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An Economic Psychological Approach to Herd Behavior

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Herd behavior refers to the phenomenon of people following a crowd for a given period, sometimes "even regardless of individual information suggesting something else" (Banerjee 1992, 798). The phenomenon of herd behavior was among the first topics studied in social psychology (Van Ginneken 1992). Early economists like Thorstein Veblen (1899) and sociologists like Georg Simmel ([1904] 1957) applied it to sudden shifts in consumer behavior such as fashions and fads. More recently, issues relating to herd behavior have again caught the eye of economists and management scholars. In 2003, Marlene Fiol and Edward O'Connor, for instance, maintained that the decisions of individuals to do whatever anyone else is doing can be applied to decision-making processes in organizational settings. In the economic approach, however, the concept is turned into something which differs from herd behavior in social psychology. As a result, researchers in the social sciences these days face inconsistent conceptions of herd behavior.

Herd behavior, however, cannot be fully understood from a single perspective alone. What was argued by John R. Commons (1934) for economics and psychology in general could also be applied to the study of herd behavior. Although both disciplines ask *what* herd behavior is, the economic perspective primarily is to focus on long-term effects, to study the value of (partaking in) herd behavior and how much one can benefit from it. The motivations underlying herd behavior are viewed in terms of the choices they produce. With respect to this mainstream economics approach, Geoffrey Hodgson (1993) came to the conclusion that, in doing so, many economists have taken individual motivations and preferences as given, because "the essential aspects of human personality and motivation are conceived of as independent of the social relations with others"

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(236). The psychological perspective, on the other hand, is to account for the subjective value of herd behavior per se. By asking "why" and "when" it occurs, the motivations underlying herd behavior are more broadly viewed in terms of the processes involved. With respect to the mainstream psychological approach, however, Jaap van Ginneken (2003, 2004) concluded that, in doing so, psychologists have hardly paid any attention to the influence which institutional settings may have. Especially when studying herd behavior in the business environment, one needs to answer the "why" and "when" of herding on both the individual and institutional level in order to understand the "how" and "how much" of it.

In this paper, first the problem of herd behavior is made clear via the historical development of the concept in economics and social psychology. Accordingly, the focus is on differences between the approaches. Second, an integrated economic psychological approach to herd behavior is proposed, attempting to overcome theoretical and methodological differences. To demonstrate its importance and to illustrate the theoretical and methodological problems that need to be overcome, the framework is applied to decision making in the presence of groupthink, a form of herd behavior that tends to be more problematic within institutional settings.

The History of Herd Behavior

Herd Behavior in Economics

In early economics, herd behavior gained the attention of researchers like Veblen that studied sudden shifts in consumer behavior such as fads and fashions. In his famous 1899 study on *The Theory of the Leisure Class*, Veblen wrote of patterns of conspicuous consumption in which people engage in actions by making comparisons with similar people who are slightly better off in order to express pecuniary strength. Consumption, however, was considered to be a passive activity without real value for society and the economy and was not given much attention in the field of economics (Dolfsma 2000). As a consequence, neither was the phenomenon of herd behavior.

In the early 1950s, Harvey Leibenstein introduced the social psychological bandwagon metaphor in economics. Remarkably, the bandwagon phenomenon, which originally referred to a wagon full of playing musicians that was followed by a big crowd, was not defined in terms of what it was, but in terms of its effects. Leibenstein defined a *bandwagon* as "the extent to which demand for a commodity is increased due to the fact that others are also consuming the same commodity" (Leibenstein 1950, 189). Drawing from psychological perspectives on social influence, he explained the motivations underlying herd behavior as "the desire of people to purchase a commodity in order to get into 'the swim of things'; in order to conform with the people they wish to be associated with; in order to be fashionable or stylish; or, in order to appear to be 'one of the boys.'" For decades this article and its treatment of herd behavior in consumption

remained a much referred to and often-cited exception in the field of economics (Dolfsma 2000).[1]

Remarkably, for decades sociologists instead of economists further developed the topic of herd behavior. Economists, however, showed a great willingness to integrate sociological frameworks into their discipline. Two research streams, one related to diffusion of innovations and the other related to social network analysis, became particularly influential in economics. As in economics, in research on the diffusion of innovations the focus was on the extent to which innovations were adopted or not, and with what effect (Rogers [1962] 1995). Everett Rogers ([1962] 1995) defined *diffusion* as "the process by which an innovation is communicated through certain channels over time among the members of a social system" (5). As innovations mostly diffused via S-shaped curves and the social system gave regularity and stability to human behavior, diffusion processes could be predicted to a large degree. Rogers offered a comprehensive and extensive overview of diffusion research. Among other things, opinion leadership in diffusing innovations and innovativeness of members of a social system were presented as main independent variables in diffusion research. Remarkably, no psychological research into diffusion, contagion, and leadership processes was included. Nonetheless, the study was a classic work and the ideas developed in the book were applied in disciplines other than psychology, such as sociology, and especially connected to social network analyses of collective behavior.

In the 1970s and 1980s, a social network approach to collective behavior became particularly influential in economics. In 1973, addressing more fundamental aspects underlying collective behavior, Mark Granovetter stressed the importance of weak ties in diffusion processes. In general, the strength of interpersonal ties in large networks of relations could be defined as "a combination of the amount of time, the emotional intensity, the intimacy, and the reciprocal services which characterize the tie" (1361). A weak tie, someone who was not too close and similar to oneself, often served as a bridge between different groups of people, which implied that "whatever is to be diffused can reach a larger number of people and traverse greater social distance when passed through weak ties rather than strong" (1366). Herd behavior, for instance, relating to the adoption of innovations, was thus more likely to occur via the weak ties of relations with people that were rather dissimilar to oneself.

In addition, in 1978 Granovetter also proposed a threshold model to collective behavior. In this model, people had a binary choice to engage in an action or not. This decision depended on perceived costs and benefits to the person in relation to a threshold, or "the number or proportion of others who must make a decision before a given actor does so; this is the point where net benefits begin to exceed net costs for that particular actor" (1420). If someone reached one's threshold in a given situation, bandwagon effects would occur when the person decided to join the herd. Again, the number of other people already partaking in a given action were thought to motivate

herd behavior. The assumptions underlying the model were that of individuals as rational actors and the existence of complete information.

In the 1980s, Ronald Burt (1982, 1987) developed another argument for the diffusion of innovations. Drawing from several grand theories in social psychology (Festinger, Schachter, and Back 1950; Homans 1950, 1961), he argued that in ambiguous situations people turned to other people that served as a reference group in order to come up with a solution that made sense in that particular context. In such situations, people would not follow others due to exchange of information. People would rather join a crowd as a result of the observation that people that were part of their reference group had already adopted it. More precisely, herd behavior occurred if someone "who could replace him in his role relations if he were removed from the social structure" engaged in a particular action (1987, 1294). Therefore, innovations merely diffused via people that were "structurally equivalent" to each other, meaning that they occupied "the same position in the social structure and [were] so proximate to the extent that they [had] the same pattern of relations with occupants of other positions" (1291).

In the mid 1980s, the bandwagon metaphor of herd behavior was again connected to an economic line of research, related to the newly introduced concept of increasing returns. Whereas bandwagon effects interacted with traditional market forces such as price to create distinct consumption patterns on the micro level, people like Paul David (1985) and Brian Arthur (1988, 1989, 1994) stressed that, on the macro level, bandwagon effects could result in increasing returns and network externalities in consumption, leading to the more or less stable evolution of average consumption preferences and related production patterns (see also Bell 2002). In particular, herd behavior could lead to "path dependence" in the sense that the good that was adopted first because of an early historical event could obtain an irreversible first mover advantage. Moreover, once a group of actors had collectively made the decision that a given product had the best benefits in terms of compatibility and installed base of users, herd behavior could lock in an entire industry (David 1985; Arthur 1988, 1989, 1994). Robert Frank and Philip Cook (1988) argued that as such a collective could become reluctant to adopt other, newer—and perhaps even better—products, leading to a "winner-take-all" society.[2]

The increasing returns approach first caused a shift away from bandwagon effects that focused upon short-term and instable forms of herd behavior to long-term and stable network effects. First coined by Michael Katz and Carl Shapiro as well as by Joseph Farrell and Garth Saloner at about the same time (1985), a *network effect* was defined as "There are many products for which the utility that a user derives from consumption of the good increases with the number of other agents consuming the good. . . . The utility that a given user derives from the good depends on the number of other users who are in the same 'network' as he or she" (Katz and Shapiro 1985, 424). The core assumptions underlying the network effect were the existence of complete information and rational actors. It was assumed that individuals had identical motivations and expectations regarding the benefits of goods. Because of the availability of complete information, the

problem of choosing between these goods was clear; the decision-making process was fully rational and to be understood in terms of appreciation of future gains and losses. Therefore, the "why" of the network effect was simple: As in the social network approach, the motivations underlying herd behavior were related to the number of others that had already partaken in a given action.

Second, the increasing returns approach caused a shift away in attention from herd behavior among consumers to herd behavior, remarkably, related to products. The phenomenon was applied to the literature on diffusion of innovations in order to answer basic questions. Giovanni Dosi (1982), for instance, asked why certain technological developments emerge instead of others; Eric Abrahamson and Lori Rosenkopf (1993, 1997) asked why certain innovations diffuse fully and become dominant, whereas other innovations diffuse partially or not at all; David (1985) and Arthur (1988, 1989, 1994), finally, asked why certain innovations that are technically inferior become a success whereas other innovations that are technically superior become a failure. These research questions clearly showed that, instead of describing human behavior, herding now referred to technology, to which an abstract installed base of users was added, aiming at gains and preventing losses. As a result, Abrahamson (1991) came to the conclusion that research into herd behavior from the increasing-returns perspective suffered from a pro-innovation bias (see also Abrahamson and Rosenkopf 1993).

In 1992, Abhijit Banerjee showed in a modeling approach that people could follow others even if private information and individual motivations suggested doing something else. In that approach, however, the psychology underlying herd behavior remained the same: the number of others consuming the good was taken as evidence that the others had access to better information than oneself. Therefore, the actor was more willing to conform (Jones 1984; Bernheim 1994). Via "informational cascades" based on imperfect information, Sushil Bikhchandani, David Hirschleifer, and Ivo Welch (1992) also modeled this. Informational cascades occurred "when it was optimal for an individual, having observed the actions of those ahead of him, to follow the behavior of the preceding individual without regard to his own information" (994). Indeed, localized conformity could emerge by simply observing the actions of others and assuming that those others held more valuable information than oneself. Although these modeling studies assumed incomplete information, individuals were still assumed to be completely rational.[3]

As opposed to the increasing-returns approach to herd behavior, in a diffusion study of 1993 Abrahamson and Rosenkopf defined bandwagon processes as "diffusion processes whereby organizations adopt an innovation, not because of their individual assessments of the action's efficiency or returns, but because of a bandwagon pressure caused by the *sheer number* of organizations that have already participated in this action" (488). Using threshold models, they argued that bandwagon pressures could be institutional, so that the fact that a majority of others had adopted an innovation seemed normal and legitimate, or could be competitive, so that the fact that a majority of others had

adopted an innovation seemed to increase their competitive advantage. In both cases, if ambiguity of information increased, purely economic considerations became less important and social considerations, especially the sheer number of others that did partake in an action, became more important. The level of ambiguity, therefore, moderated the effect of the number of others partaking in an action.

Also, in a follow-up study of 1997, Abrahamson and Rosenkopf argued that organizations do not have equal access to equal information. Some adopters in a social network had better access to information so that one's position in a social network influenced the strength of bandwagon pressure on others to follow. These threshold models solely dealt with the number of organizations that had already adopted an innovation. Although they clearly acknowledged that some organizations were more attractive to follow than others and that status differentials could play a role, they did not test how social motivations other than majority pressures played a role in decisions to join a bandwagon, or when such motivations were more likely to occur.

Summarizing, with the exception of Veblen's *Theory of the Leisure Class* (1899) and the Leibenstein article (1950), in economics herd behavior was mainly understood as motivated by the number of others that already partake in a given action. No other motivational explanations were put to the test. For decades, the core assumptions underlying models of herd behavior were the existence of complete information and rational actors (Granovetter 1973, 1978; Burt 1982; David 1985; Farrell and Saloner 1985; Katz and Shapiro 1985; Burt 1987; Arthur 1988, 1989, 1994). Although Banerjee (1992) as well as Bikhchandani and colleagues (1992) developed several models based on incomplete information, the actors, however, still were treated as rational. These conceptions still suffered from what Veblen called a "hedonistic-associational psychology" (1900) and a "hedonistic calculus" (1909), in which "human conduct is conceived of and interpreted as a rational response to the exigencies of the situation in which mankind is placed" (1909, 623). Studies that did mention alternative motivational explanations for herd behavior did not include factors other than the number of a majority in their models (Abrahamson and Rosenkopf 1993, 1997). Thus, economic knowledge of herd behavior, mostly derived from modeling approaches that needed restricted assumptions in order to be workable, left out the whole array of underlying psychological considerations.

Herd Behavior in Social Psychology

Early psychologists of crowds and masses, such as Gustave Le Bon (1895) and Gabriel Tarde (1903), were obsessed by the irrationality of masses. They feared the ways in which impulsive, irrational, and primitive emotions of some individuals could come together in a criminal collective consciousness (see Van Ginneken 1992 for a study of these early psychologists). Imitation was understood as some sort of collective hypnosis called "social somnambulism" (Tarde [1903] 1962, 84) in which people get involved in crowd actions "in mental unity" (Le Bon [1895] 1947, 23). The idea of collective hypno-

sis, which was understood as a form of social contagion, offered a means to explain herd behavior as irrational and unconscious. John Turner (1991, 8) argued that modern experimental research into social influence also started with this assumption. In 1924 Floyd H. Allport, for instance, found that people moderate their judgments on certain topics in the presence of others and explained this as an instinct of submission to the group.

In the 1930s, study of convergence in groups demonstrated the importance of "frames of reference" in the analysis of collective behavior. Muzafer Sherif (1935, 1936) showed how social norms can emerge as a collective response in groups facing new and ambiguous situations. These social norms served as a shared frame of reference for that particular situation. In his classic studies of the autokinetic effect, an optical illusion of movement that occurred if a fixed light was switched on and off, Sherif showed that individuals who developed rather extreme perceptual judgments in isolation used each others' judgments to come up with a less extreme shared frame of reference whenever they were brought together. More precisely, they gradually converged to the social norms of others in the group.

The idea of "reference groups" became very important in social psychology. In 1942, Herbert Hyman was the first to use the term and defined *reference groups* as groups that provide individuals with a reference point for defining their own personal attitudes, beliefs, and social worth (see also Hyman and Singer 1968). Also, Theodore Newcomb (1943) believed that reference groups had a strong influence over the individual. He found that for first-year students of Bennington College initially their (mostly conservative) family served as a reference group. The longer the students remained at Bennington, the more they changed attitudes toward (more liberal) fellow students that became their new reference group (Newcomb 1943). Follow-up study revealed that the latter reference group changed the students permanently: twenty-five years later they were still liberals (Newcomb, Koenig, Flacks, and Warwick 1967).

In the 1950s, Solomon Asch moved away from the assumption that herd behavior was unconscious and irrational. Asch believed that convergence in groups should be understood as rational attempts of individuals to make sense of social reality in such ways that they shared their perceptions of social reality with a reference group. In his famous line experiments (Asch 1951, 1952, 1956), in the presence of a majority group, individuals participated in a simple and unambiguous perception task, judging which of three lines was similar to a target line. The majority deliberately and unanimously went for the wrong answer, and most of the participants conformed to the majority group standpoint, despite the fact that they well realized that the answer was incorrect. For most participants, however, this caused major mental conflict, which they solved by thinking that the majority position should be correct. Important experimental variations (1951) showed that unanimity of the group members was more important than the factual size of the majority. A unanimous majority of three was far more influential than a majority of eight in which the participant was accompanied by one dissenter. Decades

later, John Turner (1991) summarized these findings in the statement that in social influence processes "consensus mattered more than numbers" (15).

In the 1950s, several grand theories were developed in order to address the "why" of herd behavior. As Burt (1987) recognized, the old notion of contagion lay at the core of many of these theories. In these theories, however, contagion was no longer understood as an irrational and unconscious process. In his theory of informal social communication, Leon Festinger (1950) stated that "uniformity pressures" influenced people in face-to-face groups. One pressure would be that individuals engaged in social reality testing so as to provide them with valid opinions and beliefs. In this process, people relied upon other people that shared a given opinion or belief. In this validation process, only the opinions and beliefs of relevant reference groups, people that were highly similar to someone on relevant topics, were of importance. John Turner (1991) summarized that a second pressure would be that uniformity was understood as desirable or necessary for the group to move toward a particular goal. This pressure would be higher if group members shared the perception of necessity and were more dependent upon the group to reach that particular and shared goal (20). Thus, the higher group cohesiveness, the more uniform the opinions and beliefs in the group would be (Festinger, Schachter, and Back 1950).

In 1954, Festinger refined his ideas in social comparison theory. This theory first addressed the problem of why people use others as reference groups. Especially in uncertain situations, people continuously made comparisons with others to evaluate their opinions and performance. If people compared their abilities with others, there was a unidirectional drive upward (hypothesis IV), which was an orientation toward others that were slightly better off in performance and consequently had higher prestige, status, and success. The so-called "similarity hypothesis" was the core assumption of the theory, saying that "given a range of possible persons for comparison, someone close to one's own ability or opinion will be chosen for comparison" (corollary III A, 121). This could be informative and serve to gain more precise opinions about oneself and social reality and also stimulate improvement of one's performance. People could thus either create informational consensus with the reference group concerning the issue under evaluation and thus become more similar, or engage in actions that were increasingly similar to those of the reference group. Albert Bandura (1965) and colleagues (1963a, 1963b) provided further evidence for this idea by showing that direct observation of a successful model led to imitation of this model.

In the social influence framework, the "why" of imitation could be explained out of the desire for social reality testing upon relevant reference groups in uncertain situations. There was, however, much debate over the "when" of it. Morton Deutsch and Harold Gerard (1955) proposed a dual-process model of social influence. They made a distinction between two sorts of social conformity and argued that people could either conform to a majority in order to align with the positive expectations of others ("normative social influence") or in order to accept information obtained from another as evidence about reality ("informational social influence"). Classic social influence studies

needed to be re-analyzed in terms of this distinction, and Deutsch and Gerard replicated the Asch experiments (Asch 1951, 1952, 1956) from this perspective. They found that conformity was dependent upon the degree of normative and/or informational dependence of individuals on groups, the degree of relevance of a group as reference point in a given situation, and the degree to which the individual felt involved in a given situation.

In the 1970s, however, especially Serge Moscovici accused the mainstream social influence framework of having a conformity bias. The mainstream approach was characterized by a unidirectional and "top-down" approach that did not leave room for highly persuasive individuals such as political leaders that influenced entire groups. Also, it was assumed that in social influence situations individuals always conformed, either to pre-established social norms or to dominant perceptions of reality. This confused social influence with power relations, in which the powerless obey the powerful, and left no room for social change in society, mostly resulting from deviancy produced by minorities. Third, mainstream social influence theory assumed that cognitive uncertainty about social reality caused conformity in given situations. Instead, Moscovici (1976) proposed "social conflict" to be at the heart of social influence. Social conflict led to uncertainty and, next, to a willingness to agree with the conflicting standpoint to a certain extent (Moscovici and Zavalloni 1969). This explained the power of minorities to influence majorities: they could generate social conflict and uncertainty in society. The majority would be willing to reduce this by reaching out toward the minority standpoint (see also Maass and Clark 1984).

Moscovici further developed his ideas in conversion theory (1980), in which he acknowledged that both majorities and minorities cause social influence. Majorities enforced conformity by means of social comparison mechanisms, whereas minorities stimulated conversion by means of validation mechanisms. Someone who disagreed with a minority would actively try to understand why he or she deviated from the minority standpoint by carefully understanding the minority's arguments. Majority pressures, by contrast, would trigger heuristic responses such as "the majority is always right." Someone who disagreed with a majority would try to understand why he or she deviated from the majority viewpoint, assuming that the majority must be better informed, and would engage in a comparison process out of a willingness to make concessions to the majority (see also Maass and Clark 1984; Martin and Hewstone 2001, 2003). Conversion theory was thus an approach in which the validation/conversion process represented informational social influence, whereas the comparison/conformity process represented normative social influence. As a result, conversion theory was a product of classic social influence theory and its criticism (Martin and Hewstone 2003; Turner 1991).

A related debate in the 1970s had to do with the idea of a "risky shift." In 1968, James Stoner discovered that on average groups tended to make riskier decisions than individuals. This led to research into the more general process of group polarization (Moscovici and Zavalloni 1969; Janis 1972; Lamm and Myers 1978).[4] It also caused a paradigm shift in social influence theory and led to reformulation of the assumptions

underlying the classic conformity studies of Allport (1924), Sherif (1935, 1936), and Asch (1951, 1952, 1956) that, in groups, individual members would converge toward the average of their initial views. Instead, in groups polarization often took place, meaning that the response of group members became more extreme after group interaction in the same direction as their response before group interaction. This explained why group actions could derail and engage in extreme, detrimental, and even excessive herd behavior, including riots (Reicher 1984a, 1984b; Moscovici 1985).

In the late 1980s and 1990s, Turner integrated minority and majority influence in self-categorization theory, a theory in which group behavior was explained as individuals acting together in terms of shared identities (Hogg and Turner 1987; Turner 1991). A person's self-identity was categorized according to group membership and ingroup-outgroup distinctions. Because of group polarization, membership in a particular group led to a deliberate contrasting away from other groups, both for majority and minority groups (Hogg and Turner 1987; Wetherell 1987; Turner and Oakes 1989). Turner and colleagues therefore understood influence processes as effects of the ways in which people defined and categorized themselves and their social identities. Regarding influence processes, reference groups had a crucial role in self-categorization theory. Robin Martin and Miles Hewstone (2001) clearly showed that "influence flows only from individuals who are categorized as similar to self on dimensions relevant to the influence topic. Similar others provide consensual validation for one's opinions and therefore disagreement with such individuals can result in influence occurring. Dissimilar others do not provide consensual validation and therefore are unlikely to be a source of influence" (224).

In sum, herd behavior in social psychology was initially understood as an irrational and unconscious process (Le Bon [1895] 1947; Tarde [1903] 1962; Allport 1924). Study of convergence in groups, however, led to the insight that the phenomenon resulted from rational attempts of individuals to make sense of social reality (Sherif 1935, 1936). In this process, reference groups were crucial: people used them in order to test their perceptions of social reality in uncertain situations with others (Hyman 1942; Festinger 1950, 1954). People that had slightly higher success, status, or prestige were especially likely to serve as points of reference (Festinger 1954; Bandura et al. 1963a, 1963b; Bandura 1965). First, the research focus was on majority influence. The number of a majority was not important, but the level of consensus with a group was (Asch 1951, 1952, 1956). Next, it was shown that a minority could also influence a majority (Moscovici 1976). This was related to group polarization, the finding that people conform to an extreme instead of an average standpoint in a group (Stoner 1968; Moscovici and Zavalloni 1969; Janis 1972; Lamm and Myers 1978). In the 1980s and 1990s, majority and minority influence were combined in dual-process models of social influence. Majority influence was likely to occur when one was motivated to follow heuristics ("the majority is always correct"), whereas minority influence was likely to occur when one was motivated to carefully scrutinize arguments, even deviant ones (Moscovici 1980; Maass and Clark 1984). Also, in order to maintain one's personal and social iden-

tity, people were driven by a desire stay in line with relevant reference groups (Hogg and Turner 1987; Wetherell 1987; Turner and Oakes 1989; Turner 1991). Close observation of their actions led to constant updates in behavior, often leading to herd behavior toward the observed reference group if it was perceived as similar (Martin and Hewstone 2001, 2003).

An Economic Psychological Approach to Herd Behavior

Although there is agreement among economists and psychologists on what *herd behavior* refers to, the histories of the concept in the disciplines not only show major theoretical differences with respect to underlying assumptions but also show major methodological differences. An integrative economic psychological approach to herd behavior could help overcoming these differences. How this could work out in practice will be illustrated via the example of groupthink, which is a particular case of herd behavior in decision-making groups (Janis 1972, 1982). First the most essential theoretical problems will be discussed, and, next, the most important methodological consequences.

On the theoretical level, an important first assumption underlying the economics approach has been the existence of rational actors. Notwithstanding the extensive debate concerning limited or bounded rationality in economics (Simon 1957, 1959, 1979, 1986; March and Simon 1958), in the increasing returns and the social network approach to herd behavior the assumption of full rationality has been maintained (Granovetter 1973, 1978; Burt 1982; David 1985; Farrell and Saloner 1985; Katz and Shapiro 1985; Burt 1987; Arthur 1988, 1989, 1994). Psychologists and many other economists, by contrast, hold a view which is consistent with the notion of bounded rationality. They assume that institutional and human limitations lead people to make satisficing instead of optimal solutions. In their seminal work of 1991, Susan Fiske and Shelley Taylor described human beings as "cognitive misers," meaning that people tend to act in rational and consistent ways but also prefer less effort to much effort. As a result, people often prefer simple over complex solutions. One simple solution is to rely on heuristics such as "the majority is always right," or "consensus is good." Following such heuristics could lead to groupthink.

Originally, Irving Janis defined *groupthink* as "a mode of thinking that people engage in when they are deeply involved in a cohesive in-group, when the members' strivings for unanimity override their motivation to realistically appraise alternative courses of action" (1972, 9). Now, the phenomenon is perceived as a widely known and excessive form of concurrence seeking within groups, eventually leading to poor decisions and/or fiascoes. Several cases on decision-making fiascoes by U.S. government leaders during major international crises in the nuclear era support the phenomenon, including the invasion of the Bay of Pigs, the Korean War, Pearl Harbor, the Vietnam War, and the Cuban missile crisis (Janis 1972), the Watergate affair (Janis 1982), a gym-

nasium controversy at Kent State University (Hensley and Griffin 1986), and the space shuttle Challenger accident (Esser and Lindoerfer 1989). The concept of groupthink illustrates that satisficing solutions sometimes lead to detrimental decision making in groups, as people do not engage in careful scrutiny of arguments. It, thus, perfectly illustrates how important it is in the analysis of herd behavior to account for the limited rationality of individuals.

A strongly related second assumption underlying herd behavior in economics is the existence of complete information. Complete information allows individuals to make rational and optimal decisions at all times. Abrahamson and Rosenkopf (1993, 1997) have shown that herd behavior, however, is merely caused by incomplete and ambiguous information, which produces uncertainty concerning social reality that can be reduced by looking at the actions of others for consensus (Deutsch and Gerard 1955; Crano 1970; Nemeth 1986; Hogg and Turner 1987; Hogg 2000). In difficult situations, people rely on the opinions and actions of similar reference groups because they are expected to share and confirm one's individual opinions and beliefs (Festinger 1950, 1954; Baron, Vandello, and Brunsman 1996). Moreover, if there is great similarity between the individual and the group, it is more likely that the majority will be seen as a relevant reference group, as a consequence of which conformity is more likely to occur (Allen 1965; Allen and Wilder 1977; Hogg and Turner 1987; Turner 1987, 1991; Turner and Oakes 1989).

The wish for similarity and consensus with others can be rather dangerous if not based on actual similarity and consensus. Indeed, illusions of unanimity are among the symptoms of groupthink, beside illusions of invulnerability, belief in the inherent group morality, collective rationalization, stereotypes of outsiders, self-censorship, pressure on dissenters, and self-appointed mind guards (Janis and Mann 1977, 132). Not surprisingly, symptoms of groupthink are closely related to the existence of incomplete and ambiguous information and the consequent uncertainty in a group concerning social reality. Irving Janis and Leon Mann (1977) have argued that these may cause defects in the group decision-making process such as incomplete survey of alternatives and objectives, failure to re-examine preferred choices and/or rejected alternatives, poor information search and processing, and a failure to develop contingency plans. Now, many economists and psychologists agree upon the existence and importance of incomplete information in herd behavior, and recent economic modeling approaches have dealt with the problem (Banerjee 1992; Bikhchandani et al. 1992; Abrahamson and Rosenkopf 1993, 1997).

However, without accounting for bounded rationality, even these models on imperfect information lose considerable explanatory power, which especially shows in limited explanations of motivations underlying herd behavior. With the notable exceptions of Veblen and Leibenstein, economists unanimously explain herd behavior out of the sheer number of others that partake in a given action (Granovetter 1978; Burt 1982, 1987; Jones 1984; David 1985; Farrell and Saloner 1985; Katz and Shapiro 1985; Arthur 1988, 1989, 1994; Banerjee 1992; Bikhchandani et al. 1992; Abrahamson and

Rosenkopf 1993, 1997; Bernheim 1994; Bell 2002). In contrast, psychologists such as Asch (1951, 1952, 1956) maintain that it often is not the actual number of a majority that causes such conformity pressure, but a need for consensus. Studies by Arie Kruglanski and colleagues show that it is exactly this need for consensus in a group which occasionally causes groupthink (Kruglanski, Webster, and Klem 1993). Especially under stress, groups exhibit a "cognitive need for closure," which is a "desire for a definite answer on some topic, any answer as opposed to confusion and ambiguity" (Kruglanski 1989, 14). Then, a group's desire for consensus does not leave room for deviation, which often results in rejection of deviants (Kruglanski and Webster 1991) and the "freezing" of judgmental accuracy (Kruglanski 1989). Thus, as proposed by Janis and Mann (1977), beside structural faults of the organization, the main conditions for groupthink to occur are group cohesiveness and a provocative situational context, determined for instance by high stress from external threats with low hope of better solution than leader's, low self-esteem induced by recent failures, difficulties in current decision-making task, or moral dilemmas.

In the above, solely economic assumptions underlying herd behavior have been criticized. This has to do with elementary differences in research focus between economics and psychology, differences that have serious methodological consequences and determine why both disciplines differ so much. In essence, economics mostly concentrates on "how much" questions, whereas psychology mainly seeks to answer "why" and "when" questions. Topics of rationality, information, and motivations relate to the "why" and "when" domain of psychology, which explains why the latter discipline has developed finer grids in these areas than economics. Interestingly and shown by Alexa Albert and Yngve Ramstad (1997, 885), as early as 1934 Commons stressed that economists, by seeking answers to "why" questions instead of "how much" questions, should concentrate on getting insight into the actual reasons why things occur instead of focusing on effects of behavior. For psychology, however, the argument could be turned the other way round. Jaap Van Ginneken (2003, 2004) has repeatedly argued that psychology suffers from the weakness of negating structural characteristics of people's social orientations, among them institutional environments. With reference to Commons, this can be explained out of a sole focus upon "why" and "when" questions and the ignorance of "how much" questions. Topics such as the influence of sector and/or industry-related dynamics or institutional rules and regulations on individuals relate to the "how much" domain of economics, which explains why economics has developed finer grids in these areas than psychology.

A first important methodological complication of these differences in research focus is that economics and psychology use distinct units of analysis. Herbert Simon said early on, "Economists have been relatively uninterested in descriptive microeconomics—understanding the behavior of individual economic agents" (1959, 254). This explains why, for many macro-economists, the smallest unit of analysis is the firm. Hodgson (1993) has said that economists that have taken the individual as unit of analysis have also taken individual motivations and preferences as given. With respect to

analyses of herd behavior, all studies exhibit this problem. Contemporary economic conceptions of the phenomenon therefore still suffer from what Veblen called a "hedonistic-associational psychology" (1900) and a "hedonistic calculus" (1909). The individual and group personalities are eliminated from the sequence of events, leading to an apprehension of phenomena in terms of (probable) outcome of action.

However, the reluctance to account for institutional structures has led to a clean break of psychology with social orientations in terms of methods of analysis used. Robert Dipboye (1990) has carefully compared experimental and field research in psychology. Most social psychological research has been conducted in the artificial setting of the laboratory. Experimental research primarily aims at increasing the internal validity of the "why" and "when" questions under investigation. It is hard, however, to generalize laboratory findings to institutional practice. Most institutional economic research, on the other hand, has been conducted in the field. Field research among decision makers within a given institution increases the external validity of findings but suffers from low internal validity. This creates methodological tension concerning the proper method for analysis as well as the accuracy and generalization of results. In general, it could be argued that the strengths of one method compensate for the weaknesses of the other (Dipboye 1990; De Cremer and Van Knippenberg 2002). To be as consistent and powerful as possible, therefore, an integrated economic psychological framework of herd behavior should preferably use a multi-method approach, in which for instance explorative threshold models or qualitative case studies could be confirmed in one or several laboratory studies, and the results of these laboratory studies, in turn, could be replicated in one or several field studies (e.g., Earley and Mosakowski 2000).

The example of Intel's departure from the dynamic random access memory DRAM industry (for a detailed analysis see Burgelman 1994) illustrates not only to what extent one-sided economic and psychological analyses differ from each other but also to what extent explanatory power increases with an integration of the two perspectives. From a mainstream economic perspective, heavily relying upon Rogers' ([1962] 1995) framework of diffusion of innovations, Intel's is an exemplary case of first-mover success and successful business exit. The story is as follows. Intel introduced the first DRAM and became first mover in the semiconductor industry. Its DRAM became the dominant design, and Intel maintained its leading position for about a decade. As the DRAM industry matured, cheaper Japanese followers entered the market and Intel lost competitive advantage but still managed to make a profit out of its DRAM technology as second or third mover. Nonetheless, Intel gradually fell behind the competition, and during the recession of the mid 1980s DRAM yielded losses. DRAMs were perceived as the core technology of Intel and as a great part of its corporate identity, so the company was reluctant to give it up and thought of further investments. Microprocessors, however, had become the most profitable part of Intel, so that the company decided not to invest any further in the DRAM industry and to exit (Burgelman 1994).

This particular analysis of Intel's departure from the DRAM industry concentrates solely on the question of "how much" profit the company made out of its DRAM tech-

nology at different development stages in comparison with its competitors in the industry. With its focus upon the firm as the unit of analysis in relation to the industry level, instead of analysis in terms of the individuals within the company, and with its focus upon "how much" questions instead of "why" and "when" questions, no psychologist would ever have come up with such a case study. However, this analysis of Intel's departure is also not convincing for economists that take into account the effects the institutional environment has on institutions. Institutional economists deliberately take institutions as the unit of analysis and explain the "why" and "when" of phenomena out of the interactions between institutions and individuals. Organizations are specific situational contexts for human behavior, more specifically, for a so-called "institutionalized individual" (Hodgson 2000, 2003).

The framework of institutional economics particularly suits an integrated economic psychology of herd behavior, as it compensates for the psychological weakness of ignoring institutional settings. That institutional economics deliberately takes institutions as the unit of analysis at first sight seems to create a major gap with psychologists, which take the individual as the unit of analysis. On second thought, however, this can be overcome, because institutions can be defined as "the commonly held patterns of behavior and habits of thought, of a routinized and durable nature, that are associated with people interacting in groups or larger collectives" (Hodgson 1993, 253). How this could work out in analysis of herd behavior nicely shows in another (rare) psychological case study of Intel's departure from the DRAM industry in which the problem is analyzed in terms of groupthink (for a detailed analysis, see Turner, Pratkanis, and Samuels 2003).

From this groupthink perspective, the focus is on why and under what circumstances the people within the company Intel made the decision to withdraw from the DRAM industry. The people within Intel were confronted with strong group cohesiveness and a provocative situational context determined by high stress from external threats. Both factors were the main conditions for groupthink to occur (Janis 1972, 1982). The strong group cohesiveness within Intel was caused by the company's identity as *the* premier and highly innovative company in the memory industry. The collective threat was a major crisis within the company caused by losing out to Japanese competitors in the DRAM industry and the mid-1980s economic recession. Intel was very reluctant to give up DRAMs as these determined its collective identity as *the* memory company of the world. Groupthink symptoms occurred when decision makers within Intel tried to revive the DRAM business and to heavily invest in this industry at a time when Intel was losing money. Groupthink was, however, circumvented because the company destroyed the old identity as the memory company and constructed a new identity as the microprocessor company. This change in corporate identity made it acceptable for the people within Intel and for Intel as a company to exit the DRAM industry (Turner, Pratkanis, and Samuels 2003).

The example of Intel's business exit illustrates the increase in explanatory power that arises from an integration of the two perspectives. In time, the company made the strategically wise but difficult decision to leave the DRAM industry despite groupthink symptoms that could have caused a longer and possibly disastrous stay in this business. The addition of "why" and "when" questions to the "how much" analysis of herd behavior contributes to the understanding of the institutionalized individual. The Intel case shows how crucial this character can be in decision-making processes. In Intel's case, each institutionalized individual within the company was characterized by a social identity of being a member of *the* leading memory company of the world and a more modest but strongly related self-identity. In fact, it was proper management of the institutionalized individual that led to Intel's circumventing groupthink via metamorphosis of a positive social identity for self-identity into another highly positive social identity (Turner et al. 2002). Summarizing in the words of Walton H. Hamilton, the case of Intel's departure from the DRAM industry clearly shows that "[i]t is necessary, therefore, that economic theory should proceed from an acceptable theory of human conduct. . . . In its stead a theory of motives must be used which is in harmony with the conclusions of modern social psychology" (1919, 316, as cited in Hodgson 2000, 317).

Conclusion

The history of herd behavior in economics and psychology clearly shows that the phenomenon has come to be studied from distinct areas of attention. As early as 1934 Commons recognized the structural difference between economics and psychology, in general, that economists focus upon the effects of herd behavior and more specifically upon the problem of how to benefit from it. Psychologists, on the other hand, primarily seek to answer why and when people feel motivated to engage in collective behavior. As a result, herd behavior in these disciplines is studied from distinct levels of analysis. Economists mostly concentrate upon macrolevel processes while keeping individual motivations and preferences constant, whereas psychologists mostly focus upon microlevel processes while ignoring the effects of a given action on the institutional level. So far, exactly those assumptions have yielded weak results.

Especially, the analysis of motivations underlying herd behavior has been a major weakness in economics. Except for Veblen's *Theory of the Leisure Class* (1899) and an article by Leibenstein (1950), economists have solely explained and tested majority pressures caused by the number of others that already partake in a given action as individual motivations underlying herd behavior (Granovetter 1978; Burt 1982; Jones 1984; David 1985; Farrell and Saloner 1985; Katz and Shapiro 1985; Burt 1987; Arthur 1988, 1989, 1994; Banerjee 1992; Bikhchandani et al. 1992; Abrahamson and Rosenkopf 1993, 1997; Bernheim 1994; Bell 2002). Psychological research into social influence, however, has repeatedly shown that the number of a majority is not as important as the degree of unanimity with a reference group (Asch 1951, 1952, 1956). If people feel

strong consensus with the observed reference group, they are more likely to move toward it, no matter how big or small (e.g., Festinger 1950, 1954). If people decide to move toward a minority reference group, they will mostly do so after careful rational analysis of arguments; if they decide to move toward a majority reference group, they will mostly do so because they feel like it (Deutsch and Gerard 1955; Moscovici 1976, 1980; Maass and Clark 1984; Turner 1991; Martin and Hewstone 2001, 2003). Characteristics of reference groups other than their actual numbers are thus of key importance. A major weakness in psychological research, on the other hand, has been the disregard of institutional influences upon individual actions and motivations. Hardly any attention has been paid to the longer-term effects and institutional influences upon herd behavior (Van Ginneken 2003, 2004).

To be a powerful analytical tool, an integrative economic psychological approach to herd behavior should cover both areas of attention, behavioral causes and effects, by accounting for macro as well as microlevel processes. In institutional settings, one should especially reckon with the so-called institutionalized individual (Hodgson 2000, 2003) who derives both social and self-identity from institutions (Turner 1991). Insights into the motivations underlying the behavior of the institutionalized individual—the "why" and "when"—should help to increase explanatory power with respect to the questions "how" to deal with herd behavior and "how much" to benefit from it. An institutionalized individual could, for instance, strive for consensus with an admired reference group, hoping that an increase in institutional identity would also increase self-identity, and as a result become less critical toward the actual behavior of the reference group (Turner, Pratkanis, and Samuels 2003). If this attitude were shared by more people, an entire group could polarize and decide to engage in herd behavior, even if this were potentially dangerous for the institution as a whole (Kruglanski 1989; Kruglanski and Webster 1991; Kruglanski, Webster, and Klem 1993). An integrative economic psychological approach could yield detailed insights into the accuracy of motivations underlying individual and group decisions to partake in herd behavior. It thus not only helps in assessment of the ways in which decision makers should deal with herding pressures within institutions but also in the estimation of how much institutions could benefit from either partaking in or avoiding herd behavior.

Notes

1. Although the framework of institutional economics particularly suited an integrated economic psychological approach to herd behavior, mainstream economics followed a different route that moved away from social psychology.
2. The first example was the history of the videocassette recorder, in which VHS and Beta competed with each other. Brian Arthur (1988, 1989, 1994) held the opinion that because of sheer luck in the early stages of adoption, VHS took over almost the entire market. The second example was the history of the typewriter keyboard, in which QWERTY and Dvorak competed with each other. Paul David (1985) argued that the QWERTY keyboard became dominant because of "historical accidents" in the early stages of diffusion. Both examples

have caused controversy in recent years (Liebowitz and Margolis 1994; Cusumano, Mylonadis, and Rosenbloom 1997).

3. It should be mentioned that George Akerlof (1970) was the first to introduce models based on incomplete information in economics (see also Akerlof 1980).
4. A detailed discussion of groupthink will be provided in the next section of this paper.

References

Abrahamson, Eric. "Managerial Fads and Fashions: The Diffusion and Rejection of Innovations." *The Academy of Management Review* 16 (1991): 586–612.

Abrahamson, Eric, and Lori Rosenkopf. "Institutional and Competitive Bandwagons: Using Mathematical Modeling as a Tool to Explore Innovation Diffusion." *The Academy of Management Review* 18 (July 1993): 487–517.

——. "Social Network Effects on the Extent of Innovation Diffusion: A Computer Simulation." *Organization Science* 8 (May–June 1997): 289–309.

Akerlof, George A. "The Market for "Lemons": Quality Uncertainty and the Market Mechanism." *The Quarterly Journal of Economics* 84 (August 1970): 488–500.

——. "A Theory of Social Custom, of which Unemployment May Be One Consequence." *The Quarterly Journal of Economics* 94 (1980): 749–775.

Albert, Alexa, and Yngve Ramstad. "The Social Psychological Underpinnings of Commons's Institutional Economics: The Significance of Dewey's Human Nature and Conduct." *Journal of Economic Issues* 31 (1997): 881–916.

Allen, Vernon L. "Situational Factors in Conformity." In *Advances in Experimental Social Psychology*, vol. 2, edited by L. Berkowitz. New York: Academic Press, 1965.

Allen, Vernon L., and David A. Wilder. "Social Comparison, Self-Evaluation, and Conformity to the Group." In *Social Comparison Processes*, edited by Jerry M. Suls and Richard L. Miller, 187–208. Washington, D.C.: Hemisphere, 1977.

Allport, Floyd H. *Social Psychology*. New York: Houghton, Mifflin, 1924.

Arthur, W. Brian. "Competing Technologies: An Overview." In *Technical Change and Economic Theory*, edited by G. Dosi, C. Freeman, R. Nelson, G. Silverberg, and L. Soete. London: Pinter, 1988.

——. "Competing Technologies, Increasing Returns, and Lock-in by Historical Events." *Economic Journal* 99 (1989): 116–131.

——. *Increasing Returns and Path Dependence in the Economy*. Ann Arbor, Mich.: University of Michigan Press, 1994.

Asch, Solomon E. "Effects of Group Pressure upon the Modification and Distortion of Judgments." In *Groups, Leadership, and Men*, edited by M. Guetzkow. Pittsburgh, Pa.: Carnegie Press, 1951.

——. *Social Psychology*. Englewood Cliffs, N.J.: Prentice-Hall, 1952.

——. "Studies of Independence and Conformity: A Minority of One against a Unanimous Majority." *Psychological Monographs: General and Applied* 70 (1956): 1–70.

Bandura, Albert. "Influence of Model's Reinforcement Contingencies on the Acquisition of Imitative Responses." *Journal of Personality and Social Psychology* 1 (1965): 589–595.

Bandura, Albert, Dorothea Ross, and Sheila A. Ross. "A Comparative Test of the Status Envy, Social Power, and Secondary Reinforcement Theories of Identificatory Learning." *Journal of Abnormal and Social Psychology* 67 (1963a): 527–534.

——. "Vicarious Reinforcement and Imitative Learning." *Journal of Abnormal and Social Psychology* 67 (1963b): 601–607.

Banerjee, Abhijit V. "A Simple Model of Herd Behavior." *The Quarterly Journal of Economics* 107 (August 1992): 797–817.

Baron, Robert S., Joseph A. Vandello, and Bethany Brunsman. "The Forgotten Variable in Conformity Research: Impact of Task Importance on Social Influence." *Journal of Personality and Social Psychology* 71 (1996): 915–927.

Bell, Ann M. "Locally Interdependent Preferences in a General Equilibrium Environment." *Journal of Economic Behavior & Organization* 47 (2002): 309–333.

Bernheim, B. Douglas. "A Theory of Conformity." *The Journal of Political Economy* 102 (October 1994): 841–877.

Bikhchandani, Sushil, David Hirschleifer, and Ivo Welch. "A Theory of Fad, Fashion, Custom and Cultural Change as Informational Cascades." *Journal of Political Economy* 100 (1992): 992–1026.

Burgelman, Robert A. "Fading Memories: A Process Theory of Strategic Business Exit in Dynamic Environments." *Administrative Science Quarterly* 39 (1994): 24–56.

Burt, Ronald S. *Toward a Structural Theory of Action: Network Models of Social Structure, Perception and Action.* London, N.J.: Academic Press, 1982.

——. "Social Contagion and Innovation: Cohesion versus Structural Equivalence." *American Journal of Sociology* 92 (1987): 1287–1335.

Commons, John R. *Institutional Economics: Its Place in Political Economy.* New York: Macmillan, 1934.

Crano, William D. "Effects of Sex, Response Order, and Expertise in Conformity: A Dispositional Approach." *Sociometry* 33 (1970): 239–252.

Cusumano, Michael A., Yiorgos Mylonadis, and Richard S. Rosenbloom. "Strategic Maneuvering and Mass-Market Dynamics: The Triumph of VHS over Beta." In *Managing Strategic Innovation and Change: A Collection of Readings,* edited by Michael L. Tushman and Philip Anderson, 75–98. Oxford: The Oxford Press, 1997.

David, Paul A. "Clio and the Economics of QWERTY." *American Economic Review* 75 (May 1985): 332–337.

De Cremer, David, and Daan L. Van Knippenberg. "How Do Leaders Promote Cooperation? The Effects of Charisma and Procedural Fairness." *Journal of Applied Psychology* 87 (2002): 858–866.

Deutsch, Morton, and Harold B. Gerard. "A Study of Normative and Informational Social Influence upon Individual Judgment." *Journal of Abnormal and Social Psychology* 51 (1955): 629–636.

Dipboye, Robert L. "Laboratory vs. Field Research in Industrial and Organizational Psychology." *International Review of Industrial and Organizational Psychology* 5 (1990): 1–34.

Dolfsma, Wilfred. "Life and Time of the Veblen Effect." *History of Economic Ideas* 8 (2000): 61–82.

Dosi, Giovanni. "Technological Paradigms and Technological Trajectories." *Research Policy* 11 (1982): 147–162.

Earley, P. Christopher, and Elaine Mosakowski. "Creating Hybrid Team Cultures: An Empirical Test of Transnational Team Functioning." *Academy of Management Journal* 43 (2000): 26–49.

Esser, James K., and Joanne S. Lindoerfer. "Groupthink and the Space Shuttle Challenger Accident: Toward a Quantitative Case Analysis." *Journal of Behavioral Decision Making* 2 (1989): 167–177.

Farrell, Joseph, and Garth Saloner. "Standardization, Compatibility, and Innovation." *The RAND Journal of Economics* 16 (Spring 1985): 70–83.

Festinger, Leon. "Informal Social Communication." *Psychological Review* 57 (1950): 271–282.

——. "A Theory of Social Comparison Processes." *Human Relations* 7 (1954): 114–140.

Festinger, Leon, Stanley Schachter, and Kurt W. Back. *Social Pressures in Informal Groups.* Stanford: Stanford University Press, 1950.

Fiske, Susan T., and Shelley E. Taylor. *Social Cognition.* New York: McGraw-Hill, 1991.

Fiol, C. Marlene, and Edward J. O'Connor. "Waking Up! Mindfulness in the Face of Bandwagons." *Academy of Management Review* 28 (2003): 54–70.

Frank, Robert H., and Philip J. Cook. *The Winner-Take-All Society: How More and More Americans Compete for Ever, Fewer, and Bigger Prizes, Encouraging Economic Waste, Income Inequality, and an Impoverished Cultural Life.* New York: The Free Press, 1988.

Granovetter, Mark S. "The Strength of Weak Ties." *The American Journal of Sociology* 78 (1973): 1360–1380.

——. "Threshold Models of Collective Behavior." *The American Journal of Sociology* 83 (1978): 1420–1443.

Hensley, Thomas R., and Glen W. Griffin. "Victims of Groupthink: The Kent State University Board of Trustees and the 1977 Gymnasium Controversy." *Journal of Conflict Resolution* 30 (1986): 497–531.

Hodgson, Geoffrey M. *Economics and Evolution: Bringing Life Back into Economics.* Cambridge, U.K., and Ann Arbor, Mich.: Polity Press and University of Michigan Press, 1993.

——. "What Is the Essence of Institutional Economics?" *Journal of Economic Issues* 34 (2000): 317–329.

——. "John R. Commons and the Foundations of Institutional Economics." *Journal of Economic Issues* 37 (2003): 547–576.

Hogg, Michael A. "Subjective Uncertainty Reduction through Self-Categorization: A Motivational Theory of Social Identity Processes." In *European Review of Social Psychology* 11, edited by Wolfgang Stroebe and Miles Hewstone, 223–255. Chicester: Wiley, 2000.

Hogg, Michael A., and John C. Turner. "Social Identity and Conformity: A Theory of Referent Information Influence." In *Current Issues in European Social Psychology*, vol. 2, edited by Wiliam Doise and Serge Moscovici, 139–182. Cambridge and Paris: Cambridge University Press and Editions de la Maison des Sciences de l'Homme, 1987.

Homans, George C. *The Human Group*. New York: Harcourt, Brace & World, 1950.

——. *Social Behavior: Its Elementary Forms*. New York: Harcourt, Brace & World, 1961.

Hyman, Herbert H. "The Psychology of Status." *Archives of Psychology* 269 (1942): 5–86.

Hyman, Herbert H., and Eleanor Singer. *Readings in Reference Group Theory and Research*. New York: The Free Press, 1968.

Janis, Irving L. *Victims of Groupthink*. Boston: Houghton Mifflin, 1972.

——. *Groupthink: Psychological Studies of Policy Decisions and Fiascoes*. Boston: Houghton Mifflin, 1982.

Janis, Irving L., and Leon Mann. *Decision Making: A Psychological Analysis of Conflict, Choice, and Commitment*. New York: Free Press, 1977.

Jones, Stephen R. G. *The Economics of Conformism*. Oxford: Basil Blackwell, 1984.

Katz, Michael L., and Carl Shapiro. "Network Externalities, Competition, and Compatibility." *The American Economic Review* 75 (June 1985): 424–440.

Kruglanski, Arie W. *Lay Epistemics and Human Knowledge: Cognitive and Motivational Bases*. New York: Plenum Press, 1989.

Kruglanski, Arie W., and Donna M. Webster. "Group Members' Reactions to Opinion Deviates and Conformists at Varying Degrees of Proximity to Decision Deadline and of Environmental Noise." *Journal of Personality and Social Psychology* 61 (1991): 212–225.

Kruglanski, A. W., Donna M. Webster, and Adena Klem. "Motivated Resistance and Openness to Persuasion in the Presence or Absence of Prior Information." *Journal of Personality and Social Psychology* 65 (1993): 861–876.

Lamm, Helmut, and David G. Myers. "Group-Induced Polarization of Attitudes and Behavior." In *Advances in Experimental Social Psychology*, vol. 11, edited by Leonard Berkowitz, 145–195. New York: Academic Press, 1978.

Le Bon, Gustave. *Les Lois Psychologiques de l'Evolution des Peuples*. 1895. Translation: *The Crowd: A Study of the Popular Mind*. London: Ernest Benn, 1947.

Leibenstein, Harvey. "Bandwagon, Snob, and Veblen Effects in the Theory of Consumers' Demand." *Quarterly Journal of Economics* 64 (1950): 183–207.

Liebowitz, S. J., and Stephen E. Margolis. "Network Externality: An Uncommon Tragedy." *The Journal of Economic Perspectives* 8 (Spring 1994): 133–150.

Maass, Anne, and Russell D. Clark. "Hidden Impact of Minorities: Fifteen Years of Minority Influence Research." *Psychological Bulletin* 95 (1984): 428–450.

March, James G., and Herbert A. Simon. *Organizations*. New York: Wiley and London: Chapman & Hall, 1958.

Martin, Robin, and Miles Hewstone. "Conformity and Independence in Groups: Majorities and Minorities." In *Blackwell Handbook of Social Psychology (Group Processes)*, edited by Michael A. Hogg and R. Scott Tindale, 209–234. Malden, Mass.: Blackwell Publishers, 2001.

——. "Majority versus Minority Influence: When, not Whether, Source Status Instigates Heuristic or Systematic Processing." *European Journal of Social Psychology* 33 (2003): 313–330.

Moscovici, Serge. *Social Influence and Social Change*. London: Academic Press, 1976.

——. "Toward a Theory of Conversion Behavior." In *Advances in Experimental Social Psychology*, vol. 13, edited by Leonard Berkowitz, 209–239. New York: Academic Press, 1980.

——. *The Age of the Crowd: A Historical Treatise on Mass Psychology*. Cambridge and Paris: Cambridge University Press and Editions de la Maison des Sciences de l'Homme, 1985.

Moscovici, Serge, and Marisa Zavalloni. "The Group as a Polarizer of Attitudes." *Journal of Personality and Social Psychology* 12 (1969): 125–135.

Nemeth, Charlan Jeanne. "Differential Contributions of Majority and Minority Influence." *Psychological Review* 93 (1986): 23–32.

Newcomb, Theodore M. *Personality and Social Change.* New York: Dryden Press, 1943.

Newcomb, Theodore. M., Kathryn E. Koenig, Richard Flacks, and Donald P. Warwick. *Persistence and Change: Bennington College and Its Students after 25 Years.* New York: Wiley, 1967.

Reicher, Stephen D. "The St Pauls Riot: An Explanation of the Limits of Crowd Action in Terms of a Social Identity Model." *European Journal of Social Psychology* 14 (1984a): 1–21.

——. "Social Influence in the Crowd: Attitudinal and Behavioral Effects of De-individuation in Conditions of High and Low Group Salience." *British Journal of Social Psychology* 23 (1984b): 341–350.

Rogers, Everett M. *Diffusion of Innovations.* 1962. Reprint, New York: The Free Press, 1995.

Sherif, Muzafer. "A Study of Some Social Factors in Perception." *Archives of Psychology* 27 (1935): 1–60.

——. *The Psychology of Social Norms.* New York: Harper Brothers, 1936.

Simmel, Georg. "Fashion." *American Journal of Sociology* 62 (May 1957): 541–558. Originally published in *International Quarterly* 10 (1904): 130–155.

Simon, Herbert A. *Models of Man, Social and Rational: Mathematical Essays on Rational Human Behavior in a Social Setting.* New York: Wiley & Son and London: Chapman & Hall, 1957.

——. "Theories of Decision Making in Economics and Behavioral Science." *The American Economic Review* 49 (June 1959): 253–283.

——. "Rational Decision Making in Business Organizations." *American Economic Review* 69 (1979): 493–513.

——. "Rationality in Psychology and Economics." *The Journal of Business* 59, The Behavioral Foundations of Economic Theory (October 1986): S209–S224.

Stoner, James A. F. "Risky and Cautious Shifts in Group Decisions: The Influence of Widely Held Values." *Journal of Experimental Social Psychology* 4 (1968): 442–459.

Tarde, Gabriel. *The Laws of Imitation.* 1903. Reprint, Gloucester, Mass.: Peter Smith, 1962.

Turner, John C. *Social Influence.* Pacific Grove: Brooks/Cole, 1991.

——. "A Self-Categorization Theory." In *Rediscovering the Social Group: A Self-categorization Theory,* edited by John C. Turner, Michael A. Hogg, Penelope J. Oakes, Stephen D. Reicher, and Margaret S. Wetherell, 42–67. Oxford: Blackwell Publishers, 1987.

Turner, John C., and Penelope J. Oakes. "Self-Categorization Theory and Social Influence." In *The Psychology of Group Influence,* edited by Paul B. Paulus, 233–275. Hillsdale, N.J.: Erlbaum, 1989.

Turner, Marlene C., Anthony R. Pratkanis, and Tara Samuels. "Identity Metamorphosis and Groupthink Prevention: Examining Intel's Departure from the DRAM Industry." In *Social Identity at Work: Developing Theory for Organizational Practice,* edited by S. Alexander Haslam, Daan van Knippenberg, Michael J. Platow and Naomi Ellemers, 117–136. New York and Hove: Psychology Press, 2003.

Van Ginneken, Jaap. *Crowds, Psychology, and Politics.* New York: Cambridge University Press, 1992.

——. *Collective Behavior and Public Opinion: Rapid Shifts in Opinion and Communication.* New York: Lawrence Erlbaum, 2003.

——. "Social Orientations." In *A Social History of Psychology,* edited by Jeroen Jansz and Peter van Drunen. Oxford: Blackwell University Press, 2004.

Veblen, Thorstein B. *The Theory of the Leisure Class.* New York: Dover, 1899.

——. "The Preconceptions of Economic Science." *The Quarterly Journal of Economics* 14 (February 1900): 240–269.

——. "The Limitations of Marginal Utility." *The Journal of Political Economy* 17 (November 1909): 620–636.

Wetherell, Margaret S. "Social Identity and Group Polarization." In *Rediscovering the Social Group: A Self-Categorization Theory,* edited by John C. Turner, Michael A. Hogg, Penelope J. Oakes, Stephen D. Reicher, and Margaret S. Wetherell, 142–170. Oxford: Blackwell Publishers, 1987.