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## INDIRECT RECIPROCITY: THE CONCEPT AND PSYCHOLOGICAL MECHANISMS

The paper has an exploratory character and provides an overview of selected perspectives on both downstream (“as you scratch someone else’s back, I will scratch yours”) and upstream (“pay it forward”) versions of indirect reciprocity. Sociobiologists’ point of view is presented, as their work has contributed to the fact that the reciprocity of openness to a third party has become a subject of research in other scientific fields. Next, the concept of downstream and upstream indirect reciprocity is explained, according to the nomenclature used by selected mathematical biologists and economists. Finally, a psychological view of both forms of indirect reciprocity (positive and negative) is given through theoretical considerations, examples of empirical studies, as well as selected mechanisms and determinants that may underlie the phenomenon.

**Keywords:** upstream indirect reciprocity; downstream indirect reciprocity; gratitude; reputation.

What we usually have before our eyes when thinking of reciprocity is situations in which someone renders a service to another person and that person repays with the same or with a behavior of similar value. In its simplest form, this principle is expressed as “a favor for a favor” and is one of the best known as well as the most frequently described and applied principles of social life (Cialdini, 2007). Yet, while thinking along the lines of “You scratch my back and I will scratch yours” (Nowak & Sigmund, 2005) is common, we much less often

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reflect on behaviors that follow the patterns of “You scratch my back and I will scratch someone else’s” or “I scratch your back and someone else will scratch mine.” The first of the two phenomena mentioned above is referred to in the literature as upstream indirect reciprocity and consists in passing on all the benevolence or malevolence that one has experienced from others. The other phenomenon is called downstream indirect reciprocity. Its dynamics is based on the principle that the benevolence or malevolence we have shown towards others in the past will return to us in the form of kindness or disrespect from third parties, not involved in the original interaction (Szcześniak & Nieznańska, 2009). Contrary to what we may think, both forms of reciprocity have been present in everyday human life since days of old; as an idea, they have a long history in the context of religiosity and mythological traditions (Boser, 2014). Also a review of selected philosophical works from various cultures reveals that they were known and applied as early as antiquity (Szcześniak & Nieznańska, 2009).

The aim of the present paper is to offer a theoretical analysis of both upstream and downstream indirect reciprocity. The paper presents a review of theories and studies addressing this phenomenon. We present the perspective of sociobiologists, who were instrumental in making reciprocity an object of exploration and research in the remaining scientific disciplines. Next, we explain the concept of indirect reciprocity and its two forms: downstream and upstream, in accordance with the nomenclature used by selected mathematical biologists and economists. Finally, we present a psychological perspective on indirect reciprocity: (1) theoretical reflections on the dynamics of behavior towards a third party; (2) empirical psychological studies on upstream reciprocity; (3) selected mechanisms and determinants of downstream reciprocity.

### **SOCIOBIOLOGICAL PERSPECTIVE ON INDIRECT RECIPROCITY**

The concept of indirect reciprocity is relatively new, since it began to function as a term as late as the 1980s, when evolutionary biologist Alexander used it to refer to certain human behaviors, consisting in extending interaction to include the presence of a third party (Hauser, 2007). Scholars also refer to indirect reciprocity as: generalized reciprocity (Trivers, 1971), generalized exchange (Baker, 2012), serial reciprocity (Lepianka, 2012; Moody, 2004), or transitive reciprocity (Schmidtz, 2006). Its essence is the presence of a third

party (Szcześniak & Nieznańska, 2009), who becomes the addressee of action despite having done nothing that would have concerned his or her benefactor.

The credit for making the first attempts at describing the phenomenon of indirect reciprocity belongs to sociobiologist Trivers (Ohtsuki & Iwasa, 2004). Still, as Trivers (1971) himself admits, it was other scholars who inspired him to reflect on behaviors subsequently termed “indirect reciprocity,” and he only organized their ideas. These other scholars were Darlington and Macker (1966), the psychologists who published a short article in 1966 in which they reported the results of an experiment on the displacement of guilt. Individuals in whom a sense of guilt was induced turned out to be more willing to engage in prosocial activities (in the form of giving blood) than individuals who were assured that they had hurt no one. In the experiment, altruistic activity was not directed at a person hurt by the participants in the study but at a third party, who had not taken part in the first interaction. Based on the above information and taking the current knowledge into account, we can assume that empirical scientific research concerning the phenomenon of indirect reciprocity originated as early as the 1960s rather than in the 1970s (Szcześniak & Jean-Baptiste, 2012).

Citing the above-mentioned study by Darlington and Macker (1966), Trivers (1971) writes about generalized altruism, in which altruistic activity may concern not one’s benefactor or the person one has wronged, as it does in typical direct reciprocity situations (you–I–you), but a completely different person, thus going beyond the interaction of two people and extending to someone else: a third party. The author considers two situations in the context of good being done. Firstly, the phenomenon he discusses relates to people who may not only bestow good on someone who has benefited them in a particular way before, but also extend their gift to other people. Secondly, seeing a person who bestows good on others, the observer may reward them in the future, even though he or she has never received anything from that person before. The former behavior brings to mind upstream reciprocity, whereas the latter relates to downstream reciprocity. This idea was subsequently named, elaborated, and formalized by Nowak and Sigmund (1998a, 1998b, 2005), and it will be presented in detail in the next section.

The next author usually mentioned in studies on the scientific history of indirect reciprocity is sociobiologist Alexander (1986). Alexander is considered to be the scientist who introduced the term “indirect reciprocity” in the sociobiological context (Nowak & Highfield, 2011; Szcześniak & Jean-Baptiste, 2012). He observes that individuals live in a constant exchange of gifts or wrongs, taking place among family members and friends as well as among

strangers. In these exchange relationships they receive rewards, derive benefits, or suffer punishment not only within their family but also within a broader community or even in the context of someone whom they have given no good and whom they have not wronged before. This behavior is based on the reputation that a particular individual has earned on the basis of previous interactions. At the same time, people engage in activities directed towards others, passing on good and evil, depending on the kind of benefit obtained or the lack of good suffered earlier.

It can be noted that Alexander (1987) postulates the existence of both positive and negative forms of upstream and downstream reciprocity when he remarks that indirect reciprocity systems include a guarantee of reward and a promise of punishment. A person who passes on good because he or she has experienced it before is an example of positive upstream reciprocity. When a person passes on evil because he or she has been its victim, the situation illustrates negative upstream reciprocity. An individual who is impressed by the observed person's good reputation will reward him or her for the good bestowed on someone else (positive downstream reciprocity), while an individual struck by someone's bad reputation may repay that person with evil (negative downstream reciprocity).

Elaborating on the topic, Alexander (1986) writes about the circumstances in which indirect reciprocity takes place. In the first case, reciprocity occurs when rewards or punishments are transferred to individuals or groups not involved in the original activity. In the second case, based on the activities of two observed people, a witness to direct reciprocity interaction decides which of these people he or she will cooperate with in the future. Usually it is good reputation and recognition that determine the choice of a person, while bad reputation and notoriety are decisive in rejecting him or her. Both illustrations are examples of indirect reciprocity, because reward and punishment either come from or are directed at a third party.

#### **BIOMATHEMATICAL AND ECONOMIC PERSPECTIVES ON INDIRECT RECIPROCITY**

Both Trivers's contribution and Alexander's intuitions were noted by Nowak and Sigmund (1998a, 1998b, 2005). In order to explain the phenomenon of indirect reciprocity, these scholars distinguished upstream indirect reciprocity and downstream indirect reciprocity, analyzing both of these forms in the context

of the game theory model. According to the assumptions of the game theory, particularly those concerning rationality, cooperation, and competition, the authors investigated the social interactions between individuals (players). Using evolutionary games and computer simulations, employed in biomathematical and economic research (Abramczuk, 2008) as well as facilitating the comprehension of the phenomena and practices occurring among people, they checked how the observed individuals behaved and what decision they made when given a gift, when wronged, and in situations of positive and negative activity.

Nowak and colleagues (Nowak & Roch, 2007; Nowak & Sigmund, 1998a, 1998b, 2005) note that upstream indirect reciprocity consists in passing on what one has received and that it concerns a person who has just received help from someone else and has an incomprehensible or even irrational desire to support a third party with good. Their research revealed that recipients of beneficial activity were more willing to help strangers, thus passing on the good they had received. The authors stress that, although it is difficult to understand this kind of behavior from the evolutionary perspective, one of the factors that may be linked with willingness to pass on the benevolence experienced is gratitude. There are reasons to believe that the feeling of gratitude and other positive emotions that accompany gratitude may be the key to the understanding of the dynamics of upstream indirect reciprocity. This stems from the fact that the good mood experienced at the moment of receiving a benefit may induce a person to bestow benefits on others and to share his or her joy with them. This kind of behavior is understandable also in the context of the popular saying that love gives wings, which means that happiness makes us capable not only of acting for the benefit of the beloved (or the benefactor), but also – because of that person – for the benefit of other people, who are often strangers. In this case, the mechanism of upstream indirect reciprocity is rooted in the fact that the addressee has received a specific good before and wishes to bestow it on others as well (Gruszecka, 2011; Kwiatek, 2016).

“Pay it forward” interactions, however, are not limited to prosocial activities (Leimgruber et al., 2014). People are recipients not only of benevolent helpful behaviors but also of unfavorable actions, which they pass on to others, thus creating what Gray, Ward, and Norton (2014) refer to as a chain of ill will. Although exposure to malevolence does not necessarily result in the transfer of negative emotions to a person who has done nothing wrong, research suggests that individuals who have fallen victim to other people’s self-interest are more likely to treat innocent strangers egoistically (Yu & Kou, 2015).

Downstream indirect reciprocity is based on the assumption that (Nowak & Roch, 2007; Nowak & Sigmund, 2005) a person who helped someone in the past has a greater chance of receiving support from other people. Using mathematical computational models, Nowak and Sigmund (2005) found that the natural selection mechanism may be conducive to helping behaviors directed towards people enjoying a good reputation. The results of a field experiment showed that support given to an observed person who had helped someone else was higher when the observer's knowledge about the helping person was sufficiently large (Yoeli, Hoffman, Rand, & Nowak, 2013). This knowledge can be derived from personal observation or from information provided by other people (through gossip). As the existing studies on direct reciprocity reveal, people often show benevolence to individuals who are benevolent towards them. This is the simplest form of the positive pattern of "I have done something good for you because you did something good for me." It is possible to extend this relationship to include the presence of a third party and, by analogy, to conclude that we show greater benevolence towards those people who are friendly towards others (Rockenbach & Milinski, 2006). The theoretical foundations of this hypothesis lie in the principle of building a good reputation (Alexander, 1987; Fehr & Fischbacher, 2003; Nowak & Sigmund, 2005; Ohtsuki, & Iwasa, 2004), which can be formulated as follows: "Someone has done something good for me because I did something good for someone else in the past." In this case, benevolence towards the benefactor is determined – though not exclusively – by the reputation that the person has earned among people through his or her earlier behavior, since help rendered or goodness shown to others give rise to the belief that the benefactor is noble and helpful (Ohtsuki, Iwasa, & Nowak, 2009). In this case, the strategy of downstream indirect reciprocity depends on what a person has done for someone else's good.

Roberts (2018) proposes an alternative way of explaining why people help those who support others. He claims that helping someone who has previously supported another person may stem from the green-beard effect. According to this explanation, a carrier of a particular gene – in this case, the altruistic gene – may or may not find it in other individuals. Depending on whether or not the observed individual has it, the carrier of the altruistic attribute will behave accordingly towards them. Observing a benevolent act, he or she will act similarly. In the case of hostile behavior, he or she is very likely to respond accordingly, too. A particular choice is based on the ability to recognize attributes characteristic of the altruistic gene in other individuals (in order to help them).

If these attributes are absent, the individual will be deprived of help because he or she does not help others.

In the context of Roberts's theory it can be assumed that downstream indirect reciprocity manifests itself not only in rewarding people for good but also in interactions punishing them for injustice or harm done to other people (Nowak & Roch, 2007; Nowak & Sigmund, 2005). In the literature this dynamics is referred to as altruistic punishment and concerns cases in which people decide to punish individuals who, as they observe, do not cooperate with others (Fehr & Gächter, 2002). In an empirical study, scholars (Fehr & Fischbacher, 2003) found that more than two-thirds of respondents who did not participate in exchange and who observed actions at variance with social norms being perpetrated against other group members decided to punish the dishonest players, even though the abuse did not affect them directly. Seeing the lack of contribution to the group project, the observers meted out punishment by considerably reducing the amount of money to be given to the non-cooperative players.

The two types of indirect reciprocity differ in the direction of the chain of actions. In the case of upstream indirect reciprocity, the player is motivated to help a person after receiving help from a benefactor, whereas in the case of downstream indirect reciprocity the player considers reputation outcomes dependent on past helping activities directed towards other people. The player helps another player who has a good reputation, but not one who has a bad reputation. Nowak and Sigmund (2005) proposed a computational model in which players helping others are perceived as good while players withdrawing their help are regarded as bad. According to the model, helping others to maintain a good reputation is more profitable than refusing to help in order to achieve a short-term benefit (Nakamura & Masuda, 2011).

**INDIRECT RECIPROCITY  
IN THE PSYCHOLOGICAL LITERATURE  
– A THEORETICAL PERSPECTIVE**

A preliminary review of the psychological literature reveals the presence of contents pertaining to indirect reciprocity (even if it was not yet referred to in this way by psychologists) as early as the 1950s, which is twenty years before Trivers's first intuitions (concerning its dynamics) and thirty years before Alexander coined the terminology functioning in present-day research. It will

easily be noted that the examples found so far concern the “pay it forward” dynamics.

One of the first signs of upstream indirect reciprocity can be found in Klein’s (1957) well-known psychological work, *Envy and Gratitude*. The author presents the acquisition of this ability from the process perspective, suggesting that paying forward the good one has received or experienced takes place as part of long-term development. According to Klein, in an object relation, usually with the mother or a different significant other, the child learns to accept a gift and initially wants to keep it to himself or herself only. This is a typical egocentric reaction, characteristic of early developmental stages. With the recurring experience of gratification and with the increasing trust in the surrounding world, the child gradually begins to feel joy caused by the good experienced and, in consequence, also gratitude, as well as a desire to repay the benefactor for the pleasure. At this stage, this is typical direct reciprocity, in which the beneficiary repays his or her benefactor. But the need to reciprocate directly is not the last ability the child acquires. The author emphasizes that the child’s systematic reception of good gives him or her a sense of internal wealth and inspires a desire to share the good received with other people. It is therefore reasonable to suppose that in this way, through an appropriate object relation, the child goes beyond the strict circle of the you–I–you relationship, characteristic of direct reciprocity, and opens up a new type of relationship: you–I–other, characteristic of upstream indirect reciprocity.

Abraham H. Maslow (1943, 1968) writes about indirect reciprocity in a slightly different context. According to him, one of the main human needs is the desire to be loved and to love (Maslow, 1943) – to receive love and to give it. At first glance, this phrasing may bring to mind only the dynamics of direct reciprocity: “I love you because I am loved by you.” In reality, however, apart from egoistic love (type D – deficiency love), which is based mainly on taking rather than on giving or conditional giving, there is also genuine love (type B – being love), distinguishing independent and selfless individuals enjoying their own and other people’s successes. True love involves not only the ability to thank for the gift received, but also gratitude that reaches beyond the benefactor. The beneficiary’s experience of individual benevolence – received from a particular person – does not limit his or her gratitude to the benefactor only but makes it possible for the person to see good and beauty in the entire surrounding reality. What is more, Maslow (1968) stresses that perceiving others as good inspires the person who has experienced a stranger’s benevolence with a strong

desire to do something good to others too. This is almost a sense of obligation, a need to share the positive experience with others.

An example of upstream indirect reciprocity is also found in other publications (Lazarus & Lazarus, 1994; Lazarus, 2006). Discussing empathic emotions, including gratitude, the authors recount the story of a certain student (according to Prof. Joseph Campos, the student was Lazarus himself), which illustrates the “pay it forward” dynamics. Here is the story:

John (in a different article his name is Richard), aged 18, was beginning his studies at the City College of New York in 1940. The college gave students with financial difficulties an opportunity to start education without having to pay tuition fees in the first term. Books and other necessary items had to be bought by the student, which often forced him or her to get an extra job. Therefore, John thought that he could earn money to cover the remaining university expenses by cutting people’s hair. The simplest way to find clients was to look for them among his friends. He worked in his spare time, thus earning his living.

One day the young amateur hairdresser received a warning from a policeman (probably following a denunciation by a professional hairdresser) that he should stop working because had no license. John understood that he would either have to buy a permit to work in the trade or give it up. Meanwhile, one of the professors was informed about John’s problems and invited him for a conversation in order to understand his situation better. Aware of the gifted student’s potential, he offered him a job as a courier delivering academic documentation to various university faculties in New York. The income was comparable to that which John had achieved from his previous hairdressing work; he worked conscientiously and was always on time, never neglecting his university duties. After a few months the professor offered him a job that was more interesting and related to his studies: performing statistical calculations. Also in this case John showed diligence and persistence. The professor appreciated his honesty and his work being often completed ahead of schedule, increasing his remuneration.

John never forgot his professor’s kindness. After completing his military service and obtaining a doctoral degree, he remained at the university, became a well-known and respected lecturer in his field – and, bearing in mind what he had received he began himself to help gifted students in a difficult financial situation. Many years later, on an anniversary of the professor who had helped him in his hard student years, John wrote a letter to him, conveying heartfelt gratitude. The experience from the past taught John to share good with others and pay it forward.

In this story it is not difficult to notice the role of gratitude, which was mentioned by Nowak and Roch (2007). Another motive behind the “pay it forward” behavior may be empathy, considered by many authors (Emmons & Stern, 2013; Lazarus, 2006; Worthington, 2003) to be a disposition to feel the emotions experienced by another person and to psychologically put oneself in that person’s place. There may be many more hypothetical factors, and they may concern also the hierarchy of values, the sense of responsibility and/or justice, or meaning in life and making life meaningful. This shows the broad array of motives that may inspire actions characteristic of indirect reciprocity. Apart from factors motivating people to help others the way the professor did, it is possible to distinguish at least two determinants of this help. The first one is mindfulness, defined as the ability to be here and now and to notice what is happening around. We are beneficiaries of good on numerous occasions, but we are not always able to thank for this good – for the simple reason that we are not aware of it and do not notice it. The next determinant is appreciation, understood as the ability to recognize another person’s action that we benefit from as valuable. It happens that we can see good but we do not regard it as worth thanking for.

Apart from illustrations of positive “pay it forward,” the literature provides rare examples illustrating the dynamics of negative indirect reciprocity. One of the most popular phenomena is displaced aggression, which consists in venting one’s anger on a different object – one that did not cause the wrong that one has experienced. According to authors analyzing displaced aggression (Denson, Pedersen, & Miller, 2006; Marcus-Newhall, Pedersen, Carlson, & Miller, 2000; Miller, Pedersen, Earleywine, & Pollock, 2003), the following factors favor its occurrence: the absence of the person who is the cause of frustration and has left the locale; the source of frustration is elusive (e.g., bad weather); the frustrator causes anxiety due to his or her status (e.g., a fear of the boss). In such situations, anger is redirected to a different person, present at a given moment or having a lower status. An individual who did not take part in the first interaction becomes an object of resentment or anger for someone who has been wronged by a different person (Miller et al., 2003). The dynamics of this behavior corresponds to the “kick the dog” effect (Anspach, 2011), which illustrates the tendency to displace aggressive behavior to a different object. If the original source of aggression is the superior who reprimanded his or her employee, who in turn did not respond to the superior directly, fearing for his or her future, and has transferred resentment to a third party, then the behavior reflects the pattern of negative indirect reciprocity.

**“AS YOU DO TO ME, I WILL DO TO SOMEONE ELSE”  
– STUDIES ON UPSTREAM INDIRECT RECIPROCITY**

The analysis of the psychological literature on the subject reveals that there are relatively few empirical studies addressing the issues of positive and negative upstream reciprocity. Their beginnings date back to the 1960s. Berkowitz and Daniels (1964) discuss the norm of social responsibility associated with helping others. This norm means an imperative to help the people whose fate depends on our activities. According to this principle, consistently with the cultural norm, when a person receives help from another person, they are obliged to offer help to someone who is dependent on them. The social responsibility norm was confirmed in experimental research that the authors conducted among female psychology students. The students whom the examiner helped in performing an activity made a greater effort to help a person dependent on them. Moreover, the authors tried to explain the cause of this kind of behavior by referring two psychological patterns. The first pattern is Gouldner's norm of reciprocity, according to which people fulfill their social obligations in order to pay back the good they have received in the past as well as that which they hope to receive in the future. The other one is help understood as a consequence of good mood. Because the respondents received the experimenter's help, they felt better, and feeling well motivated them to act for the benefit of another person, dependent on them. By contrast, the students who received no help may have felt resentment and, as a result, they did not help others. The results obtained by Berkowitz and Daniels (1964) in a study on the influence of well-being were subsequently confirmed by Isen and Levin (1972), who observed that the students participating in the study (whom the experimenter put in a good mood by giving them cookies) were more willing to help others than the respondents who were in a neutral mood. The pattern was the same in the case of passers-by from the experimental group, who found a ten-cent coin in a telephone booth – they were more willing to help than subjects from the control group, who had no opportunity to find unexpected money.

Also Greenglass (1969) examined the relationship between help and the social responsibility norm. Her experimental study showed that prior help increased the social responsibility norm. The norm demands that precisely in this kind of situation it is proper to extend help to other people who are dependent on you. The results are consistent with the social responsibility norm, according to which people should help even in those situations in which the beneficiary did not help them in the past and will not be able to pay them back in the future.

Later studies reveal that one of the factors that may be related to upstream reciprocity and willingness to pay forward the benevolence experienced is gratitude (Gruszecka, 2011; Kwiatek, 2016). This is shown in the already discussed study by Nowak and Sigmund (2005) and in the analyses performed by some psychologists. For instance, Bartlett and DeSteno (2006) experimentally demonstrated that gratitude not only inspires a desire to pay back the good received (even if the cost of doing this is high), but also motivates us to help strangers – that is, people we have not received anything from before. This is a case of upstream reciprocity, and research results make it legitimate to suspect that gratitude might play the role of a mediator between the help received and the help offered to a third party, and that extending a helping hand to a stranger in such a situation goes considerably beyond the traditional and commonly known direct reciprocity.

Further studies, conducted by DeSteno, Bartlett, Baumann, Williams, and Dickens (2010), confirmed these results, but in the context of making decisions to engage in or abandon economic cooperation. The participants in the experiment who were in the group subjected to manipulation inducing a feeling of gratitude made decisions to engage in cooperative activity, maximizing common profit even at the cost of their own. Moreover, an increase in prosocial activity occurred regardless of whether a person had known their benefactor before or whether he or she was a stranger. It can therefore be concluded that gratitude is an emotion that reduces the likelihood of egoistic economic activities, builds trust, and contributes to stable economic exchange. It can also function as an emotion playing an important role in social and economic development, since grateful individuals engage in behaviors that promote long-term well-being.

Tsang (2006) obtained similar results in her research. The participants in her experiment showed greater kindness towards strangers when they interpreted the benefactor's benevolent actions as intentional. And even though the author did not investigate upstream reciprocity, it can be assumed on the basis of her findings that gratitude contributes to inducing prosocial behaviors towards third parties.

Apart from psychological analyses addressing the motivational role of gratitude in upstream indirect reciprocity, research has also been conducted on the function of reputational stimuli in passing on good (Simpson & Willer, 2008). Its results revealed that whereas individuals diagnosed as having a tendency to behave egoistically (egoists) behaved prosocially only when they were encouraged to do so by reputation (someone else found out about their

prosocial decision), subjects with a tendency to behave altruistically (altruists) behaved prosocially without encouragements involving reputation (no other person knew about their prosocial decision). Consequently, egoists exhibited a tendency to engage in prosocial activity only publicly, while altruists acted prosocially both in public and in private, without a reputation-related encouragement.

The results of a Polish study (Szcześniak, Zaleski, & Rondón, 2013) suggest that what is important for indirect reciprocity, apart from gratitude, is personality traits, values, as well as empathy and self-esteem. The participants in the study who were supposed to imagine what they would do with a certain amount of money received as medicine reimbursement declared behaviors that were divided into four types: (1) no idea what to do with the money received; (2) spending the money on pleasures; (3) using the money for necessary things; (4) donating the money to charity. Empirical data showed that the largest differences in the investigated variables occurred between the subjects who would give the money to charity (“pay it forward” dynamics) and the respondents who would spend it on pleasures. For instance, compared to subjects spending money on pleasures, individuals acting for the benefit of third parties turned out to be less fearful and less likely to experience negative emotions (lower neuroticism); they were more persistent and motivated to engage in goal-directed activities (higher conscientiousness) and trusted others (higher agreeableness). Moreover, they were less hedonistic as well as less focused on pleasure and material goods, and what they attached greater importance to was moral, religious, and patriotic values – namely, those that help us become more open to other people. While lower trait anxiety, higher trust in others, and moral or religious values are understandable in the context of indirect reciprocity, conscientiousness may seem surprising. It might seem to refer exclusively to people’s attitude to work, manifesting itself in a sense of responsibility and reliability. Conscientious people, however, also have the ability to motivate themselves and to engage in actions that require effort – and, after all, it is easier to return good to the benefactor than to support a stranger: conscientiousness may therefore be a significant factor in paying forward.

The values of truth and patriotism from Brzozowski’s scale (Scheler Values Scale) may also seem to be weakly linked with upstream reciprocity. Yet, as postulated in the theory formulated by Brzozowski (2005), truth values include wisdom, open mind, and broad horizons. Indirect reciprocity is not one of the standard behaviors, and individuals who attach importance to truth values are more capable of acting not only for their benefactor’s good but also for the

benefit of a third party. Patriotic values as popularly understood refer to a rather different category – “one of us” as opposed to “foreign.” But this group of values also includes mindfulness of one’s country, nation, and homeland, and this kind of ability to go beyond one’s own needs may motivate a person to be open to third parties, too.

Furthermore, the reimbursement research revealed that subjects showing empathic concern for others and high self-esteem as well as a tendency to maintain a high opinion of themselves were more likely to engage in indirect reciprocity. Empathy, by nature, makes us focused on other people, while self-esteem and self-enhancement express concern for oneself, though they do not exclude acts of benevolence towards others and upstream reciprocity. Eisenberg (Eisenberg, Miller, Shell, McNalley, & Shea, 1991; Eisenberg, Carlo, Murphy, & Van Court, 1995) notes that when we feel good with ourselves, we are capable of becoming open to others. Additionally, in research on the development of prosocial behaviors in teenagers, the author found that the tendency to engage in indirect reciprocity whose beneficiary was a larger group belonged to the category of abstract or internalized types of reasoning, such as social concern (activity for the benefit of society of a community), concern about individual rights, and efforts for the equality of people.

Studies addressing negative upstream indirect reciprocity are equally few. In one of the experiments, Gray and colleagues (2014) demonstrated that the respondents who were persuaded that they had fallen victim to other people’s greed (because they had received less cash) became more selfish towards a third party (to whom they were supposed to pass on the money) than the subjects from the equality and generosity conditions. Investigating the dynamics of negative upstream indirect reciprocity in capuchin monkeys and four-year-old children, the same team of scholars (Leimgruber et al., 2014) noticed a pattern of behavior that was common to the two groups. It turned out that paying forward was connected with a simple “give what you get” schema. After receiving spinach, which they did not like, the majority of animals (75%) passed the spinach on to other monkeys – the other option being grapes, which were their delicacy. Similarly, children (72%) who received one sticker and had a choice of passing on either one or four stickers chose the option of only one sticker.

The choice of the negative reaction towards a third party may stem from various causes. The occurrence of indirect reciprocity depends on individual differences in the experience of emotions (Ketelaar, 2015). A good example here is anger, very often felt as a result of ill-treatment. Having no opportunity to see the perpetrator of an event and respond to them constructively, or believing that

a reaction would be inappropriate at a given moment (Xiao & Houser, 2005), may lead a person to vent their annoyance on a totally innocent stranger. The dynamics of such behavior resembles the mechanism of transference, known from psychodynamic approaches as the displacement of feelings, thoughts, or behaviors to a different person, with whom the individual is currently interacting (Suszek, Wegner, & Maliszewski, 2015). Another reason why we pass on evil can be specific aversive emotions towards other people, such as indignation (Moll, di Oliveira-Sourza, Zahn, & Grafman, 2008). The authors claim that indignation appears when the negative outcomes of an action affect the individual or someone else. Similarly, Peter de Hemmer Gudme (2013) speaks of passing on feelings connected with resentment.

Zitek and colleagues (Zitek, Jordan, Monin, & Leach, 2010) take a slightly different perspective, insisting that what is of greater significance in undertaking egoistic actions after being wronged is not so much frustration, anger, and other negative emotions as entitlement. In the experiment conducted by these authors, students convinced that they had been wronged and felt victim to unfair treatment wanted to avoid further suffering and tried to obtain as much good as possible for themselves. This led to most of them refusing to help another person when that person asked them for help. Thus, research showed that individuals with a sense of being victims engaged in actions that involved passing on wrongs to third parties.

It is also possible to look at the mechanism of negative upstream reciprocity (i.e., passing on the bad things we have received) from the point of view of Austin, and Walster's (1974) theory of equity with the world. They claim that a certain level of justice is present in various interpersonal relations, not only in those that include direct reciprocity (I–you, you–I). If an individual is continually deceived by particular people, he or she may start to deceive others too (you–I–others). An example of such behavior is the event described by the authors, which took place on July 2, 1973, in New York. On that day, a certain man was mugged when returning from work, and the muggers stole his weekly salary. According to press reports, after returning home the man took a gun and began to shoot at innocent strangers. When asked by policemen about the reasons for his behavior, he admitted he was tired with being constantly deceived by others. He passed on the evil he experienced himself.

**“AS YOU DO TO SOMEONE ELSE, I DO TO YOU”**  
**– MECHANISMS OF AND STUDIES**  
**ON DOWNSTREAM INDIRECT RECIPROCITY**

Nowak and Highfield (2011) stress that everything which concerns human life – even if we are not fully aware of it – is linked not only with upstream but also with downstream indirect reciprocity (you–other, I–you). On the one hand, this kind of reciprocity assumes that a person who helped someone in the past has a greater chance of receiving support from other people in the future (Rockenbach & Milinski, 2006). On the other hand, someone who has wronged somebody may encounter someone else’s negative activity in the future.

In most cases, studies on downstream reciprocity are linked with the concept of karma, which, in traditional Hindu religions, is believed to be part of the universal or cosmic law of cause and effect (McClelland, 2010). Although karma is, to a great extent, an integral part of Eastern philosophy, its assumptions are also present in Western cultures, manifesting themselves in commonly known sayings (“You’ve made your bed, so you must lie in it”; “No work, no pay”; “History repeats itself”) (Kulow & Kramer, 2016) or in the contents of religious teaching (“For as you judge, so will you be judged, and the measure with which you measure will be measured out to you,” Matthew 7:2). Karma means that we reap the fruits of what we sow. If we sow what is constructive or wise (*kusala*), we shall reap what is constructive and wise. If, by contrast, we sow what is destructive or unwise (*akusala*), this is also what we shall reap (Wake, 2010). One of the functions of karma is to convince individuals that, despite the obvious inequality and injustice in the world, evil deeds are eventually punished and good deeds are rewarded. Moreover, McClelland (2010) speaks of karma as a form of moral reciprocity or retributive justice. It works like a boomerang. Positive actions lead to positive outcomes, while negative ones lead to negative outcomes. If someone throws evil at another person, the evil will circle around and hit the one who threw it – in this life or in the next.

Because karma concerns behavior, it has considerable importance for psychology. Numerous phenomena investigated by social psychology, especially those connected with interpersonal relations, are consistent with the basic assumptions of karma. If a person behaves in a certain way, he or she may, as a result, experience similar behavior from others (Allen, Edwards, & McCullough, 2015).

For instance, as the existing studies on indirect reciprocity reveal, people often show benevolence to individuals who are benevolent towards them, or

respond with evil to the evil they have received. Fein (1976) noted that, as early as the preschool age, children evaluated the experimental situation in terms of “If you have done something wrong, you will be punished,” but they did not draw conclusions such as: “If you have been punished, you must have done something wrong.” In a different study (Edlund, Sagarin, & Johnson, 2007), researchers analyzed whether or not faith in a just world influenced gestures of reciprocity. The experiment showed that the subjects who had been given presents and then asked to buy lottery tickets bought more tickets when they more strongly believed in the world’s justice. This reflects the well-known reciprocity principle (Cialdini, 2007). There is also a common belief that one gets exactly what one deserves in life (Kulow & Kramer, 2016). In that case, the need to believe in a just world (Lerner, 1971; Simmons & Lerner, 1968) manifests itself in the belief that what you have experienced is a result of your previous actions, as in: “I deserved it” or “I have only myself to blame.” Success is a consequence of hard work, and failure stems from the lack of it. People are motivated to maintain their belief in a just world, since that gives them a sense of stability and meaning in life; recent studies have shown that it is also related to the indicators of psychological well-being, such as positive affect, optimism, or a low level of depression (Hagiwara, Alderson, & McCauley, 2015).

This kind of relations can be extended to indirect reciprocity, since people show kindness to those who are friendly towards others and resent those who lack this kindness (Kulow & Kramer, 2016; Rockenbach & Milinski, 2006). In this case, what determines – though not exclusively – the nature of a person’s actions is good or bad reputation (Ohtsuki et al., 2009). We know, too, that social behaviors are largely determined by the perception of other people’s behaviors (Jung, Nelson, Gneezy, & Gneezy, 2014). Reputation is a set of beliefs, perceptions, and opinions concerning the members of a particular community (Wu, Balliet, & Van Lange, 2016). In evolutionary psychology there is a view postulating that over the centuries people developed and adapted to their living conditions by managing their own reputation. A good reputation based on cooperation with others brought them benefits in the form of liking from third parties or observers. The stake was high, as they could hope to get similar treatment in the future. Likewise, the lack of good reputation stemming from the inability to cooperate led to social exclusion and ostracism.

Drawing on the already mentioned theory proposed by Trivers and his concept of reciprocal altruism, Tooby and Cosmides (2015), write about social exchange consisting in an exchange of goods, present in various cultural contexts (i.e., panhuman) and taking place since the old times. The authors do not mention

downstream indirect reciprocity. Nevertheless, the fact that they allow the possibility that the exchange takes place not only at the same time but may also be postponed or sequential and go beyond dialogical interactions (thus being extended to more socially complex relations, going beyond you–I–you relations) suggests that, according to Tooby and Cosmides (2015), this form of reciprocity may be a significant element of human social functioning.

Another way of explaining the dynamics of downstream indirect reciprocity may be the phenomenon of the unconscious tendency to imitate other people's behavior. Research has shown that people often imitate not only the words and gestures but also the attitudes and behaviors of observed others or individuals they interact with (Stel, van den Bos, Sim, & Rispens, 2013). From the perspective of downstream indirect reciprocity, whose essence lies in activity directed towards a person who has previously done something good or bad for someone else, an observer, witness, or listener may unconsciously imitate similar behaviors towards the person they witnessed engaging in them.

These conclusions can be drawn based on a study exploring gratitude understood as a factor facilitating the imitation of behaviors (Jia, Lee, & Tong, 2015). Although the study concerns you–I reciprocity, it can be related, by analogy, also to downstream indirect reciprocity. The scholars found that the subjects who had received intentional help from their benefactor imitated the benefactor's way of behaving later. No similar effect was observed when the respondents perceived positive activity as accidental. It is therefore possible to hypothesize that in  $A \rightarrow B$  and  $C \rightarrow A$  relationships  $C$  will imitate  $A$ 's behavior towards  $B$  and behave in the same way towards  $A$ . What is more, the explanation for this behavior may be coordination, which consists in adopting another person's attitudes, values, beliefs, emotions, and specific actions (Kulesza & Nowak, 2003). This applies not only to the positive form of this kind of behavioral or emotional coordination but also to its negative form.

## CONCLUSION

The aim of this article was to present the sociobiological, biomathematical, economic, and psychological perspectives on both forms of indirect reciprocity. The present study is a preliminary one and does not exhaust the topic. The review format of the article stems from the fact that the phenomenon discussed in it is known under various names in the literature, and in psychology it is either not referred to by means of any particular term at all or is described by means of the terminology adopted by Nowak and Sigmund. In the latter case, it can be

observed that studies are few and that they explain only some of the mechanisms and determinants leading to engagement in positive and negative actions characteristic of upstream and downstream indirect reciprocity.

The perspectives presented (sociobiological, biomathematical, economic, and psychological) agree on the occurrence of these forms of indirect reciprocity but give different answers to the question of whether these behaviors are rational. Whereas the psychological approach to indirect reciprocity does not question the rationality of action for the benefit of third parties and assumes a variety of motives, in the light of game theory formalization these actions are incomprehensible (Nowak & Sigmund, 1998a, 1998b, 2005). This stems from the fact that, in accordance with the classic conception of *homo oeconomicus*, in a simplified version of the theory of utility, people pursue only their own gains, and their behaviors are motivated by the maximization of satisfaction and by a desire to achieve their own interests. The assumption that there is a homogeneous motivation suggests that an individual cooperates with others only when he or she is convinced about future personal benefits to be derived from the helping action. Consequently, game theory models often focus on looking for mechanisms that transform activity for the benefit of others into activity for one's own benefit.

This criterion, however, is incompatible with the mainstream of social psychology, in which it is assumed that the motives of behaviors are heterogeneous and not limited to egoism (Baker, 2012; Bolle, Breitmoser, Heimel, & Vogel, 2012). In this context, Sztompka (2016) observes that in the natural human ethical awareness there is a deeply rooted principle that you have to repay the good you have received, just like there is a belief that evil should be punished. What is more, even if passing benefits on to a third party may seem illogical, in the long run benevolence towards others not only does not bring losses to the individual but also builds a sense of community in which benefactors become beneficiaries and beneficiaries become benefactors. At the same time, by consistently refusing to reciprocate benefits or acting in a manner incompatible with social norms, a person incurs sanctions. In both cases we are dealing with *homo reciprocus*, whose behavior is marked by a tendency to follow the patterns of direct and indirect reciprocity, thus giving rise to a network of mutual interactions (Baker, 2012), in which there is a place for third parties. Therefore, the behavior of an indirectly reciprocating person seems to be an alternative to the behavior of *homo oeconomicus*. It proves that even though the human being has evolved as a rational creature, he or she has a strong sense of justice, making it possible to seek not only his own her own happiness but also other people's well-being (Hauser, 2007).

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