



ARTICLE



<https://doi.org/10.1057/s41599-023-01862-0>

OPEN

The theory of social games: outline of a general theory for the social sciences

Jörg Stolz¹✉

Sociological general theories (or “grand theories”) have been criticized for being too abstract to be of any practical use for empirical sociological work. This paper presents the outline of a general theory that claims to be better linked to empirical social research than previous theoretical attempts. The theory analyzes social life as a multitude of interacting social games. A social game is an entity created by players with resources who engage in action that is shaped by goals, rules, and representations, that involves objects, and that leads to game outcomes. The general theory is as encompassing as previous theoretical attempts, while allowing us to integrate both instrumental and normative action at different levels of the social. Its main advantage is that it is linked to middle-range theory and empirical research by a descriptive-interpretive heuristic, an explanatory heuristic, and formal and agent-based modeling. The article provides many examples to illustrate the claims.

¹University of Lausanne, Lausanne, Switzerland. ✉email: joerg.stolz@unil.ch

Introduction

Sociological general theories (or “grand theories”) have been criticized for being too abstract to be of much practical use for empirical sociological work. Such a criticism was made by Robert Merton (1968a) of Talcott Parsons’ theoretical system, but similar criticisms have been levelled at many other well-known general theories (Münch, 1996; Van den Berg, 1998). The claim has been especially often made that general theories cannot explain phenomena (something that is even deemed *scandalous*), and are therefore irrelevant to empirical research (Goldthorpe, 2000).

This article advances the idea that a sociological general theory may be written around the concept of a “social game”, and that this general theory may have an edge over competing general theories when it comes to giving guidance on interpretation, explanation, and translation into middle-range theories. The concept of “game” is used here not as a metaphor (as it is used by many scholars), but as a heuristic starting-point and center for the general theory.¹

A general theory is what Merton (1968a) calls “general sociological orientations”, a series of interlinked concepts that may guide the researcher’s thinking and be translated, if made more specific, into substantive, “middle-range” theory. This means that general theory cannot be immediately tested empirically; however, neither should it be self-contained or immunized from empirical falsification. There are scholars who would a priori question the utility of such general theory. On the other hand, general theorizing, if successful, may have important functions: it allows us to summarize sociological knowledge, makes findings from different substantive fields comparative, and, most importantly, may provide ideas and guidance for substantive theorizing and empirical work (Alexander, 1986; Fligstein and McAdam, 2011).

The goal of this article is to show that the theory of social games is as general as other competing grand theories, but that it offers a more straightforward way of being translated into middle-range theorizing and empirical work.² The link to middle-range theory and empirical work is created with a descriptive heuristic, an explanatory heuristic, and formal and agent-based modeling. The contribution of the article is thus to offer a highly abstract unifying scheme both for qualitative, quantitative, and formal and agent modeling in sociology.

I will construct the theory by starting with very simple games-for-fun, such as “noughts and crosses” and chess, abstracting their basic properties, and showing how such a model can be applied to social games in general.

In doing so, I draw freely on, and integrate, the insights of well-known theorists from different disciplines. My main inspirations come from *sociology*, I draw in particular on the work of Goffman, Garfinkel, Elias, and Coleman. Goffman (1961, 1967, 1969), analyzed social life in respect to the ways that individuals-in-roles play—either for other individuals, as in a theater performance, or with other individuals, as in a game. Garfinkel (1967, 2006 (1963)) showed that social games use various layers of both discursive and tacit rules, and that the reproduction of these games rests on a level of general trust that these rules will prevail. Elias (1970) argued that using game models of varying levels of abstraction to analyze the social can help overcome the individual-society dichotomy. Coleman (1969, 1990) realized that the playing of social games leads to emergent outcomes that can be explained by independent game elements and the process of the game. However, important insights regarding games as models can also be taken from the writings of Boudon (1976), Bourdieu (1984), Fligstein/Adams (2011), Merton (1968b), and Weber (1988 (1922)). More recently, DiCicco-Bloom/Gibson (2010) and Stachura (2014) have argued that real games such as chess, go, poker, and cycling competitions could help us devise sociological theory.

But the theory of social games also draws on the insights from disciplines other than sociology. A whole research tradition in *economics* and *mathematics* launched by Neumann and Morgenstern (2004 (1944)) has shown that games-for-fun can be the starting-point for a mathematical modeling of strategic situations, thus leading us to formal models of idealized games. *Probability theory* was invented by Huygens in the 17th century by analyzing dice games (David, 1955). In *philosophy*, Searle (1995) used games-for-fun to demonstrate how social reality is both real and constructed, and Winch (2008 (1958)), following Wittgenstein (2003), showed that the understanding of social phenomena resembles the understanding of games-for-fun. *Biology and evolutionary social science* argues that play is used both in animals and humans to learn behavior useful in later adult life (Bateson, 2005). Humans extend the period of immaturity and let their children play and engage in games-for-fun for an increasingly long time; here, children also learn complex interactions and role identities through playing.³ This point of view is *grosso modo* corroborated by anthropologists who study early hunter-gatherer, pastoral, and horticultural societies (Gray, 2012).

Finally, in *cultural and game studies*, Huizinga (1963 (1956)) argued that human culture is in essence game-like, Caillois (2001 (1961)) proposed important ways of classifying games, and scholars such as Klabbers (2009, 2018) have shown how computer games can create whole new worlds.

Creating a general social theory with games-for-fun as a starting-point has been criticized, however, with scholars arguing that, unlike a game (for example, a game of chess between friends), the *rules of social life* are often complex, ambivalent, and open to different interpretations by different actors; that the actors may not consciously know these rules and sometimes only discover them while playing the game; and that there may be substantial disagreement on the rules, which may be contested and changed by powerful players (Bourdieu, 1980; Garfinkel, 1967; Giddens, 1984; Rawls, 1955). Furthermore, critics have argued that, unlike games-for-fun, situations in social life are extremely *complex*; actors have to react to cues that belong to various, and sometimes conflicting, frames and contexts; and that a game does not have this complexity (Goffman, 1974). Finally, it has been argued that, unlike in games-for-fun, actors in social life are not in a make-believe world of a game, but in the *real world*. Thus, they cannot just stop the game, take “time out”, or ignore the consequences of their actions (Maynard, 1991).

I do not find these criticisms convincing. Contrary to what these critics think, many games-for-fun are in fact complex, ambivalent, and open to different interpretations (Kew, 1992). Rules can be complex and contradictory in improvisational games; the application of rules is routinely challenged in football; when children play games, they constantly discuss the existence and form of rules; and, in Russian roulette and running-for-the-bridge, the game may have serious consequences. The problem is that the (implicit) definition of “game” that these critics use is very narrow, and automatically excludes many phenomena of interest. A broader definition of social game would provide us with a powerful tool to understand and explain precisely the phenomena mentioned in the criticisms above.

This outline article can only show the central elements of the general theory. Since every part could be treated in much greater detail, many possible questions must remain unanswered. But there is a rationale for presenting a first overview to see if further work on such a project is warranted.

Social games

Defining social games. A *social game* is a form of ordering the social sphere in which players with resources use objects to

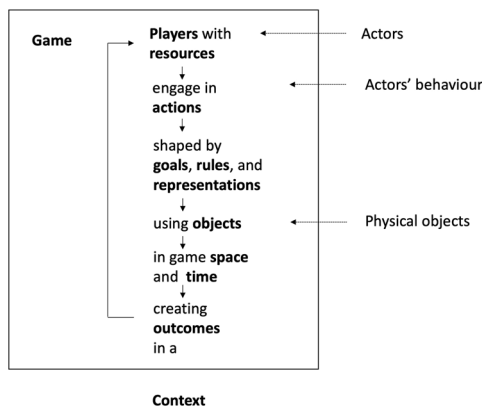


Fig. 1 Scheme of the social game. Source: Original creation by the author.

engage in actions, which are shaped by goals, rules, and representations. The social game creates game time, game space, and leads to game outcomes. The game takes place in, and is influenced by, a context. Figure 1 shows the main idea. The arrow loop points to the recursive nature of social games; game interactions lead to new game interactions until the game is finished. Social games operate in a societal context: they “use” actors and their behavior, as well as physical objects, and transform them into players, game actions and game objects with a symbolic reality that would not exist without the game (the dotted lines show this transformation). Thus, when I play rock-paper-scissors, I become a “player”, and my fist becomes a “rock”. In football, a round leather object becomes a “football”, and a person in black becomes the “referee”.

The ontological status of social games. A note is in order here on the ontological status of social games: social games exist in the real-world, and are at the same time “socially constructed”. This problem has long bedevilled social theorists, and much energy has been expended on discussing whether social reality is “real” or “constructed” (Burr, 2015 ; Hacking, 1999; O’Brien, 2006). In the current discussion, the constructionist view is often merged with postcolonial, critical, and discourse theories, while the realist view is often confounded with analytical sociology. The theory of social games easily shows that social games are *both* real *and* socially constructed (Elias, 1970; Goffman, 1961; Searle, 1995). They exist independently of how social scientists represent or are aware of them, and are thus part of the “real-world out there”. Nevertheless, social games exist only insofar as the players themselves believe that they exist and actually play these games. This can be easily demonstrated with a game-for-fun: when I play rock-paper-scissors, my fist is not a real rock. It is socially constructed in the sense that it only represents a rock as long as I and the other players treat it as a rock in the framework of the game. Nevertheless, in that framework, it has its undeniable reality with the real consequence that I can really win or lose the game. But the same point can be made for *all* social games: a \$100 bill is socially constructed in that it is worth \$100 only insofar as I and many others believe in its worth—if those beliefs crumbled, I would be left with a worthless piece of paper. Nevertheless, and insofar as these beliefs pertain, I can go to a shop and buy real objects for my \$100 bill.

Forms of social games. Social games come in a staggering variety of forms, and many different classifications have been proposed (Klabbers, 2009). Social games may or may not have spectators, exhibit external effects, have a function for yet other games, have the same or different goal(s) for the different players, may involve

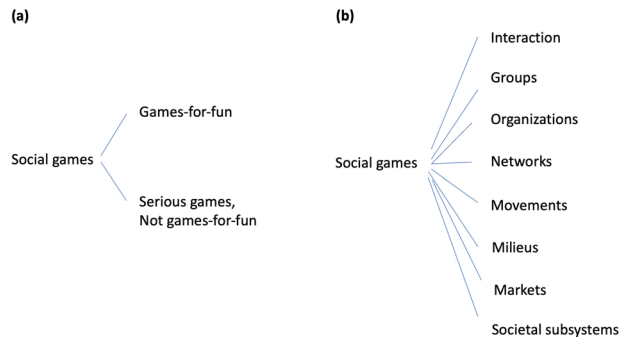


Fig. 2 Social games. a, b Types of social games. Source: Original creation by the author.

only two or hundreds and thousands of players. Their rules and representations may be consensual or contested, may or may not be known to all the players, etc.. For this outline, I focus on two classifications: the distinction of games-for-fun and social games, and the distinction between “levels” of social games.

Games-for-fun and serious games. A first distinction is between games-for-fun (e.g., chess, football, rock-paper-scissors) and serious games or games that are not played for fun (e.g., staff meetings, emergency services, political campaigns) (Fig. 2a). The main distinction between the two types is the fact that games-for-fun are abstracted from manifest interests and functions in the social world. This is why games-for-fun exhibit a sense of “freedom”, “absence of necessity”, and “enjoyment” (Cailliois, 2001 (1961); Huizinga, 1963 (1956)). Serious games (in this understanding of the term) on the other hand are seen as belonging to the “real worl”, where serious work and necessity reign. Apart from this point, however, games-for-fun and serious games exhibit exactly the same properties. The basic assumption made in the theory of social games is that there exists one overall game-like structure of social organization. Games-for-fun are just the emergence of exactly this same form in a mini-format and “for enjoyment”. This is why they lend themselves particularly well as models for theorizing. I have found that some people have difficulty in extending the game definition to serious matters such as presidential elections, police raids, or faculty meetings. They may object that calling a faculty meeting, which is arguably often devoid of fun, a game is only true metaphorically. But “fun” is not part of our definition of a social game, and a faculty meeting falls very nicely under the definition of social game that we have given above.

Levels of social games. A second classification concerns different “levels” of social games, these different levels being distinguishable according to how players are accepted as players (Fig. 2b). For example, interactions are formed by players who see each other as present in a concrete situation and as currently playing a game; groups are formed by players who accept each other as members based on certain criteria; and markets are formed by players who buy and sell goods and services from and to each other. In this way, we can distinguish between very different types of social games that are well-known in the social sciences, such as interactions, groups, organizations, networks, movements, milieus, markets, and societal sub-systems (the economy, the polity, science), which are all analyzed as social games. Thus, a conversation between neighbors (an interaction) is just as much a social game as a book club (a group), or a Friday-for-Future meeting (a movement). Note that this is quite similar to how Luhmannian systems theory sees different levels of social systems (interaction, organization, society) (Luhmann, 1996). I allow

more types of games than Luhmann, however, and my criterion to distinguish the types is different to his. An in-depth treatment of these different types of social games would require another article. It is only important at this point that the theory of social games aims to be very general, and that its fundamental concepts are applicable to phenomena of very different extension.

Like competing grand theories, the theory of social games claims to be applicable to the social world in general; social games are thought to exist in all domains and at all levels of the social. However, I do not claim to offer a theory of the social as such—which would require deep treatments of language, communication, social evolution, etc.)—but rather a theory of the social whenever it takes the form of social games. In fact, not everything belonging to the social world is a game: most notably, most game elements. Thus, the rules of a game are not themselves a game, and nor are the players, the goals, the objects, or the representations. Individuals may also take individual actions that are not part of an obvious social game. Furthermore, the so-called life-world is not itself a game, but consist of the complicated coupling and nesting of several games. When I go to a Manchester United match with my friends, we form an interaction game that also belongs to a group game (not everyone in our group of friends is present). To enter the stadium, we have to go through security, an interaction game that is part of a larger organization game. When inside, we buy hotdogs and beer (an interaction game that is at the same time a market game). When we watch the match (an interaction game), the teams are each a group game. There is a further interaction game between the public and the teams. Every one of these games could be subject to an in-depth analysis regarding its players, rules, representations, objects, etc.

Assumptions about individuals. A theory of social games must necessarily make at least six assumptions about the individuals who play such games. I call this actor model “*homo ludens*” (for a comparable set of assumptions see Fligstein and McAdam, 2011). First, *homo ludens* speaks and understands a language. Games are language-based, and, without language, the actor could not play a social game (Searle, 1995). Second, *homo ludens* has basic human needs, such as the need for food, water, clothing, sleep, shelter, security, the sense of belonging, and social worth. Third, *homo ludens* recognizes social games in her surroundings and can adopt and internalize their goals, understand their representations, and follow their rules, as well as also being able to a certain extent to explain them causally and to predict their outcomes. Much of the waking time of a *homo ludens* consists in scanning the world for clues of various games. Fourth, *homo ludens* makes different games and their goals the center of her action, and uses them to fulfill her basic needs and motives. She does so by identifying her personal goals with the game goals. Thus, *homo ludens* seeks to gain social worth through being in a group of friends, to earn money through being employed in an organization, and to reach her place of work through driving through traffic. Fifth, *homo ludens* creates a sense of “who she is”, of her own “identity”, by monitoring and judging her relative performance in the game and by identifying with a game that she or others are playing. She may also create identity by identifying with the leaders of some of the games that she plays. Finally, *homo ludens* will try to satisfy her needs as much as possible by expending as little energy/input on a game as possible. She will try to balance her engagement in different games to maximize the satisfaction of her overall needs. This is not to say that *homo ludens* always calculates in a perfectly rational way. Rather, it is assumed that *homo ludens* tries overall to “play the games well”. These assumptions seem quite uncontroversial, but, should they require justification, then we can turn

to literature in socio-biology. Humans have at a certain point in time acquired language and goal-related, rule-guided, symbolic, cooperative action (“games”), and we take it that this is now “human nature” (Harari, 2011; Hauser et al., 2014).

As readers will notice, *homo ludens* combines the two elements of norm-following (*homo sociologicus*) and rationality (*homo oeconomicus*) (Elster, 1989a). This is obvious: we could not play a game of chess without at the same time wanting to follow the rules and seeking to choose winning strategies. Also note that, while *homo ludens* is rational, her preferences are not fixed, but rather are transformed by the game that she is playing. For example, she may be engaged in a game where the goal is to be altruistic or heroic, and where social worth is created by looking out for others more than for herself. And while she will normally try to strike a balance regarding her involvement in different games, she might become so caught up in a certain game that she no longer satisfies some of her basic needs (e.g., amateur bodybuilders who risk their health by using steroids; spiritual seekers who try to survive by eating only sunlight). It is also worth emphasizing that this model of the individual has at its center the symbolic nature of the human being. Social reality, which is made up of social games, is symbolic, and we could not understand even the simplest human game actions (e.g., moving a chess piece) without understanding the game representations in which this action is immersed.

The elements of social games

Players. Games are played by actors in their capacity of players. *Actors* are individual human beings. A *player* can be defined as an actor (or a group of actors) who is accepted (voluntarily or involuntarily) by other players as such, and who actually plays the game. Players have game-relevant *attributes* and *roles*. *Player attributes* are the traits of players that are relevant for the game. These include the amount of game resources (e.g., objects, money, land, publications) and the amount or type of social, physical, psychological, corporal resources or attributes (e.g., gender, intelligence, strength, number of friends, stigmatic appearance). For example, in Monopoly, it is only important how much game money a person has at a certain point in the game, but it is not important whether a person is male or female; on the Titanic, on the other hand, both money and gender were important factors in survival. Player attributes can also be negative, i.e., rules may specify what attributes certain players are *not* allowed to have. A *player role* is a bundle of rights and obligations concerning the actions and behavior of the respective player. Thus, in cops-and-robbers, some players are cops and others are robbers. In football, one player per team is the goalkeeper, while all the others are field players.

Resources. The term *resources* is used to capture all the (both legitimate and illegitimate) means that players may use to achieve the (intermediate or final) goals of the game. Resources are also sometimes called different forms of “capital”. Resources do not denote a separate area of the game, but encompass all the game elements described in this article insofar as they help players achieve the goal of the game. Thus, player attributes, rules, representations, context, and even other game goals themselves, may all become, in one situation or another, a resource in a given game. A good tactic that can help a person find resources in a game is when she asks herself what she needs to be successful as a player—a list of resources will then come to mind. Resources come in a large *variety of forms*, and different typologies have been proposed (Bourdieu, 1983; Coleman, 1990; Esser, 2000b; Giddens, 1984). From a social-game perspective, resources comprise objects, cultural knowledge, social capital, mental and

physical attributes, positional attributes, but also game and context attributes that a player may use to achieve the goal of the game. In general, forms of resources or “capital” differ strongly according to the game in question. Being tall (an individual corporal attribute) helps with basketball, but not with chess. A profound knowledge of Einstein’s field equations (an individual cultural attribute) may be an important resource when doing a physics exam, but will (probably) not help much when chatting someone up in a bar.

Actions. An *action* may be defined as a socially constructed model of a short duration (or “strip”) of behavior that is distinguished from other behavior (and thus “counted as” an action) on the part of one or several actors. The distinguishing or “counting as” may happen before, during, or after the strip of behavior. Examples of actions would be “score a goal”, “give a statement in a presidential debate”, “ignore somebody”, and “chop wood” (the famous Weberian example) (Weber, 1978 (1920)). These models of behavior can be used by actors to plan, conduct, and monitor their own behavior, as well as to interpret the behavior of other actors. We would be unable to conduct our lives if we could not interpret, plan, conduct, and monitor our stream of behavior in terms of these socially constructed models of action. A *game action* is a model of a strip of behavior by a player that is accepted by other players as being part of a social game. In game actions, players orient their behavior towards the other game elements, i.e., they try to achieve the game goals with game resources and objects, thereby keeping in mind the rules and representations of the game. Game actions are often called “moves”. If I “score a goal in football”, or “give a statement in a presidential debate”, then this is counted as a game action. If I voluntarily “ignore somebody”, acting as if that person were not present, and if others perceive this behavior as such, then this action becomes a game action.

Goals. Games have at least one, but often several, *goal(s)*. The goals of a game can be defined as the typical states, events, or things that players aim for, which is the reason that they enter a playing relationship with other players. The goal is what the game “is about”, what is “at stake” (Bourdieu, 1984; 1968b). In tennis, for example, the game is about “winning the match”; in a US presidential race, it is about “becoming president”; in science, it is about “discovering new knowledge”; in a chat with a neighbor, it is about having a short and friendly exchange that is not too profound. There is a large array of types of goals, and I can only mention some of the most important distinctions. Goals can be final or intermediate. In tennis, a player has to win sets to win the match; in a US presidential race, a candidate has to win the primaries to win the presidency. Goals can be competitive, non-competitive, or a mixture of the two. Competitive goals demand that players try to be superior to the other players in achieving the goals; non-competitive goals can and should be achieved without its being intended or even possible to compare the players. Goals in games may apply to individuals or groups (individual *vs.* team sports); in some games, all the players have the same goals, while, in other games, different types of players have different goals. As can be seen clearly in presidential races, even people or groups that detest each other may share the same game goal. Goals should be distinguished from players’ *motives* to play the game. Social games have the power of channeling players’ goal-seeking behavior into a similar direction, but motives to play the game may vary widely. On a first level, there is variation in whether the primary player motivation is to reach the game goal. Most players will play the game to reach the game goal (e.g., tell the funniest joke, rise in the league). But sometimes players may have other motives to play the

game (e.g., take part in the church youth group to meet attractive other participants). On a second level, even when players are motivated primarily by the game goal, their motive as to why they want to win may vary widely (e.g., become president to help the country, to fulfill personal psychological needs of grandeur, for personal financial reasons, etc.). The playing of a social game very often involves a mix of motives. As has often been noted, players may also internalize the game-goals and fuse them with their innermost motives. Scientists may believe that finding something new is the most important thing in their life; Musicians may think that they could not live without music.

Rules. Social games have *rules*. These can be defined as instructions that are applied intersubjectively and under certain circumstances to (a) perceive/count a certain phenomenon in certain ways (constitutive rule), or (b) act in certain ways (regulative rule) (Searle, 1995). Thus, a rule may stipulate that the person who was fastest be seen as “the winner” (rule telling us to perceive/count as), or it may tell us that once one player begins counting to 40, the others have to run away and hide (rule telling us to act). The rules in a game derive their existence and validity from being shared. A rule is valid if players share the belief that it is valid. In turn, this belief is created by the observation that most of the other players in their actions obey the rules, and that transgressions are either sanctioned or otherwise “repaired”. As Garfinkel (1967, 2006 (1963)) has shown, social games use various layers of both discursive and tacit rules. If there are written rules, we often find that there are other (written or unwritten) rules of how to apply the first-order rules. Yet, there are even other, often unwritten, rules of how “everybody knows” that these rules and their application really have to be applied (or not) under different circumstances. This phenomenon can be found both in games-for-fun and in social games in general. Rules may be more or less *legitimate*. Legitimacy may be defined as the correctness of rules in both a cognitive and a normative sense (Esser, 2000c). Rules are legitimate for players if the latter think that they are actually the rules (facticity), and that there are convincing values that show these rules to be “good” (e.g., with regard to fairness, God’s will, etc.).

Rules may also be typologized according to their *form*. Following Merton (1968b), we can distinguish prescriptions (what is to be done), preferences (what should preferably be done), permissions (what is allowed to be done), and proscriptions (what is forbidden). As such, rules may regulate every aspect of the game, such as the nature of the goal of the game, the kinds of actors that are allowed to be players, and what attributes of actors are game-relevant.

Many social games have *known ways of breaking the rules*, ways of acting that the players of the game find particularly iniquitous: in sports, doping; in science, plagiarizing and fabricating results; in stand-up comedy, stealing material from other comedians; in criminal gangs, snitching. The *breaking of rules* can lead to different reactions and effects. The rule can be upheld by *negative sanctions*, which are actions or events that punish the rule-breaker. More minor infringements will normally be dealt with first within the framework of the game itself. Thus, in football, the referee may punish the guilty player by awarding the other team a free kick. Likewise, cheating in an exam at school may lead to the mark “0”. More major infringements may also have effects outside the game, as when cheating in a casino is dealt with by the police. Negative sanctions may be applied by other players, by leaders of the group, or by individuals or groups with game roles that involve policing/judging (e.g., referees, police officers, judges). However, there are other ways of reacting to transgression and maintaining the rule. The rule-breaker may try to

“repair” the situation by apologizing or by explaining her action through shifting the responsibility elsewhere. If rules are broken and the norm-breakers are not sanctioned, or the norm-breaking is not “repaired” in some other form by apology or explanation (Goffman, 1971), then the rules might simply *disappear*, such as when littering in public spaces becomes acceptable, or a teacher loses all authority in her classroom.

Representations. Games are based not only on rules, but also on *representations*, which can be *defined* as signs that signify something else, according to convention and in a public way. Representations are symbols or associations of symbols (Searle, 1995). The representations of a game are what we could also call its “culture”, and this is how cultural sociology is incorporated into social game theory (Smith and Riley, 2008). We can distinguish three types of representation in a game. The first concerns signs for different game elements (rules, objects, players). Objects and events have names (e.g., the “king” in chess); rules come in the form of language (e.g., “Players take it in turns to move a piece”). The second concerns representations that are attached to game elements so that the players can communicate reflexively about the game. Such representations can legitimize, mythologize, systematize, comment on, or critique the game. In chess, there is a large literature on chess tactics; the ritual of Christian communion is linked to various Biblical stories and concepts (the Last Supper, the bread of life). The third type concerns the *language used when playing the game*. In most games, players have to use language to communicate before, during, and after the game to “pull the game off”. Players must greet each other, determine when and where to begin, decide on “whose turn is it next”, etc. Games are made out of representations, but they are also immersed in the wider context of language, as well as of other social games and their representations (Searle, 1995). It is important here to understand that social games are by nature representational or symbolic (or “meaningful”) (Giddens, 1993; Searle, 1995). What all the different strands of “interpretive” sociology (ethnomethodology, symbolic interactionism, Schutzian phenomenology) have said about interaction is true also of social games. To take away the meaning of the different game elements is to take away the game.

Economists versed in economic game theory have sometimes objected that representations are not important. Once the structure of the game (the pay-off matrix) is fixed, it does not matter what the different options are called. This may be true in certain cases. For example, it is possible to play a game of chess with a board depicting a court with a king and queen, or with figures from Star Wars or Harry Potter, or in the form of birds, or made out of cookies or corks (all these exist). If the figures retain their function, then the form and imagery and “culture” that are present make little difference. Nevertheless, in most social games, representations are of the utmost importance, since these are what give the social game its true meaning. It is their imagery that makes us feel that the game is worth it. If that were not the case, then marketing, branding, and spinning political messages would make no sense. As Weber (1922) wrote: “Not ideas, but material and ideal interests, directly govern men’s conduct. Yet very frequently the ‘world images’ that have been created by ‘ideas’ have, like switchmen, determined the tracks along which action has been pushed by the dynamic of interest”.

Objects. An object can be *defined* as a non-human material entity (including plants and animals). People do not count as objects,⁴ and nor do ideas or ideational phenomena (freedom, love, God). Games do not always need objects: for example, the “material basis” of paper-scissors-rock or a spontaneous rap battle is

provided by the bodies of the players and the sounds that they make, and the game objects in digital gaming are not material entities but digital representations that are encountered in the digital world. Nevertheless, all game elements can be linked to or represented by objects. The *goals* (or the reaching of the goal) can be represented as objects. In some games, the goal of the game is to obtain an object, as in a raffle or lottery. In other games, special objects symbolize the win: medals, trophies, and pedestals. *Rules and representations* are immaterial by nature, but they are often symbolized by objects, written down in books, or engraved in stones. Or the objects may themselves be the signs representing the rules and representations, such as in traffic signs, statues of Gods, or crowns. *Resources* very often come in the form of objects. In games-for-fun, we find gaming pieces, cards, balls, sticks, sportswear, etc. In social games, everything that Marx (1992 (1867)) called the means of production qualifies: factory halls, technical equipment, machines, tools, but also all kinds of objects that represent symbolic power, such as clothing, means of transportation, luxury items, etc. *Game space* is often symbolized by objects, such as game boards, fields, buildings, fences, border stones, and curtains. Finally, objects can also characterize actors, who may wear uniforms, robes, rings, crowns, colored belts, or have slit ears. Interestingly, objects may also stand for players, as avatars: for example, every player in Monopoly is represented by a small figure (a car, a ship, a dog, etc.), while a person in black magic may use a doll to represent her enemy.

Space and time. Concrete games are always situated in time, space, and a societal context. Interestingly, though, they also create their specific game time, game space, and game context. *Game time* is the time during which the game is played. The beginning, internal temporal structure, and end of a game are often marked by specific actions, for example by uttering words (Ready, steady, go!) or making sounds (a gun shot, a gong ringing, a whistle). They may be regulated by fixed rules as when a seminar at university takes place from 9 o’clock until 10.30. Games very often have an internal temporal structure, such as tennis, where a number of games make up a set and a number of sets make up a match, or a BA degree, where weeks are nested in semesters, semesters nested in years, and years nested in the overall curriculum. Another example is the liturgy of a Catholic mass, which gives the different elements of the ritual a sequence that can be repeated. *Game space* is the space where the game is played, and is often marked by objects (lines, ropes, steps). The game space is sometimes inside a special building or room (a temple, a parliament, a hospital), and is very often spatially differentiated internally, as when a football pitch is divided into two halves, with each goal having a six-yard box and a penalty area.

Outcomes. Games have *outcomes*, which are the states, events, or dynamics of a game or its context that result from game interaction. They can coincide with the game goals or not, be intended or not, and be measured by the game or not (Boudon, 1982). Other meta-theories call outcomes “*explananda*” or “*effects*”. Outcomes can take different *forms*. One type of outcome is the *creation or change of a game element*. Examples are the occurrence of checkmate in chess, or Hitler’s decision to invade Poland on 1 September 1939. A second type comes in the form of a statistic of a *game or context variable*, often a point measurement, sum, mean, or variance. For example, the number of goals scored by each team in a football match, or the percentage of overall wealth owned by a society’s wealthiest 2%. Third, outcomes may also present themselves as the *covariance of two game or context variables*, often a cross-tabulation, correlation coefficient, regression coefficient, or odd’s ratio. For example, the mean

difference in the number of goals scored by Manchester United and Manchester City, or the difference in mean income earned by men and women. Finally, outcomes may present themselves as a statistic of the *form the game process over time* (e.g., a function). For example, the way that property and money become concentrated in a game of Monopoly, or the way that a medical innovation is disseminated over time.

Game outcomes that are created for a higher-level game or the players are called *game functions*. Thus, a commission may be set up with the function of finding a new president for an organization, a university has the function of educating the elites for the wider society, and a football match may be played for the enjoyment of the public. Some of these functions may be latent, and not consciously known by the players, as when Christmas traditions have the latent function of maintaining the social bonds of families, or when the Kula game helps strengthen social control in Trobriand societies. Of course, the existence of games should not be explained by their function or the needs of the players, as classical functionalism thought possible (Malinowski, 1960 (1944); Parsons, 1977). Current effects (the function) are not the same as historical causes. Nonetheless, some games are consciously set up to fulfill a certain function, the planned function then being one of the causes behind the setting-up of the game. Furthermore, some games are very stable, because their function creates an interest among powerful players or stakeholders, who will counter any attempts to stop the game or change its game elements.

Context. *Game context* consists of all the phenomena outside the game—to the extent that these phenomena were, are, or might in the future be important for the playing of the game. Game context is not everything that exists outside the game, and clearly defining its limits is difficult. Thus, the invention of the spiked leather running shoe in the 1890s certainly belongs to the context of football, whereas the invention of the flexible vaulting pole in the 1950s does not.

Social games and empirical research

The theory of social games is a general theory and cannot as such be tested directly. To render the theory empirically testable, we would have to transform it into a middle-range substantive theory. It is here that the theory has in my view an advantage over alternative theories, since it uses (1) a descriptive-interpretive heuristic; (2) an explanatory heuristic; and (3) formal and agent-based modeling.

Descriptive-interpretive heuristic. Social games can be reconstructed with a *descriptive-interpretive heuristic*. This consists of several questions that can be asked to create a model of the game (Anonymous (year)). The questions are simply constructed by going through the list of necessary elements of a game. We would thus ask: What kind of game is played here? Where can we place this game in the different game typologies? What are the relevant players, resources, actions (moves), goals, rules, representations, objects, game space, game time, game context, and outcomes? Is this game coupled with other games, does it encompass other games, or is it nested within other games? And, if so, how?

In practice, this means that, depending on their initial knowledge, researchers will often begin with a rather crude model and tentative game elements that they will then specify during the analysis. The descriptive-interpretive heuristic has to be used in a qualitative manner. To yield ever more valid answers to their questions of what the goals, rules, representations, etc. of this social game are, researchers have to spend time with the social game, use participant observation, conduct interviews, read

documents. Thus, researchers do in a more systematic way what individuals in the everyday world do when they try to learn a new game. An additional heuristic trick that proves extremely useful when reconstructing a social game is to ask: What elements would I minimally have to use to create a board or computer game that would create the dynamics and the outcome of interest? This question forces researchers to specify the necessary elements of the game, and often makes them notice previously unobserved assumptions and mechanisms (Coleman, 1969).

Readers acquainted with qualitative research will have noticed that the proposed heuristic resembles the “coding paradigm” in grounded theory (Strauss, 2003 (1987); Strauss and Corbin, 2014 (1998)). This paradigm distinguishes conditions, interactions, strategies, and effects, and I will replace it here with our game model as a heuristic starting-point.

We call this heuristic “descriptive-interpretive” because at the same time it leads researchers to a description and an interpretive understanding of the central game elements. Understanding an element of a social game (a move, a rule, a representation) means capturing its possible meanings within the framework of the entire social game. For example, I understand the chess rule “castling” if I know under what conditions, with what reasons, and with what resources/objects a player may typically apply it. Thus, understanding a social game means understanding the “game language” and being able at least in principle to play the game. This is similar to what the later Wittgenstein (2003) and Winch (2008 (1958)) proposed.

Explanatory heuristic. The game mechanisms of social games can be tested with what I call an *explanatory heuristic*, which consists of several general hypotheses that steer researchers to useful and more substantive hypotheses and mechanisms that can be directly tested (for a similar endeavor, see Elias (1970)).

The hypotheses are created by distilling central sociological insights from the literature and expressing them as game mechanisms. We do not have space to give all the explanatory hypotheses here and point the reader to a companion paper (Anonymous). The goal at this point is just to show how the heuristic functions. We will therefore stick to three examples of hypotheses involving rules—but analogous hypotheses exist for all other game elements (actors, resources, objects, representations, etc.).

(H1) Rule change. If a new rule is created in a game and if it is enforced, then it will change the behavior of the players in accordance with the rule. Since rules restrict the chance that actors have of achieving some of their goals, some of these actors may try to find ways around the rule, leading to non-intended effects (Boudon, 1982). The rule-change hypothesis seems to be obvious, but rule change is the most important way that interventions are effectuated in social games, which we can see very well in games-for-fun. In 1925, football officials changed the offside law, reducing from three to two the number of players needed to make an attacker offside. This was done because the old rules had favored the defending team, who could plan very efficient offside traps, thus increasing the number of stoppages and decreasing the number of goals. The rule change did in fact have the intended effect, with the number of goals scored in the Football League increasing from 4700 in 1924–25 to 6373 in 1925–26.⁵ But it also had several unintended effects: for example, the defending team played much closer to their goal, and the attacking team made more use of their wingers. As for non-fun games, rule changes are one of the main types of intervention used in both democratic and authoritarian states, a prominent example being the use of lockdown rules and cards to prove vaccination status during pandemics. The unintended effects of

this are of course financial problems for cafés and shops, and the fact that people might begin forging their vaccination cards.

(H2) Absence or overuse of sanctioning—*anomie*. If transgressions of the rules are not sanctioned in a game, then the rules tend to disappear, and a state of “*anomie*” ensues (Durkheim, 2009 (1897); Esser, 2000a). Conversely, overuse of sanctioning may have the same effect. Overuse of sanctioning signals that rules are in effect not obeyed by other players and that further disobedience may be expected. In such a situation, players may be encouraged to join in the contestation of authority. Both absence or overuse of sanctioning may lead to the collapse of the game, and there are many examples of this hypothesis. In one infamous Chilean football game, the referee showed a red card to a player and then slapped the player across the face when the player confronted him. This led to his losing all authority, with many other players then confronting him and finally chasing him around the pitch in a scene resembling a Benny Hill sketch.⁶ Other good examples of everyday *anomie* are unruly classrooms with teachers who lack authority, or a state of lawlessness in failed states.

(H3) Rule advantage—social closure. If a game offers important benefits to players, then people from the outside will try to join the game and share in the benefits. The game’s current players will then try to set up entry barriers to keep the benefits to themselves (Weber, 1978 (1920)). Social closure exists with regard to players who try to enter a game from the outside, or to players who try to enter higher-ranked sub-games (e.g., elites, professions) from below. There are numerous examples that illustrate this hypothesis. Pastors try to prevent deacons from preaching the gospel; psychiatrists try to prevent psychologists from prescribing medication; Western countries try to stop immigrants from entering their territory; the aristocracy tries to stop the bourgeoisie from entering its circle.

Using this type of mechanism heuristic brings us close to the tradition of analytical sociology (Elster, 1989b; Hedström and Bearman, 2009; Manzo, 2010). Analytical sociology is very strong in explanation and methods but has had difficulty in reaching consensus about its central theoretical concepts, especially the definition of “social mechanisms”. Against this backdrop, the social-game perspective proposes to define social mechanisms as typical causal relationships in one or several social games. Explaining an outcome of a social game then means showing how a change in a game parameter (i.e., a rule change, a goal change, a change in context) has led causally, via a game mechanism, to a change in the game output. Two types of explanations may be distinguished.

A *reconstructive* explanation accounts for a *specific game move* or a *game process* by showing that precisely this game move or game process could have been predicted (or had a high probability of happening) in a specific historical instance. If we combine different specific explanations in a historical chain, then this may result in a *historical-genetic explanation of a specific game*. We try to reconstruct the game situation at different points in time, look at the options open to different players, and try to understand-explain all (or only the “important”) moves made by the players. In this way, we could, for example, explain the outbreak of the French Revolution historically genetically.

A *statistical* explanation occurs when we *explain variance in game outcomes*. Here, we account for the typical statistical effect of a change (or of a difference) of a game element on a game outcome. In this case, we normally assume a game mechanism to be at work, i.e., a typical way in which a combination of game elements creates a specific game outcome through game interaction.⁷ For example, we find that, when a larger ball was introduced in table tennis in 2000 (change of a game rule and game object), the average number of exchanges in a rally

increased (Djokic et al., 2019). The mechanism lies in the fact that the larger ball is slower due to more air resistance, which decreases the importance of the difficult serve, increases the chances of players receiving the serve, and allows for more attacking play overall.

Both reconstructive and statistical explanations are causal explanations that assume counterfactual causality (Pearl and Mackenzie, 2018; Woodward, 2004). Such explanations make statements such as: “The changing of rule R1 has caused outcome O in such and such a way; and, had we not changed rule R1, outcome O would not have changed in this way”.

Formal modeling. Social games can be formally studied in the style of economic game theory (Davis and Brams, 2021; Selten, 2001). Game theory can be defined as a “branch of applied mathematics that provides tools for analyzing situations in which parties, called players, make decisions that are interdependent. This interdependence causes each player to consider the other player’s possible decisions, or strategies, in formulating strategy” (Davis and Brams, 2021). The main types of game theory are classical game theory, evolutionary game theory, and behavioral game theory, and a further distinction is the game-theoretical analysis of cooperative and non-cooperative games (Breen, 2009).

Just like the theory of social games, economic game theory starts with the analysis of games-for-fun (*Gesellschaftsspiele*) (von Neumann, 1928), and is then extended to a mathematical and economic theory that claims to be applicable to a wide range of social phenomena (Luce and Raiffa, 1957; von Neumann and Morgenstern, 2004 (1944)). The initial idea is that multi-person strategic situations are different from rational action facing nature. They are like a “game” in which player A faces a player B, who also wants to win the game. Both players know this about each other; the situation is one of circularity. Neumann asks what rational action player A (and any other player) should perform in such a situation, and what the outcome of such a game will be if all the players are rational. Neumann, and later Neumann and Morgenstern, show that a certain number of very simple games have clear “solutions” (which, following Nash (1951), are called “equilibria”), i.e., endpoints that necessarily result if all players play rationally. Interestingly, they may also create suboptimal social effects even though all individuals play rationally (e.g., in the game of “prisoner’s dilemma”). To be able to calculate the solution of such a game, Neumann and Morgenstern need to make very strong assumptions: players must be perfectly rational and perfectly informed; the types of “moves” must be well-defined; and the payoffs for each outcome must be fixed.

Game theory has had important successes in disciplines such as economics, political science, international relations, and biology, but has been used less often in sociology (Breen, 2009; Swedberg, 2001), with many scholars in the social sciences criticizing the theory, just as they criticize the rational-choice approach, for being “unrealistic” and “irrelevant” (Schmitter, 2009). It is probably fair to say that the games constructed by game theory are strongly simplified and idealized (Little and Pepinsky, 2016): they often assume that information is perfect, that players are perfectly rational, that payoffs are well-defined, and that no other variables influence the game. Most real-world (not-for-fun) games are more complex, however. Rules have many layers (formal rules, actual rules), and different players interpret them differently. Games are routinely played even though the players only have a very unclear knowledge of a very restricted part of the game, and even if they do not yet understand the main payoffs. It is for this reason that we need the descriptive and explanatory heuristics described above—namely, in order to gain information about complex and constantly changing social games. When it

comes to complex real-life games, formal game theory often has only limited applicability.

From the point of view of the theory of social games, however, formal modeling and agent-based modeling do have an important function. First, formal modeling may help clarify the deep structure of a certain type of game (e.g., dilemma games, zero-sum games, and certain aspects in games, i.e., a penalty). Understanding that a certain real-life game has the deep structure of a prisoner's dilemma can be very illuminating. Second, the models created by formal modeling may function as ideal types that can be used to measure real cases by measuring the difference to ideal situations. They tell us what the pure form of the game looks like, and how perfectly rational players would play it. In this sense, they are normative. Third, formal and agent-based modeling may help us uncover hidden assumptions and simulate how different parameters may lead to different game outcomes.

An illustration: Blau's dynamics of bureaucracy. To illustrate the three heuristics, consider the following example: In his fascinating book "The Dynamics of Bureaucracy", Peter M. Blau (1955) describes the very different effects of a new monitoring system—productivity statistics—on two sections of a job-referral agency of a large state bureaucracy.

With a technique close to what I have described as a descriptive-interpretive heuristic, Blau reconstructs the structures and processes of the agency with its two sections. In terms of social game theory, he shows us the goals, rules, representations, and outcomes of the social game that is played here. Agents receive job-seeking individuals with the goal of matching them with job offerings, the outcome being a certain number of job placements per day. In an exploratory manner Blau shows us the great complexity of the social game being played—a complexity that could only be unearthed with qualitative methods. For example, Blau demonstrates that the official rules and goals set down in official regulations are adjusted for the specific needs and contexts at hand (1955: 24). To give one illustration among many: Agents should officially choose the best applicant for a job opening; in practice, however, and since jobs have to be filled quickly and agents are evaluated on the number of placements, such maximizing behavior is never observable. Rather, agents choose the first possible applicant for a job opening (satisficing). Or, to give another illustration, receptionists receiving job-seekers for jobs that have no opening should tell these job-seekers to come back two months later. To minimize tension, receptionists frequently give earlier due dates at their own discretion.

With an explanatory technique close to what I have described as explanatory heuristic, Blau gives several reconstructive and statistical explanations of bureaucratic practices. For example, he routinely uses the heuristic device to check how rule changes lead to changed intended and non-intended behavior. In one especially interesting case, he shows how the introduction of a new monitoring system leads to non-intended consequences in section A of the agency. The new monitoring system consists in counting the number of placements per agent per day and thus showing every agent's productivity. The non-intended effect consists in the fact that agents are afraid of being judged negatively if their individual scores are suboptimal. Therefore, they try to increase their placement score by using "dirty tricks" (hoarding of job openings; giving false information on job openings to fellow agents). Conversely, agents in section B react differently. The new monitoring system leads to norms forbidding fast and competitive work and everybody continues to work with everybody else. Blau explains the difference in reaction by three combined factors: The supervisor in section B puts less emphasis on statistics as a measure of individual

productivity than the supervisor in section A; the agents in section B have previously developed a professional code of employment interviewing; the agents in section B have more job security than the agents in section A. Interestingly, the cooperative section B proves—as a section—to be more productive than the competitive section A.

While Blau does not use formal modeling, his analysis makes it very clear that formal modeling could nicely be used to elucidate the deep structure of what is going on in the two sections. The overall situation is one of a prisoner's dilemma, where agents have an incentive to defect (use "dirty tricks"). If everybody uses "dirty tricks", the overall outcome is suboptimal (as happens in section A). Additional factors may lead to the creation of norms that impede defecting, thus leading to a better outcome (as happens in section B).

My point is neither that Blau uses social game theory (evidently, he does not), nor am I suggesting that his study would have become better had he consciously used the theory of social games—as it is, it is a remarkably good piece of social research. Rather, my claim is that this seminal piece of empirical work can be very well reconstructed with the "grand theory" of social games. The three heuristics are very close to what Blau actually does. The theory of social games thus brings the heuristics implicitly used by Blau into a coherent and explicit whole.

But why should one reconstruct the case with a grand theory in the first place? As I have argued above, grand theories have two important *functions*, and they can be seen in this case. First, the grand theory may provide new ideas and guidance to study a specific case. In our example, the theory of social games could not strongly improve the Blau study in descriptive-interpretive and explanatory terms since the study is already so expertly conducted. Still, we might get the idea to formally model the deep structure in the two sections. Second, grand theory summarizes sociological knowledge and makes findings from different substantive fields comparative. Applying the social game perspective to this case, we see the agency as a social game of the organizational type, where a rule change leads to non-intended consequences of a prisoner's dilemma type. In a next step we might for example use the case in a more general account about non-intended consequences in organizations. Alternatively, we might engage in comparative case studies about how rules in different social settings are adjusted to specific contexts both in organizations and other social games. To give just one example, the filling of life-boats on the Titanic as analyzed by Stolz et al. (2018) is an extremely different phenomenon than Blau's job agency. However, here, too, we find the phenomenon that official rules (women and children first) are adapted to specific circumstances: On Starboard, since not enough women were present, life-boats were filled up with men. The fact that very different phenomena may be summarized in an overall theoretical framework is a progress in sociological theorizing.

To reiterate, the functions of grand theory lie not so much in explaining specific facts better than competing theories, but in providing a helpful conceptual and heuristic environment for middle-range empirical research in all stages of the research process. The Blau study is an illustration of how the theory of social games may do this.

Conclusion

The main contribution of this paper is to propose an outline of a new "grand theory" which has a similar level of abstractness as its competitors, but a clearer link to empirical, qualitative, quantitative, formal, and agent-based modeling research.

I have outlined a meta-theory for the social sciences called “theory of social games”. Readers acquainted with sociological theory will have noticed that much of what this theory says is based on its integration of ideas from various strands of existing sociological traditions. While simply including some previous insights, the new general theory often also adds a new twist. Thus, the idea of causal game mechanisms is very close to the mechanisms described in the tradition of analytical sociology (Boudon, 1998; Hedström and Swedberg, 1998; Manzo, 2010). What is added is that game mechanisms are assumed to consist of interlinked game elements, and are therefore never only causal, but also symbolic. Likewise, the idea that social games are both real and socially constructed owes much to the writings of Searle (1995). What is added is that such a games perspective can be put to explanatory use, because games have (often quantifiable) outputs that are the causal effects of playing the game. The idea that there are different “levels” of social games is taken from Luhmann (1996), who speaks of “systems” rather than “games”. Unlike Luhmann, though, we allow many more forms of social games, and distinguish them according to how individuals become players. To give a final example, we can see that the idea that those players who are consistently disadvantaged by playing the game will try to change the rules, while those advantaged by the game will try to preserve and legitimize the rules, is of course inspired by Weber (1978 (1920)) and different field theories (Bourdieu, 1990; Fligstein and McAdam, 2011). What is added is that this element of contesting the rules of the game as well as other game parameters can be generalized from strategic action fields to games in general, and can be found in children’s games, in everyday interactions, and in “societal fields” like art and science.

The generality of the theory can be seen in the fact that it starts from a very abstract model of social games that is nevertheless able to capture phenomena at very different social levels: interactions, groups, milieus, movements, networks, organizations are all cast as social games. Phenomena of extreme complexity are seen and analyzed as combinations of nested and coupled social games. The theory can show that social reality is both real and constructed, that social action incorporates both rule-following and instrumental aspects, and that it is both causal and meaningful. But this generality and these insights are not yet what sets the theory apart, since systems theory, practice theory, discourse theory, and structuration theory all have such a high level of generality, and make some or all of these points.

The main advantage of the proposed “grand” theory of social games, though, is that it is better able than its competitors to bridge the theoretical-empirical research divide, by using a descriptive heuristic, an explanatory heuristic, and formal and agent-based modeling.

The descriptive-interpretive heuristic consists in several questions directly linked to the game elements (e.g., “What are the goals of this game?”, “What are the rules and sanctions of this game?”, “Who are the actors and what are their resources?”). This heuristic works much like the “coding paradigm” in grounded theory and lends itself very well to explorative qualitative work. It allows researchers to reconstruct a game model, one that is as simple as possible, yet as complex as necessary, and one that the players may not (or only partly) know consciously. This heuristic is strong because it is a systematization of how real people learn real games in the social world.

The explanatory heuristic consists of several hypotheses, which are again linked directly to the central game elements. This heuristic allows researchers to focus on typical game mechanisms that crop up time and time again in social games. They function like a toolbox of possible “nuts and bolts” that may or may not be applicable in an empirical social game. Explaining an outcome of a

social game means showing how a change in a game parameter (e.g., a rule change, a change in game leader, a change in resources) has led causally to a change in the game output. Again, this heuristic is strong because its central elements are straightforward and easily observable, and because this is how players try to have a causal influence on games in social reality. In other words, our explanatory heuristic is a systematization of how real people try to have a causal influence on real games in the social world.

Finally, social games can also be analyzed with formal (mathematical) game theory, which can be very useful when it comes to understanding whether such games have solutions that would be chosen by rational players. Such formal analysis may help clarify the deep structure of a certain type of game (e.g., dilemma games, zero-sum games), create ideal types from which to measure real cases by measuring the difference to ideal situations, and reveal other possibilities not (yet?) observed empirically. Agent-based modeling may also help towards a better understanding of emergent game behavior given various types of initial parameters.

Some critics might say: “We already have economic game theory, so why do we need the theory of social games?” My answer is that economic game theory does not exhaust the possibilities of the game model for the social sciences. Economic game theory is extremely strong in its domain, i.e., when it comes to formal analysis, experimental research, and simulation. But my point is that games as starting points are also very useful in additional fields, such as when we think about how individuals learn and understand games, how they create their identities, and how they create the symbolic worlds in which we live. Thus, for a vast number of research questions in the social sciences, economic game theory must be supplemented with a sociological take on games. These questions must be addressed with qualitative or quantitative empirical methods, and they may or may not lead to an additional formalization à la game theory. To give just one example: if you want to know about football, reading only game-theoretical accounts of the sport will not be of much use.

Other critics might say: “This is all very well: so we can see social reality as a number of interlinked social games. But we could just as well see it as several fields (Bourdieu), social systems (Parsons, Luhmann), configurations (Elias), or structures (Giddens). What is the advantage of starting from scratch with the game concept?” I have argued that the major advantage that the theory of social games has over its theoretical competitors is that it is just as general as its competitors, while having a more straightforward link to middle-range theory and empirical research.

This article of course has limits. It is only an outline that sets out the major ideas in a very general way, and it has had to skip many deeper issues—something that is difficult to avoid in an initial sketch of a new theory. Thus, I have only alluded to the different types of games (e.g., interaction, group, milieu, etc.), and to how games may be interlinked (nested, coupled). I have not been able to present the descriptive and explanatory heuristic in full, and nor have I been able to go into questions of trust and power. It is also evident that, while formal game theory and agent-based modeling are already well-established scientific fields, using descriptive and explanatory game heuristics must still prove its usefulness in the future.

These limits notwithstanding, I am convinced that there is some promise in developing a general theory of social games, and I welcome both theoretical and empirical studies that develop this new research path further.

Data sharing. Data sharing is not applicable to this research as no data were generated or analyzed.

Received: 3 September 2022; Accepted: 19 June 2023;

Published online: 30 June 2023

Notes

- 1 My use of the concept “social game” is not metaphorical, since I define the concept of game, identify its elements, and show how the concept can be operationalized and put to practical use in the proposed heuristics.
- 2 Some readers may expect a “theory” to single out a specific area of social life in which it describes and explains phenomena in a novel way. But that is not the goal and function of grand theory (and therefore not of this paper).
- 3 Among the sociological and philosophical classics on games and their link to social evolution and socialization, Mead takes a special place. Mead, G.H. (1967) (1934) *Mind, Self & Society from the Standpoint of a Social Behaviorist*. Edited and with an Introduction by Charles W. Morris. Vol. 1. University of Chicago Press, Chicago. For lack of space, I cannot do justice to Mead in this paper. See for these discussions Nungesser, F. (2020) The social evolution of perspective-taking. Mead, Tomasello, and the development of human agency. *Action, Agency and Practice*. 11(1): 84-107 and Gillespie, A. (2005) G.H. Mead: Theorist of the Social Act. *Journal for the Theory of Social Behavior*. 35(1): 19–39. <https://doi.org/10.1111/j.0021-8308.2005.00262.x>.
- 4 Even though people do not count as objects in the theory, they can be treated like objects in games.
- 5 See Caroni, Julian. “The History of Offside”. http://www.kenaston.org/download/KenAstonRefereeSociety/offside_history-JulianCarosi.pdf. Accessed 20 January 2022.
- 6 <https://www.youtube.com/watch?v=GQWqJ5iHgVY&t=77s> (Accessed 20 January 2022).
- 7 The terms “game mechanism” and “game” have to be distinguished as can be seen by the definitions given. One game may therefore include a variety of game mechanisms (e.g., sanctioning mechanisms, self-reinforcing (de)motivating mechanism, player-recruitment mechanism, etc.).

References

- Alexander J (1986) *Theoretical logic in sociology*. Vol. 4. The modern reconstruction of classical thought: Talcott Parsons. University of California Press, Berkeley, Los Angeles
- Bateson P (2005) The role of play in the evolution of great apes and humans. In: Pellegrini AD, Smith PK (eds) *The nature of play. Great apes and humans*. The Guildford Press, New York, pp. 13–24
- Van den Berg A (1998) Is sociological theory too grand for social mechanisms? In: Hedström P, Swedberg R (eds) *Social mechanisms. An analytical approach to social theory*. Cambridge University Press, Cambridge, pp. 204–237
- Boudon R (1976) Comment on Hauser’s review of education, opportunity, and social inequality. *Am J Sociol* 81(5):1175–1187. <https://doi.org/10.1086/226196>
- Boudon R (1982) *The unintended consequences of social action*. St. Martin’s Press, New York
- Boudon R (1998) Social mechanisms without black boxes. In: Hedström P, Swedberg R (eds) *Social mechanisms. An analytical approach to social theory*. Cambridge University Press, Cambridge, pp. 172–203
- Bourdieu P (1980) *Le sens pratique*. Minuit, Paris
- Bourdieu, P. (1984) Quelques propriétés des champs, in: ders. (ed) *Questions de sociologie*. Les Editions de minuit, Paris: 113–120
- Bourdieu P (1990) *The logic of practice*; translated by Richard Nice. Stanford University Press, Stanford
- Bourdieu P (1983) Oekonomisches Kapital, kulturelles Kapital, soziales Kapital. In: Kreckel R (ed) *Soziale Ungleichheiten. Sonderband 2*. Schwartz, Göttingen, p 183–198
- Breen R (2009) Game theory. In: Hedström P, Bearman P (eds) *Analytical sociology*. Oxford University Press, Oxford
- Burr V (2015) *Social constructionism*. Routledge, London
- Caillois R (2001) *Man, play, and games*. University of Illinois Press, Urbana and Chicago, (1961)
- Coleman JS (1969) Games as vehicles for social theory. *Am Behav Sci* 1:2–7. <https://doi.org/10.1177/00027642690120060>
- Coleman JS (1990) *Foundations of social theory*. The Belknap Press of Harvard University Press, Cambridge
- David FN (1955) Studies in the history of probability and statistics I. Dicing and gaming (a note on the history of probability). *Biometrika* 42(1/2):1–15. <https://doi.org/10.2307/2333419>
- Davis MD, Brams SJ (2021) Game theory. *Encyclopedia Britannica*
- DiCicco-Bloom B, Gibson DR (2010) More than a game: sociological theory from the theories of games. *Sociol Theor* 28(3):247–271. <https://www.jstor.org/stable/25746228>
- Djokic Z, Straub G, Malagoli Lanzoni I, Katsikadelis M, Munivrana G (2019) Effects of rule changes on performance efficacy: differences between winners and losers table tennis players. *Phys Educ Sport* 17(1):149–163. <https://doi.org/10.22190/FUPES180228016D>
- Durkheim E (2009) *Le suicide*. Etude de sociologie, Payot, Paris, (1897)
- Elias N (1970) *What is sociology?* Columbia University Press, New York
- Elster J (1989a) *The cement of society. A study of social order*. Cambridge University Press, Cambridge
- Elster J (1989b) *Nuts and bolts for the social sciences*. Cambridge University Press, Cambridge
- Esser H (2000a) *Soziologie. Spezielle Grundlagen. Band 3: Soziales Handeln*, Campus, Frankfurt
- Esser H (2000b) *Soziologie. Spezielle Grundlagen. Band 4: Opportunitäten und Restriktionen*, Campus, Frankfurt
- Esser H (2000c) *Soziologie. Spezielle Grundlagen. Band 5: Institutionen*, Campus, Frankfurt
- Fligstein N, McAdam D (2011) Toward a general theory of strategic action fields. *Sociol Theor* 29(1):1–26
- Garfinkel H (1967) *Studies in ethnomethodology*. Prentice-Hall, Englewood Cliffs
- Garfinkel H (2006) A conception of and experiments with “trust” as a condition of concerted stable actions. In: O’Brien J (ed) *The production of reality*, Fourth Edition. Pine Forge Press, Thousand Oaks, pp. 370–380. (1963)
- Giddens A (1984) *The constitution of society. outline of the theory of structuration*. Polity Press, Cambridge
- Giddens A (1993) *New rules of sociological method. A positive critique of interpretative sociologies*. Polity Press, Cambridge
- Gillespie A (2005) G.H. Mead: Theorist of the social act. *J Theor Soc Behav* 35(1):19–39. <https://doi.org/10.1111/j.0021-8308.2005.00262.x>
- Goffman E (1961) *Encounters: two studies in the sociology of interaction*. Allen Lane. The Penguin Press, Indianapolis
- Goffman E (1967) The nature of deference and demeanor, in: ders. (ed) *Interaction Ritual*. Anchor Books. pp. 47–96
- Goffman E (1969) *Strategic Interaction*, Philadelphia
- Goffman E (1971) *Relations in public*. Basic Books Inc, New York
- Goffman E (1974) *Frame analysis. An essay on the organization of experience*. Harvard University Press, Cambridge
- Goldthorpe JH (2000) *On sociology. Numbers, narratives, and the integration of research and theory*. Oxford University Press, Oxford
- Gray P (2012) The value of a play-filled childhood in development of the hunter-gatherer individual. In: Narvaez D, Panksepp J, Schore AN, Gleason TR (eds.) *Evolution, early experience and human development: From research to practice and policy*. Oxford University Press, Oxford, pp. 352–370
- Hacking I (1999) *The social construction of what?* Harvard University Press, Cambridge
- Harari YN (2011) *Sapiens. A brief history of humankind*. Vintage books, London
- Hauser MD, Yang C, Berwick RC, Tattersall I, Ryan MJ, Waturmull J, Chomsky N, Lewontin RC (2014) The mystery of language evolution. *Front Psychol* 5(401):1–12. <https://doi.org/10.3389/fpsyg.2014.00401>
- Hedström P, Bearman P (2009) *The Oxford handbook of analytical sociology*. Oxford University Press, Oxford
- Hedström P, Swedberg R (1998) *Social mechanisms: an introductory essay. Social mechanisms. An analytical approach to social theory*. Cambridge University Press, Cambridge, pp. 1–31
- Huizinga J (1963) *Homo Ludens. Vom Ursprung der Kultur im Spiel*, Rowohlt, Reinbek bei Hamburg, (1956)
- Kew FC (1992) Game-rules and social theory. *Int Rev Sociol Sport* 27:293–306. <https://doi.org/10.1177/1012690292027004>
- Klabbers JHG (2009) *The magic circle: principles of gaming & simulation* (3rd and rev. ed.). Sense Publishers, Rotterdam
- Klabbers JHG (2018) On the architecture of game science. *Simul Gaming* 49(3):207–245
- Little AT, Pepinsky TB (2016) Simple and formal models in comparative politics. *Chin Polit Sci Rev* 1:425–447. <https://doi.org/10.1007/s41111-016-0032-0>
- Luce RD, Raiffa H (1957) *Games and decisions. Introduction and critical survey*. John Wiley & Sons, Inc., New York
- Luhmann N (1996) *Social systems*. Stanford University Press, Stanford
- Malinowski B (1960) The functional theory. In: Malinowski B (ed) *A scientific theory of culture and other essays*. Galaxy Book, New York, pp. 145–176. (1944)
- Manzo G (2010) Analytical sociology and its critics. *Eur J Sociol* 51(1):129–170. [10.1017/S0003975610000056](https://doi.org/10.1017/S0003975610000056)
- Marx K (1992) *Capital: a critique of political economy*. Penguin, London, (1867)
- Maynard DW (1991) Goffman, garfinkel, and games. *Sociol Theor* 9(2):277–279
- Mead GH (1967) *Mind, self & society from the standpoint of a social behaviorist*. Edited and with an introduction by Charles W. Morris. Vol. 1. University of Chicago Press, Chicago, (1934)
- Merton RK (1968a) On sociological theories of the middle range, in: Ders. (ed) *Social theory and social structure*. The Free Press, New York. pp. 39–72
- Merton RK (1968b) Social structure and anomie, in: ders. (ed) *Social theory and social structure*. The Free Press, New York. pp. 185–214

- Münch R (1996) Autopoiesis per definition. In: Preyer G, Peter G, Ulfig A (eds) *Protozoologie im Kontext. "Lebenswelt" und "System" in Philosophie und Soziologie*. Königshausen, Würzburg, pp. 347–356
- Nash J (1951) Non-cooperative games. *Ann Math* 54(2):286–295
- von Neumann J (1928) Zur Theorie der Gesellschaftsspiele. *Mathematische Annalen* 100:295–320. <https://doi.org/10.1007/BF01448847>
- von Neumann J, Morgenstern O (2004) *Theory of games and economic behavior*. Princeton University Press, Princeton, (1944)
- Nungesser F (2020) The social evolution of perspective-taking. *Mead, Tomasello, and the development of human agency. Act Agency Pract* 11(1):84–107
- O'Brien JE (2006) *The production of reality. Essays and readings on social interaction, Fourth Edition*. Pine Forge Press, Thousand Oaks
- Parsons T (1977) The present status of "Structural-Functional" theory in sociology, in: ders. (ed) *Social systems and the evolution of action theory*. The Free Press, New York. pp. 100–117
- Pearl J, Mackenzie D (2018) *The book of why. The new science of cause and effect*. Basic Books
- Rawls J (1955) Two concepts of rules. *Philos Rev* 64:3–32. <https://doi.org/10.2307/2182230>
- Schmitter PC (2009) The nature and future of comparative politics. *Eur Polit Sci Rev* 1(1):33–61. <https://doi.org/10.1017/S1755773909000010>
- Searle JR (1995) *The construction of social reality*. Penguin
- Selten R (2001) Die konzeptionellen Grundlagen der Spieltheorie einst und jetzt. *Bonn Econ Discussion Papers, No 2/2001*. https://www.econstor.eu/bitstream/10419/78400/1/bgse2_2001.pdf
- Smith P, Riley A (2008) *Cultural theory. An introduction*. Wiley-Blackwell, Malden
- Stachura M (2014) By fair means. *Radsport, Bergsport und das Problem der normativen Regulierung des Handelns. Berliner J für Soziologie* 24:111–134. <https://doi.org/10.1007/s11609-014-0239-6>
- Stolz J, Lindemann A, Antonietti J-P (2018) Sociological explanation and mixed methods: the example of the *Titanic*. *Qual Quant* 53(3):1623–1643. <https://doi.org/10.1007/s11135-018-00830-0>
- Strauss A (2003) *Qualitative analysis for social scientists*. Cambridge University Press, Cambridge, (1987)
- Strauss A, Corbin J (2014) *Basics of qualitative research. Techniques and procedures for developing grounded theory, Fourth Edition*. Sage, Thousand Oaks, (1998)
- Swedberg R (2001) Sociology and game theory: contemporary and historical perspectives. *Theor Soc* 30(3):301–335. <https://www.jstor.org/stable/657964>
- Weber M (1978) *Economy and society. An outline of interpretive sociology*. University of California Press, Berkeley, (1920)
- Weber M (1988 (1922)) R. Stammlers "Ueberwindung" der materialistischen Geschichtsauffassung, in: ders. (ed) *Gesammelte Aufsätze zur Wissenschaftslehre*. J.C.B. Mohr UTB (Paul Siebeck), Tübingen
- Weber M (1922) *The social psychology of the world religions*. In: Gerthand HH, Wright MC (eds) *From Max Weber*. Oxford University Press, New York, pp. 267–301
- Winch P (2008) *The idea of a social science and its relation to philosophy*. Routledge, London and New York, (1958)
- Wittgenstein L (2003) *Philosophische Untersuchungen. Auf der Grundlage der Kritisch-genetischen Edition neu herausgegeben von Joachim Schulte*. Suhrkamp, Frankfurt
- Woodward J (2004) *Making things happen: a theory of causal explanation*. Oxford University Press, Oxford

Acknowledgements

The author acknowledges helpful comments on previous versions of the article by Blaise Bonvin, Anaïd Lindemann, Jan H.G. Klabbers, Matthias Koenig, David Voas, and Aurore Schwab.

Competing interests

The author declares no competing interests.

Ethical approval

This article does not contain any studies with human participants performed by any of the authors.

Informed consent

This article does not contain any studies with human participants performed by any of the authors.

Additional information

Correspondence and requests for materials should be addressed to Jörg Stolz.

Reprints and permission information is available at <http://www.nature.com/reprints>

Publisher's note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.



Open Access This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this license, visit <http://creativecommons.org/licenses/by/4.0/>.

© The Author(s) 2023