice of trust between the involved actors is of paramount importance for the resolution of urgent problems. Equal remuneration and treatment, the use of natural resources, the protection of ecosystems, or the climate crisis, are addressable only at the level of collective action. All of these issues necessitate a fundamental redesign of our way of living, with particular emphasis on the manner in which goods are produced and consumed. This can only be achieved through a complex effort of coordination and communication, an effort that must be undertaken collectively.

48 Moreover, at the regional or local level, numerous communities and organisations engage in long-lasting forms of collaboration that are based on mutual learning, communication, and development. It is of the utmost importance to provide support to these communities and organisations in their endeavours to enhance the quality of their cooperative endeavours, to engage with stakeholders and to identify innovative solutions to their challenges. In all these contexts, from working together in teams in for-profit or non-profit organisations to strengthening regional development and fostering cross-regional or global cooperation, there is a need for a deeper understanding of how to build and maintain trustful relationships. While creative research and experimental games for better understanding the dynamics of cooperative relationships can make valuable contributions concerning how to approach collective action, assuming an invariably self-interested nature of human beings will probably fail to deliver those insights.

References

Assem, Martijn J. van den, Dolder, Dennie van, & Thaler, Richard H. (2012). Split or Steal? Cooperative Behavior When the Stakes Are Large. *Management Science* 58, 1(2012), 2–20. http://www.jstor.org/stable/41406368

Axelrod, Robert (1984). *The Evolution of Cooperation*. New York: Basic Books

Baier, Annette C. (1991). *Trust. The Tanner Lectures on Human Values*. Delivered at Princeton University, March 6-8, 1991. https://tannerlectures.utah.edu/_resources/documents/a-to-z/b/baier92.pdf

Baier, Annette C. (1997). Doing Things with Others: The Mental Commons. In: Lilli Alanen, Sara Heinämaa, & Thomas Wallgren (eds). *Commonality and Particularity in Ethics. Swansea Studies in Philosophy*. London: Palgrave Macmillan, 15-44. https://doi.org/10.1007/978-1-349-25602-0_2

Becker, Gary Stanley (1976). *The Economic Approach to Human Behavior*. Chicago: The University of Chicago Press

Bolton, Gary, E., Ockenfels, Axel (2000). ERC: A Theory of Equity, Reciprocity, and Competition. *American Economic Review*, 90 (1), 166-193. DOI: 10.1257/aer.90.1.166

Charness, Gary, Rabin, Matthew (2002). Understanding Social Preferences with Simple Tests. *The Quarterly Journal of Economics*, 117 (3), 817–69. http://www.jstor.org/stable/4132490

Fehr, Ernst, Schmidt Klaus M. (1999). A Theory of Fairness, Competition, and Cooperation. *The Quarterly Journal of Economics*, 114(3), 817–68. http://www.jstor.org/stable/2586885

Gigerenzer, Gerd, Selten, R. (eds.) (2001). *Bounded Rationality. The Adaptive Toolbox*. Cambridge, Massachuesetts: The MIT Press

Gintis, Herbert, Bowles, Samuel (2011). *A cooperative species: human reciprocity and its evolution*. Princeton, New Jersey Oxford: Princeton University Press.

Gould, Stephen Jay (1996). *Full House. The Spread of Excellence from Plato to Darwin*. New York: Harmony Books

Hardin, Garrett (1968). The Tragedy of the Commons. *Science*, 162(3859), 1243–48. http://www.jstor.org/stable/1724745.

Hartmann, Martin (2011). *Die Praxis des Vertrauens*. Frankfurt a. M.: Suhrkamp

Hirschman, A. O. (1984). Against Parsimony. Three Easy Ways of Complicating Some Categories of Economic Discourse. *Bulletin of the American Academy of Arts and Sciences*, 37 (8), 11-28. https://doi.org/10.2307/3823226

Hume, D. (1739/40). *A Treatise of Human Nature*. London / New York: Penguin Books 1969

Hutcheson, F. (1742) An Essay on the Nature and Conduct of the Passions and Affections, with Illustrations upon the Moral Sense. Anodos Books: Withorn 2019

Kahneman, D. (2011) *Thinking, fast and slow*. New York: Farrar, Straus and Giroux

Levitt, Steven D., List, John A. (2007). What Do Laboratory Experiments Measuring Social Preferences Reveal about the Real World? *The Journal of Economic Perspectives*, 21(2), 153–74. http://www.jstor.org/stable/30033722

Neumann, John von, Morgenstern, Oskar (1944). *Game Theory and Economic Behavior*. Princeton: Princeton University Press

Nowak, Martin, Highfield, Roger (2011). *SuperCooperators. Altruism, Evolution, And Why We Need Each Other to Succeed*. New York: Free Press

Olson, Mancur (1965). *The Logic of Collective Action: Public Goods and the Theory of Groups*. Cambridge, MA: Harvard University Press

Ostrom, Elinor (1990). *Governing the Commons. The Evolution of Institutions for Collective Action*. Cambridge: Cambridge University Press

Ostrom, Elinor (2000). Collective Action and the Evolution of Social Norms. *The Journal of Economic Perspectives*, 14(3), 137–158

Ostrom, Elinor (2009). Beyond Markets and States. Polycentric Governance of Complex Economic Systems. Prize Lecture, December 8, 2009. https://www.nobelprize.org/prizes/economic-sciences/2009/ostrom/lecture/

Rabin, Matthew (1993). Incorporating fairness into game theory and economics. *The American economic review*, 83(5), 1281-1302

Sally, David (1995). Conversation and Cooperation in Social Dilemmas: A Meta-Analysis of Experiments from 1958 to 1992. *Rationality and Society*, 7(1), 58-92 https://doi.org/10.1177/1043463195007001004

Sen, Amartya (1977). Rational Fools: A Critique of the Behavioral Foundations of Economic Theory. *Philosophy & Public Affairs* 6(4), 317-344. http://www.jstor.org/stable/2264946

Simon, Herbert A. (1957). *Models of Man. Social and Rational*. New York: Wiley & Sons

Solomon, Robert C., Flores, Fernando (2001). *Building Trust. In Business, Politics, Relationships, and Life*. Oxford: Oxford University Press

Telser, Lester G. (1995). The Ultimatum Game and the Law of Demand. *The Economic Journal*, 105(433), 1519–1523. https://doi.org/10.2307/2235114

Williamson, Oliver E. (1985). *The Economic Institutions of Capitalism*. New York: Macmillan

Wittgenstein, L. (1953). *Philosophical Investigations*. Oxford: Basil Blackwell.

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