



A Model of Organizational Bandwagon

Davide Secchi, Ph.D.

Department of Management
University of Wisconsin, La Crosse (U.S.A.)
secchi.davi@uwlax.edu

Emanuele Bardone, Ph.D.

Department of Philosophy, Computational Philosophy Lab
University of Pavia (Italy, E.U.)
bardone@unipv.it

No 1, September 2009

ABSTRACT

Bandwagon has been analyzed as an imitation of practices, ideas, techniques, and innovations that are popular among organizations. It has been considered at the organization level but few scholars have conducted research at the individual level: what happens inside organizations? This paper presents a mathematical model of bandwagon in organizations based on organizational culture and social relations. Both of these determinants are studied on the basis of what Herbert Simon calls human “docility.” The model presents the idea that bandwagon depends on how well organizations manage the ability of individuals to learn from each other (*active* information processing) instead of imitating each other (*passive* information processing). We believe that the model shades a new light on the bandwagon effect by (a) broadening its explaining factors and (b) providing scholars with a framework for empirical testing of hypotheses.

Keywords: bandwagon, cognition, docility, organizational culture, social relations, fallacy

A MODEL OF ORGANIZATIONAL BANDWAGON*

“Who wants to be a Millionaire?” is the title of a highly successful TV show where contestants answer trivia questions and advance towards the million (if they get it right). When you do not know how to answer a question you can use three alternatives, one of which is to let the public suggest the answer. You analyze data, and give your answer. Usually, what happens is that contestants follow the opinion of the majority of people. And this “aid” is designed explicitly to support this behavior. Follow the stream! Jump on the bandwagon!

The TV show is nothing but a simple example of what people do all the time. Whether it is their personal, social or work life, they often behave consistently with what others do. In the paper we analyze bandwagon in organizational settings. This topic is not new for management scholars and we aim specifically at expanding and improving the existing literature (especially Fiol, & O’Connor, 2003). In particular, our contribution is directed towards the understanding of determinants and outcomes of bandwagons as they affect individual cognition in organizations. What is that triggers this behavior? What are the factors that cause its emergence in organizational settings? How bad it could affect organizational life?

The paper is organized in four sections. The first section presents bandwagon as it is considered in management, cognitive science and economics literature. In the second section we define its determinants and generate propositions that structure the model of bandwagon in organizations (section three). Throughout the paper we use mathematical modeling to explicit relations between variables. Discussion and conclusions follow in the fourth and last section.

* This paper is a working paper in that it is a collection of ideas and suggestions for potential research in this field more than an organized exposition of knowledge. We would like to thank those who read the paper and will send us their impressions and comments. We also thank Tong Ye, a graduate UW-L student, for the time he spent helping us with editing and layout.

A short methodological note on the use of mathematics in this paper

Given the amount of knowledge that the scientific community has developed until now, we do not believe that human behavior and cognition can be fully described by any mathematical model, no matter how advanced and sophisticated it is. As far as we know, there are no models capable of a fair representation of the plasticity, variety and complexity of human cognition and behavior. Therefore, the model that we present in this paper is a simplified and imperfect representation of real phenomena. However, the same extraordinary characteristics of the human cognition allow us to understand limits and potentials of the model and to expand its meaning using inferences and abductive reasoning processes (this is the point of the debate on model-based reasoning among cognitive scientists; see Magnani, Nersessian, & Thagard, 1999; Magnani & Nersessian, 2002; Magnani, 2006).

In other words, what we are trying to state here is that we use mathematical modeling as heuristic, in the meaning of “cognitive facilitator” (Magnani, 2007; also, this is very close to what meant by Gigerenzer & Todd, 1999). We hope that the reader will take a cognitive advantage from what the model suggests.

BANDWAGON: OLD, NEW, AND VERY OLD**Old theories**

There are many definitions of bandwagon. They spread from economics to management, to sociology, and political science. According to the literature, the first who introduced the term in economics is Leibenstein (1950). He writes about the nonfunctional consumers’ demand, referring to that part of the demand that relates to the “external effects of utility. That is, the utility derived from the commodity is enhanced or decreased owing to the fact that others are purchasing and

consuming the same commodity, or owing to the fact that the commodity bears a higher rather than a lower price tag” (1950: 189). In particular, he writes that a *bandwagon effect* emerges when “the demand for a commodity is *increased* due to the fact that others are also consuming the same commodity” (Leibenstein, 1950: 189). This happens when consumers “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’” (Leibenstein, 1950: 189). He continues considering the knowledge that each individual possesses and relating it to this phenomenon.

The idea that Leibenstein has of bandwagon is similar to that of sociologist Mark Granovetter. In one of his papers, he uses the concept of “threshold.” This is, when referred to an individual, “the proportion of the group he would have to see join before he would do so” (Granovetter, 1978: 1422). On a more detailed take, he specifies that the “threshold is simply that point where the perceived benefits to an individual of doing the thing in question [...] exceed the perceived costs” (p. 1422). It is apparent that the idea of threshold is related to that of bandwagon. Imagine 100 individuals and that “there is one individual with threshold 0, one with threshold 1, one with threshold 2, and so on up to the last individual with threshold 99. [...] The outcome is clear and could be describes as a ‘bandwagon’ or ‘domino’ effect” (1424). It is important to highlight that, according to Granovetter, threshold is a “purely behavioral” concept (1978: 1435).

In both cases, bandwagon is related to a cost-benefit analysis, where utility is the measure that explains the reasons why people make the decision to jump on the bandwagon.

New theories

More recent studies on the same topic take a broader approach to the problem, in the sense that

authors use a macro-approach. Abrahamson and Rosenkopf, for example, define bandwagons as “diffusion processes whereby organizations adopt an innovation, not because of their individual assessments of the innovation’s efficiency or returns, but because of a bandwagon pressure caused by the *sheer number* of organizations that have already adopted this innovation” (1993: 488). There are several points that are important in this definition. Although the focus is on innovation we believe that the core characters of the phenomenon are well outlined. First, there is no *assessment* of innovation but adoption. As Fiol and O’Connor explain through Langer’s categories (1989), bandwagons emerge when individuals (organizations in the definition) are not able to exercise their mindfulness, i.e. the level of attention and awareness typical of active information processing (Fiol & O’Connor, 2003: 58). This accounts for the adoption without assessment. Second, Abrahamson and Rosenkopf write that innovation is adopted because of *pressure* from peers. This is very different from the perspective of the above mentioned “old” approaches of bandwagon, where the rational individual makes a decision based on utility. Bandwagons can be “induced” or “forced,” in some cases, by environmental pressures. If it is so, then the rational decision-making process doesn’t count any more. When we consider the two parts of Abrahamson and Rosenkopf definition together, we have the idea that bandwagon is the act of imitating something/somebody when there is an external *pressure* to do so. It doesn’t involve rationality or *active* cognitive processes (as we will show below) and it come as a sort of need for the organization. Or, this is when it relates to innovation.

Fiol and O’Connor modify and improve Abrahamson and Rosenkopf’s definition stating that “[b]andwagons are diffusion processes whereby individuals or organizations adopt an idea, technique, technology, or product because of pressures caused by the number of organizations that

have already adopted it” (Fiol & O’Connor, 2003: 54). There are two contribution of Fiol and O’Connor’s definition. On the one hand, they expand and specify the *what* of bandwagon, i.e. ideas, techniques, technologies, and products. On the other hand, they explicit the fact that *individuals*, not only organizations, jump on the bandwagon too. And yet they remain stuck to the point that bandwagon is the “adoption” of something because of *pressures* from peers.

The reasons why individuals and organizations are prone to bandwagon have been analyzed in the literature and often used to classify theories (Abrahamson & Rosenkopf, 1990, 1993; Fiol & O’Connor, 2003; Katz & Shapiro, 1985). We found Abrahamson and Rosenkopf’s classification (1993: 489f) of theories particularly useful. According to the evolution of studies on bandwagon that we already mentioned, they recognize (a) rational-efficiency theories, and (b) fad theories.

An individual jumps on the bandwagon because he or she thinks to gain something from that behavior (rational-efficiency theories) or because of social pressures that instigate this person to adopt the idea, technology, product, etc. (fad theories).

In the first case, a rational choice can be driven by a cost cutting strategy, a cost-benefit analysis, or simply by beliefs that what everybody is doing is right (see the case for popular management techniques in Staw & Epstein, 2000). The second case raises concerns about the feelings that an individual may experience if that specific product or idea is not supported, or adopted, i.e. feelings associated with not bandwagoning. Emotional analyses of bandwagon are yet to come however, if we explain bandwagon through “social pressures,” this might be the case for irrational decisions dictated by the strong emotions that come with them (Ariely, 2008, ch. 5; Ariely, & Loewenstein, 2006).

Another interesting study (Staw, & Epstein, 2000) presents the case of organizations that copy

popular management techniques. To explain motives of this behavior, they borrow the concept of “legitimacy” from institutional theory (Scott, 1995), and define it as “the degree of *cultural* support for an organization” (Meyer & Scott, 1983: 201; italics added). Evidence of this behavior has been found by Deephouse (1996). He “showed that conformity to prevailing industry standards (in terms of asset allocations) was significantly associated with banks’ legitimacy” (Staw & Epstein, 2000: 525). Although these studies were “conducted within a highly regulated industry, in which the organization had little choice but to follow accepted practices” (Staw & Epstein, 2000: 525) we believe this is another important point about bandwagon: formal and informal norms and rules.

 Insert Table 1 about here

We have tried to summarize the major traits of bandwagon in Table 1, dividing the *who* from the *what* and the *why*. Depending on the approach you would like to use you can “connect the dots” and link “individual” bandwagon to “ideas” and “mindlessness,” for example, or “organizational” bandwagon to “innovation” and “social pressure.” However, you find little evidence that brings you to answer the question: What determines bandwagon? The answer is limited to the third, the *why* column of table 1. Is it enough? Is there something missing?

The next paragraph is an attempt to answer these questions and to set the ground for what comes in the next section.

The very old: Insights on individual cognition

What new and old studies of bandwagon overlook stays at the basis of the concept: individual cognitive processes that favor or support the raise of bandwagon. Only one of the above men-

tioned works takes into consideration individual cognition (Fiol & O'Connor, 2003) and this is where we want to start with our argument. To do that, we need to delve into the “very old.”

Fallacies

If we take the problem of defining bandwagon from a cognitive perspective, we found that students of logic call it a *fallacy*. Indeed it is a specific form of fallacy.

From the perspective of classical logic, a fallacy is a pattern of poor reasoning which appears to be a pattern of good reasoning (Hansen, 2002). Two disciplines respectively illustrate the different kinds of fallacies: (1) formal logic, which recognizes and explains “formal fallacies,” and (2) informal logic, that describes the so-called “informal fallacies.” On the one hand, we can say that the validity of a deductive argument depends on its form, consequently, formal fallacies are arguments which have an invalid form and are not truth preserving (for example the fallacy of “affirming the consequent” and of “denying the antecedent”; Hansen 2002). On the other hand, informal fallacies are any other invalid modes of reasoning whose failing is not strictly based on the type of the argument (e.g. the *ad hominem argument* or the “hasty generalization,” see below). For example, an “hasty generalization” occurs when a person infers a conclusion about a group of events based on a sample that is not large enough. A more precise approach on fallacies is that of Gabbay and Woods (2007):

1. A fallacy is a pattern of poor reasoning. That means it is *erroneous*. It leads us to a conclusion by means of poor reasoning.
2. A fallacy is a pattern of poor reasoning that, however, looks good. That is, it is *attractive* and *seductive*, since it can be easily smuggled as a good argument sometimes.
3. A fallacy is also *universal* in its occurrence. That is, everybody is got used to commit

fallacies, no matter where she lives or what culture she belongs to.

4. A fallacy is *incorrigible* in the sense that people display high level of post-diagnostic recidivism; committing fallacies is a incorrigible disposition or mind-set.

Erroneous, attractive, universal, and incorrigible are all adjectives that clearly depict an intuitive notion of fallacy, labeled by its proponents with the acronym *EAUI*.

It is hard to get a definite and complete list of typical fallacies, therefore we conventionally assume the list provided by Woods (2004). Woods listed eighteen items - the so-called *Gang of Eighteen*. For what is needed here, we refer to three main types of “gossiping fallacies”:

- (1) *argumentum ad hominem* (or argument against person), based on the release of unrelated bad information about a person with the purpose of diminishing the value of his/her argument (an example is the delving into the past of political candidates, assuming that these information tell something on a particular argument of the candidate’s campaign; from a logical perspective they don’t);
- (2) *argumentum ad verecundiam* (or appeal to authority), based on the appeal to an authority acknowledged as such in order to support or boost a certain position rather than another (an example is that of accepting a publication based on the fact that the “right” mainstream and recent literature has been cited; this does not mean that the argument is fine); and
- (3) *argumentum ad populum* (or appeal to popularity or *bandwagon*). People are used to believe or think what the many believe.

All these three fallacies are traditionally considered as examples of a broader category called *ignoratio elenchi* or red herring. As Latin names suggest, this is a very old and studied topic; in

fact the Greek thinker Aristotle was the first to introduce fallacies in his logic (Gabbay & Woods, 2007: chapter 1). Although one may argue that bandwagon is new for sociologists, economists and management scholars it is not for logicians so that we can take advantage, in this paper, from developments of this very old tradition of studies. Modern studies on human cognition assume the study of fallacies as a basis. Here we go in the next paragraph.

A cognitive take on bandwagon

In this subsection our aim is to describe how the so-called *bandwagon effect* relates to cognitive processes. As a product of an *ad populum*, the bandwagon effect is that process in which a person follows what the majority of people does (Leibenstein, 1950). Generally speaking, popularity is a kind of competence surrogate. It is a competence (or knowledge) surrogate, because it does not require any learning process that is the only means by which competence might be eventually acquired. However, as brilliantly put it by Sunstein “conformity is often a rational course of action, but when all or most of us conform, society can end up making large mistakes” (Sunstein, 2005: 3). This is very important for our analysis for at least two reasons: (a) conformity is enhanced by a shared system of norms and values between individuals and (b) competence surrogates link bandwagon to processes that are more standardized (like routines), where individuals execute tasks mechanically. We will discuss these two points further in the model (next section). To explain the reason why we follow bandwagons besides conformity and competence surrogates, we refer to the *plasticity* of our cognition (Clark, 2004). This is the ability of exploiting those signs that are more symptomatic than others of a certain situation we have to cope with. Indeed, this ability is enhanced by having a second non-genetic inheritance system, by which successful solutions can be transmitted and accumulated leading to better adaptation. This allows

people to have access to a great variety of information and resources resulting from the activity of previous generations (e.g. culture). Also, according to leading cognitive scientists, this depends on how human cognition works and is well described by the so-called distributed cognition approach (Clark, 1998; Hutchins, 1995; Magnani, 2007; Thagard, & Woods, 2007).

Hutchins explains that “cognitive processes may be distributed across members of a social group, cognitive processes may be distributed in the sense that the operation of the cognitive system involves coordination between internal and external (material or environmental) structure, and processes may be distributed through time in such a way that the products of earlier events can transform the nature of later events. The effects of these kinds of distribution of processes are extremely important to an understanding of human cognition” (Hutchins, 2000: 1-2). According to this explanation, human cognition is shaped by external resources on the basis a continuous and useful interchange between in- and outside the brain (Clark & Chalmers, 1998).

Imitation (bandwagon) is a typical case of how cognition is distributed. What we end up doing comes out from making sense of what other people are doing, and this shapes our cognition. As Hutchins (2000) explains, the social group (e.g. an organization) supports this cognitive attitude. We do not want to enter in too many details but the core point here is that our cognition is not limited to the brain but it is shaped by the interchange between external and internal resources (Clark, 2004), especially those of the social group. Bandwagon, from this perspective, is a typical cognitive activity that is *socially* distributed.

Our proposal is to define bandwagon on the basis of the cognitive activity at its basis, i.e. imitation, and to use a *scale of social imitation* to define it on a time-space continuum. The advantages of using such a scale are at least three. First, we are able to confer a more detailed meaning to

Granovetter's threshold model since individuals, for example, can make the decision to steal one pen because they observed that their boss did it (this is discussed shortly by Granovetter, 1978).

Second, we can define imitation as a sort of *passive* or *behavioral* process when it is bandwagon-like. Otherwise, we can say it is *active* or *docility-based* when it is not (see below).

Now, our contention is that the bandwagon effect constitutes a major factor inducing cognitive group impoverishment, because it slows down, or even interrupts, the accumulation and transmission of knowledge. It deters the true potentials of the distributive cognitive process: constant learning. A short investigation of citation behavior in science may be a case in point for illustrating this contention.

During the last thirty years a number of contributions about why and how authors cite others' documents has appeared (Bornmann, & Daniel, 2006). Such contributions have developed an alternative approach to the sociology of science (Small, 2004; Van der Veer Martens and Goodrum, 2006) taking advantage of the introduction of powerful tracking tools able to store and retrieve upon request a huge amount of data. For citation analysis has now become a widespread methodology, which is a fundamental means for extracting meaningful patterns from various citation-databases. Indeed, there are a number of issues concerning the scientific reliability of citation analysis but, as far as we are concerned here, such data and results are merely exploratory rather than validating.

An interesting case to mention is given in Anderson (2006). Anderson investigated the influence that a book, *The Social Psychology of Organizing* by Karl Weick, has had during the last thirty years on a number of disciplines including social psychology, management, and organizational behavior. Using a methodology called *context citation analysis*, Anderson re-

ported empirical evidences about the fact that authors citing *Organizing* appear to be “willing to accept concepts in *Organizing* without empirical confirmation” (p. 1687), although little difficulty would be required to do that with respect to a number of concepts introduced by Weick. This appears to contradict the commonly accepted view according to which science is built on *organized skepticism* (Merton, 1996). To our view, the example we documented is simply an effect due to bandwagon. That is, scholars often cite documents just because they see them cited by others. As a result, most of these citations may be reasonably considered as *perfunctory* or *ceremonial* citations rather than meaningful, as they usually appeared in introductory sections (Case and Higgins, 2000). On some occasion, authors may not even read the materials they cite, but they merely copy them from a third source.

What is bandwagon?

We can now redefine bandwagon on the basis of individual cognition as we illustrated it in the previous paragraph. First, bandwagon processes emerge from *observation*. The individual observes what goes on and makes the decision to do the same. The framing process is subject to bounded rationality and to biases (Kahnemann, 2003) but the individual doesn't want to or cannot analyze them if he/she is about to bandwagon. Second, a shared system of norms and values defined in a social group, i.e. organizational culture, expands the opportunities to develop distributed cognitive processes. So that, and this is the third character, the individual *imitates* what a significant number of other people are doing, and this involves a *passive* cognitive process.

In summary, the attitude to exploit external resources may end up in bandwagon when distribution is only passive. We argue that this is more likely to happen when the social group has more distant (or “thin”) social relations, i.e. the social network does not provide the correct support for

exploitation of the full cognitive potential of the individual. Opposite to this behavior is the case of individuals exercising *active* cognitive processes independent of what other people do or think. The model described in the next section starts from these three assumptions.

IMITATION, CULTURE AND SOCIAL RELATIONS

Two major points define our model: (1) our focus in on individuals and organizations are the social environments that shape their cognition; and for this reason (2) we are not interested in behavior only but we want to understand what the cognitive determinants and implications of bandwagon are. In this section, we relate the cognitive account for bandwagon to its organizational dynamics. The outcome is the model presented and discussed in the last two sections of the paper.

A cognitive model of bandwagon

As defined above, bandwagon is a fallacy, something that is “bad for logic but (sometimes) good for life.” In particular, this *ad populum* fallacy describes the situation that people face when they have to make decisions under uncertainty, are short of time, seek legitimacy in the group, don’t see other alternatives, etc. Broadly speaking, whether they use a rational calculation or feel under social pressure (Abrahamson & Rosenkopf, 1993), biases, prejudices, and rational bounds (Kahneman, 2003) work to make the choice of bandwagon more likely. These shortages of cognitive capabilities can be, and sometimes are, used by companies, organizations at large, and governments to suggest (or *nudge*, as Thaler & Sunstein, 2008 put it) a preferred alternative.

It is the case, for example, of the employee stealing pens or copy-paper from the office because “everyone is doing it.” Another example might be the idea that you cannot ask that colleague to retrieve data for your report, because nobody does and “there must be a good reason for that.”

These are very simple and quite meaningless cases but think of employees disregarding one, two, three and then n symptoms (i.e. data) of an upcoming crisis (reasons for sales increase/decrease, shareholders claims, environmentalist protests, etc.) because everybody thinks they have no meaning and “it makes you feel fool if you think they are.” And the crisis arrives. Think of the number of cases where this could be a simple but accurate explanation of what happened. Are you thinking at sub-primes? The crisis our companies are facing right now? Well, we do not have the data and do not pretend bandwagon can be the sole cause for the crisis but it is fair to consider that it could have contributed. You decide the extent to which it is important in such cases; however, our point is that bandwagons are an important part of organizational behavior and life (Chiang, 2007; Granovetter, 1978).

What stays at the basis of bandwagon? Let’s keep the simple example: stealing pens for personal use from the company stockroom. The employee tells to him- or herself that these pens are for his or her child as a justification, which might happen to be true however it is not the point here. The idea of threshold (Granovetter, 1978) is particularly useful. The employee decides to steal pens only when he or she observes that a certain number of other people behave that way. This number of people is his or her threshold. Then, the employee *imitates* what other people do.

Bandwagon is about *imitation*. As biologist Kevin Laland (2001) suggests, imitation is related to social learning and it is very common in primates and other animals. However, when we refer to human beings, what kind of learning is this apparently “mindless” behavior? If you steal a pen from the stockroom because you imitate other people are you learning anything besides how to steal?

Active and passive cognitive processes: docility

We answer these questions in a simple way. When the employee observes his boss stealing the pen for personal use, what she or he should do (and does) is to ask for explanations. Suppose the boss says that “it is not a big deal, you can do it!” What is he or she doing is to give you an advice on what to do. This is an active process since there is recognized and open interaction between the two - a short discussion, with maybe opposing arguments and a decision that derives from reasoning. In the case of bandwagon, the employees sees a bunch of people stealing pens from the stockroom for personal use and it is not likely, in our opinion, that he or she keep asking everyone to explain what they are doing. Nevertheless, this mass-behavior is an advice, although we define it as a *passive* advice. It doesn't involve any active exchange between you and the other people.

As the growing literature on the topic suggests (Bonaccio, & Dalal, 2006), advice giving and taking are not marginal in groups and organizations. However, scholars in this field usually consider only *active* advices, i.e. when people receive or give information, suggestions, comments and use these as a major basis for choice. This has a cognitive counterpart which is defined *docility* meaning “the willingness to be taught” in its Latin root (*docilis* from *docere*, to teach). As Herbert Simon puts it, docility is the tendency “to depend on suggestions, recommendations, persuasion, and information obtained through social channels as a major basis for choice” (Simon, 1993: 156). A recent version of it expands it to include also the *active* side, as in advice giving (Secchi, & Bardone, in press).

This active-passive process is typical of learning and it is what we mean to be *docility* or *docile behavior*. Docility attitudes are different for individuals behaving in groups (Secchi, 2007) so

that there are levels of docility for any given organization (Secchi, & Bardone, in press). In particular, we would like to treat docility as the opposite of bandwagon, from a cognitive standing. As we know, bandwagon is the tendency of the individual to observe something and to imitate that if it is popular. Docility, when individuals are considered within organizations can be defined as the attitude that individuals have, on average, to exchange information with other individuals on a meaningful and active basis. This attitude may vary depending on characters of the individual, the co-workers and the organizational structure. We call this measure *docility intensity* of the organization.

Proposition 1. *Bandwagon* behaviors emerge when *docility intensity* of the organization is low.

Bandwagon is compatible with the passive side of docility, i.e. when the individuals tend to take from social channels without any interaction. Behavior observation is a passive process and bandwagon can emerge when docility intensity is low, which means that individuals are in a “take-only mode.”

In the next pages we explore the relationship between *docility intensity* and *bandwagon* trying to define its determinants. Cognitive studies (Hutchins, 1995; Clark, 2004) support the fact that docility as a distributed cognitive process is related to: (1) norms that emerge in the social group, i.e. organizational culture, and (2) how social relations are organized. We present a model of social imitation (bandwagon) (y) as function of (C) organizational culture, the extent to which (z) social relationships that, in turn, depend on (x) docility (equation 1).

$$y = f(C, z) \quad (1)$$

Organizational culture

It is not our intention that of discussing and defining what culture is for organizations. We want

to underline what it is interesting for an imitative behavior to take place, and to establish that in relation to the tendency of individuals to lean on and provide information using social channels, i.e. *docility*. Hence, we try to establish a relations between the analyzed variables and the emergence or decline of organizational cultures.

We refer to organizational culture as “(a) a pattern of basic assumptions, (b) invented, discovered, or developed by a given group, (c) as it learns to cope with its problems of external adaptation and internal integration, (d) that has worked well enough to be considered valid and, therefore (e) is to be taught to new members as the (f) correct way to perceive, think, and feel in relation to those problems” (Schein, 1990: 111). In particular, we would like to stress “the role of a shared belief system in integrating the various components of the social system” (Schein, 1996: 233). A part of these shared beliefs are codified in “norms, values and roles expectations” (Scott, 2003) but for its major part a culture could not be entirely codified or written (informal or behavioral structure). Therefore, considering that “culture manifests itself: (a) observable artifacts, (b) values, and (c) basic underlying assumptions” (Schein, 1990: 111), we start from the assumption that:

Proposition 2a. Organizational cultures are more likely to be observed when individuals establish formal and informal relations, rules and use written and informal codes of conduct that can be easily recognized and traced in their behavior.

Proposition 2b. The higher the number of these *recognizable traits* the strongest the culture.

Broadly speaking, we argue that a strong organizational culture manifests itself from the behavior of its members and, if it is so, it must be observable.

The second factor that relates to organizational culture is docility. This is implied in the definition of culture we used above: it needs individuals engaged in learning to emerge (Schein, 1990).

This is because culture is based on social transmissions intended as a constant interchange between members of a community (or organization). This requires the fact that individuals are open to others (i.e. social channels); thus docility is essential for a culture to emerge. People need to listen to each other and to make decisions taking into consideration comments, suggestions and advices from other people. However, what we consider here is a mix of how docility changes over time due to changes in individuals' attitudes and of its overall *quality* (an idea on how to measure this can be found in Secchi, & Bardone, in press). This is what we call *docility intensity* (see above). The relation is direct and exponential.

Proposition 3a. Docility contributes to the emergence of a culture: more intense docility levels facilitate organizational cultures to emerge.

Docility facilitates the emergence of organizational culture up to a point. This is when one culture establishes itself as mainstream in the organization. After that point, individuals tend not to be that open in terms of learning from others and rigidity (or stability) is introduced in the organization: routines are established and parts of the culture get into written rules as well and codified behaviors. We argue that the intensity of docility that supported the establishment of a culture becomes “structured” in the organization. This is what Secchi (2007) calls the *docility effect* and we suggest that, after the organization is affected that way, the system acquires some level of rigidity.

Proposition 3b. When a culture is well established in the organization, a high level of *docility intensity* in the system constitutes a threat and tends to be avoided; culture modifies itself at slower rate.

We are able to formalize these patterns in the following algorithm:

$$C = \frac{e^{cx}}{n + \frac{e^{cx}}{n}} + 2kx \frac{1}{2}, \quad (2)$$

where C is culture (dep. variable); n is the number of recognizable and observable norms and behaviors in the organization; c is how slow or fast docility affects culture; x is docility intensity (indep. variable); k expresses the stability of the culture

The first part of the equation defines growth. For a culture to emerge, we must reach a point in which the norms and rules that we mentioned above are well established in it. Therefore, we may have to reach a point from where the culture modifies itself and goes on with slight modifications of the basic rules (as stated in Proposition 3b). Docility is a facilitator here: (1) it defines how fast organizational culture is established (the ratio c indicates this role of docility x in the population), and (2) how the average level of the population increases or decreases stability of the culture over time (the parameter k). We assume that the number of norms and rules that define what it takes for a culture to establish itself are fixed in the parameter n but different for each organization. Then the first part of the equation accounts for growth. However, if we stop there we should have something that grows up to a point (n) and stops there (Figure 1 where $k = 0$ and all other parameters being equal).

The second part of the equation takes into consideration the case in which docility in the population continues to increase, on average, but the core of the organizational culture is established. This must be combined with time so that the increase in docility is truly a change in its *quality* over time and variable x expresses docility that renews itself in the system.

Parameter k allows us to define how norms and rules in a culture are affected by docility. As we mentioned above, they do not change abruptly but proceed in continuity with their original matrix, and change slightly after culture is established. High docility intensity involves change.

When equilibrium is reached in the social system we know that there are individuals who are capable of very high levels of open-mindedness and learning: these people are the drivers of culture change. Of course, in our system, they do not make a “revolution” (i.e. define new norms and rules that change the culture, this takes more time and more resources) but they do change the quality of relationships. Figure 1 shows docility and time trends for a given culture where, for example, it takes 100 observable and recognizable stable behaviors and norms to be established ($n = 100$), docility impacts on culture positively ($k = 1$) and it affects how slow or fast is the growing culture at the rate of $c = 0.08$.

 Insert Figure 1 about here

How modifications of norms and rules affect organizational culture at a given point in time is a matter of how *docility intensity* affects change in the organization. All other parameters being equal, when $k = 1$ docility has an impact on culture growth and its slight change (figure 1). When $k < 0$, then culture is unable to filter docility into norms and rules and never emerges (see figure 1). The line slightly goes down as nobody is following rules or behaviors that are stable and recognizable, that is to say that no culture is strong enough to emerge within the members of the organization/society considered.

The more k is high, the more creativity and change we have, and this goes up to a point where everybody follows its own “personal culture” (this is an experimental thought). Of course, this is not docile at all. In fact, for values of k that are big enough the curve comes close to the y axis where docility is at its minimums. The extremes converge.

If we stop here and we define bandwagons in relation to culture (and docility) only, we should

have had a bandwagon that grows together with the established culture. We do not think this is the case since bandwagon also depends on how individuals develop social relations. Although this is a classic point in social studies it is not to connect it to culture, docility and bandwagon.

Social relations

The second factor that affects the emergence of bandwagon is social relations. In this paper, *social relations* are the ties that bind a community or a group of human beings (Granovetter, 1973, 1985; Chiang, 2007). Social relations, exemplified by variable z , might be low or high depending on (1) the frequency of interactions among community (organization) or group members and (2) their intensity, which designates the quality of the relation. These two points are intended to be a summary of what sociologists call strong or weak ties (Chiang, 2007). We do not want to define these relations in general but to observe how they relate to the concept of *docility intensity* and bandwagon (next section).

The point here is that social relations increase dramatically with docility or, that is to say, that they emerge together with the attitude of people to *trust* each others (Simon, 1993; Secchi, 2007), and then to consider social channels as a major basis for choice. The more docility is intense - widespread and qualitatively high (i.e. the bigger x is) - the more people interact and establish social relations (i.e. the more z increases). However, there is a “tipping point” (Gladwell, 2002) for docility too. Higher levels of docility are related to creativity and non-routine jobs so that it is not in the interest of the organization to have too many people showing an above average docility (Secchi, & Bardone, in press). We try to describe this relationship using the same logic and mathematical terms (whenever possible) that we used to describe organizational culture. Social relations are connected to docility in a strong and direct way then (equation 3):

$$z = \frac{e^{cx}}{\left(n + \frac{e^{cx}}{n}\right)} + x^{i-w} \quad (3)$$

where z is social relations (dep. variable); n is the number of recognizable and observable norms and behaviors in the organization; c is how slow or fast docility affects culture; x is docility intensity (indep. variable); i is the tendency of people to build strong relations as docility intensity grows up in the group; w is the level of distrust that people show against each other.

In the first part of the equation it is apparent that social relations z increase depending on the parameters c (i.e. how fast a culture establishes itself) and n (i.e. the number of recognizable and stable behaviors that define a culture), and on the variable x , *docility intensity*. The meaning of these parameters together with the variable is the following:

Proposition 4a. Social relations increase when organizational members share a common set of values, norms, roles expectations, and behaviors that define the organizational culture.

Studies on social networks show that there is evidence of the fact that organizational culture affects social relations (Pahor, Škerlavaj, & Dimovski, 2008; Krackhardt, & Kilduff, 2002).

What is different from equation 2 is the fact that we do not have the second term of the equation because we believe that docility affects social relations more than as it does with culture. The variable is considered with the an exponent where there are two parameters: w and i . These two define the strength and persistency of relations (ties as to Chiang, 2007 and Granovetter, 1973) in the organization. The reason why we have two parameters here is because we want to take two effects into account. i is the tendency of people to build strong relations as docility intensity grows up in the community; w is the level of distrust that people have on each other.

Proposition 4b. Social relations increase depending on the level of trust and/or distrust between individuals where *docility intensity* is a relational facilitator.

It is interesting to notice that, all other parameters being equal, when $i > w$ we have an signifi-

cant growth in the social relationships scale (y axis in Figure 2).

 Insert Figure 2 about here

When $i < w$, docility doesn't matter any more. No matter what the value of w is, when distrust is more than the willingness of people to trust each others and establish relationship then the line becomes flat and there is no more growth (Figure 2).

This first part of the model for social relations can be considered as stand-alone as it takes into consideration the level of trust and distrust that characterize people's attitudes towards strong or weak ties. For Kavanaugh, Reese, Carroll, & Rosson (2005) trust is very important in social relations as it is "a feature of social capital *and it increases as people get to know each other, learn who is trustworthy, and experience things together*" (Kavanaugh et al., 2005: 120, italics added). Moreover, trust can be "thick" or "thin" depending on its association with relatively strong or weak social relations or ties (Kavanaugh et al., 2005; Newton, 1997).

These are not the only factors that count when we analyze social relations. As you can see, figure 2 shows a dramatic growth after a first period of assessment and we believe this is not accurate. Equation 3, as it is, does not consider interesting dynamics such as frictions between members, the possibility that people tend to change their mind on the others, the fact that sub-groups emerge, friendship, roles and positions in the organization, and other social factors. In other terms, we want to integrate the model with changes in strong and weak ties; the fact, for example, that a strong tie might become weak and vice-versa. These changes might cause relations to stagnate at a certain point in time or they may vary depending on performance, job satisfaction,

and we can list many other causes that enhance or depress social relations.

Proposition 4c. Organizational culture, norms, trust/distrust and docility have multiple and contrasting influence on frequency, intensity and hence stability of social relations.

We need to find an algorithm that when considered together with equation 3, leads to take into consideration the following elements: (a) there is a process of trust and distrust that relates to the social structure of the organization, i.e. observable norms and values (parameter n in equation 2 together with i); (b) social relations improve or worsen depending on how well the organization fits individual's needs; (c) the propensity to be open minded and lean on social channels (i.e. the extent to which people show their docility) may vary in time and intensity and undermines relations (x needs to be related to c again, and to w); (d) when culture is strong enough, individuals in the are capable of structuring docility (docility effect, see above) to guarantee social relations and to prevent the system to collapse; (e) organizations develop defensive routines (this is factor r in equation 4).

We transform equation 3 in equation 4 below (equation 4 combines equation 3 with equation 3.1, see Appendix A). The first part is related to the fact that when social relationships are established, we have a sort of discount effect that comes into play with stagnation of relationships and the other point is a multiplicative factor for the docility effect. So that when docility grows in the group, it affects social relationships.

$$z = \frac{\left(n + \frac{e^{cx}}{n}\right)x^w}{\left(e^{cx} + 2kx \frac{1}{2} \cdot \left(n + \frac{e^{cx}}{n}\right)\right) \left(n^i + \frac{e^{cx}}{n^i}\right)} + \frac{\left(n + \frac{e^{cx}}{n}\right)x^{w-r}}{e^{cx} + 2kx \frac{1}{2} \cdot \left(n + \frac{e^{cx}}{n}\right)} \quad (4)$$

where z is social relations (dep. variable); n is the number of recognizable and observable norms and behaviors in the organization; c is how slow or fast docility affects culture; x is docility intensity (indep. variable); i is the tendency of people to build strong relations as docility intensity grows up in the group; w is the level of distrust that people have on each other; k expresses the stability of the culture; r stays for “defensive routines.”

Graphically, this equation presents interesting features. We analyze r in this section and discuss all the other parameters in the next section, in relation to bandwagon. Figure 3 shows that, all the other parameters being equal, social relations grow when docility intensity increases the likelihood of people to trust each other (a more detailed analysis of all of these variables is superfluous here, since we provide it below, when dealing with bandwagon).

 Insert Figure 3 about here

Needless to say that this is just an example on how to use the variables and that the graphical analysis of figure 3 describes three different combinations of events where r changes while all other parameters don't. Defensive routines are “any policies or actions that prevent the organization from experiencing pain or threat *and* simultaneously prevent learning how to correct the causes of the threat in the first place” (Argyris, 1986: 541). The parameter r adjusts in relation to w and affects the ability of individuals (and the organization) to face distrust: the higher the parameter, the lower people's ability to establish and maintain social relations. In figure 3, we have an organization where w (distrust) is higher than i (trust), so that the lower the level of r (which transfers in more defensive routines - note r is negative in the formula) the highest the in social relations.

In the next section, we explain that social imitation and bandwagons depend on the combination

that the two factors, organizational culture and social relations, have when considered together.

THE MODEL

If we want to define bandwagons as they emerge from socially constructed imitation of behaviors then we need to define them as a function of the intensity and frequency of social relations (variable z) and of organizational culture (variable C). We believe that imitation becomes “social” when these two variables come into play.

Following our argument, we can state that a strong culture facilitates imitative behaviors. Strong culture is defined by values, norms, and behaviors that individual of the same group share. It is more likely, in these cases, that people who strongly believe in the same values or principles imitate each other very often:

Proposition 5a. The strongest the culture the more likely is to have imitative behaviors and bandwagons. Otherwise, when individuals are, on average in a given organization, particularly inclined to exchange opinions, give and take advices and show altruistic and cooperative behaviors, bandwagons are unlikely to be widespread.

Proposition 5b. When *docility intensity* is high and organizational culture changes fast, it is very hard for bandwagons to emerge and be widespread.

The case for social relations follows a pattern that is similar to docility, since they are positively related, in the sense that:

Proposition 5c. Intense and frequent (high) social relations affect negatively the formation of bandwagons. Equation 5 presents how these two variables, when combined, account for bandwagon:

$$y = \frac{x^w}{n^i + \frac{e^{cx}}{n^i}} + x^{w-r} \quad (5)$$

With few algebraic passages we obtain equation 5 (see appendix A) from the two equations

above (2 and 4). The last term x elevated to $(w - r)$ accounts for how individuals compensates when too many people tend to imitate without learning, bringing sclerosis to the organization: this is the case where individuals tend to develop defensive routines that are anti-learning (Argyris, 1986). Equation 5 shows that bandwagon is not supported by docility intensity but in the first times when social relations and culture are yet to emerge and consolidate, so that low levels of docility are compatible with bandwagons. When organizational culture emerges, imitation raises and grows at its highest levels.

 Insert Figure 4 about here

The graph, a sort of bell curve, is very steep in that point (Figure 4). The core element to understand the graphical analysis of equation 4 is the defensive routines coefficient r . This is, as mentioned above, how qualitative is docile “resistance” to imitative practices, i.e. how the organization and individuals are prone to adopt change and learn more than adopt defensive routines. It is proaction vs defensiveness. In our example, let’s give a stable value to distrust (w) and play with r . In doing that we can change the exponent $(w - r)$ into $(1 - r)$ as to ease number management. When r is close to 1, meaning that there are no defensive routines, learning and change are priorities for individuals in the organization, docility exercises 100% effect in the system. Imitation and bandwagon grows fast and disappears quickly. This is the case where everybody becomes docile in a given system (Figure 4); although interesting it is useful to mention it for explanatory purposes only.

When r is close to zero, meaning that docility has limited or no effect in the organization, then imitation is widespread and grows more than organizational culture and more than social rela-

tionships. All other cases, i.e. when r is in between 0 and 1, are cases where a “decent” or “correct” level of docility needs to be determined. And needless to say that this level varies depending on the organization under analysis.

DISCUSSION AND CONCLUSIONS

The model provides a theoretical framework to analyze bandwagon as an organizational phenomenon. Relations explicit in the model can be discussed in three points. Bandwagon is affected by (1) the level of distrust between members of the organization, (2) the trust that people confer to recognizable behavioral and normative patterns, (3) individual change facing organizational change.

Level of distrust

In the model, bandwagon emerges when people in the organization don't trust each other. Usually, when this happens, individuals tend to behave selfishly and this results very close to the hypothesis of bandwagon being the result of a rational choice (Abrahamson, & Rosenkopf, 1993). Let's go back to the example “stealing a pen from the stockroom.” This is a situation that could happen when the employee sees everybody stealing pens and he/she (maybe) doesn't want to appear the silliest of all. She/he jumps on the bandwagon quickly.

The model takes into consideration another interesting relations, the one between bandwagon and altruism. Traditional economics considers altruism as opposite to selfishness (Khalil, 2004). Since selfishness is related to distrust and altruism works only when trust between the giver and the receiver is established (Khalil, 2004), we can argue that bandwagon is inversely related to the insurgence of altruism. Moreover, this connection becomes even more direct if we consider that

altruism is a byproduct of individual docility (Simon, 1993; Secchi, 2007).

Level of trust in shared beliefs

The denominator of equation 8 shows a relation between two parameters, n and i , that show interesting properties when they are considered together.

The former, n , is the level of recognizable behaviors, norms and values so that you can define a culture and the latter is the level of trust among members of the organization. When forming an organizational culture is particularly easy (the number of recognizable behavior, i.e. of those behaviors - or levels as in Schein, 1990: 111 - that you relate to one culture is low, e.g. $n = 50$) then bandwagons are particularly diffused and reach a very high number. This happens when participants of the organization come, for example, all from the same ethnicity, they share their national culture therefore it is easier for them to create a particular cultural niche inside the organization. From a managerial perspective, this has to deal also with diversity (e.g. gender, nationality, and any kind of diversity). The more diverse the composition of the workforce, the more unlikely is for bandwagon to emerge. The case for majority-minority group relations can also be considered here since large organizations can be defined as shifting coalitions (Scott, 2003) and bandwagon may be limited to a specific group and do not emerge in the organization as a whole (studies of group social capital are useful to stress this point, e.g. Oh, Labianca, & Chung, 2006).

The second factor we want to consider is the level of trust in the organization, defined by the parameter i . The relation in the model is particularly interesting since it combines trust to cultural *levels*. The level of trust strengthens the effect that the culture has on bandwagons, letting very weak cultures to still have an effect if participants show a high level of trust. We suggest that “trust” here well represents also other variables such as the position hold, rule tightness or other

aspects of organizational life that relate to leadership. In fact, it is likely that even in a weak cultural environment leaders are trusted and create bandwagons.

From the graphical analysis it is interesting to notice that the change in these two parameters only change the shape of the bell curve but not its slope. According to this, bandwagon fades or persists depending on docility more than culture or trust.

Individual change vs organizational change

Organizational change happens when individuals foster it or at the expenses of individuals (e.g. Grove, 1999). In the first case, bandwagon is not an issue for most of the people in the organization while it is in the second case. In particular, when individuals open to change are consistent and diffused enough, organizational culture could change too. This is, in our model, related to an increase in docility intensity and it is inversely related to bandwagons.

This is very close to what we stated in proposition 5b: When docility intensity is high and organizational culture changes fast it is very hard for bandwagons to emerge and be widespread. An example helps here.

There are organizations where high levels of docility are common, creativity is also cultivated, and they are not afraid of changing too fast. Google is an example of this. Its culture is, probably, to have many cultures or to change them very fast. Their leadership styles, their recruitment processes, their way to stay in the market, and their products and services are related to a very peculiar management style. This company shows, if we want to use our terminology, a high level of docility intensity and people are asked and forced not to jump on any bandwagon.

We can also take the example of a very sclerotic company. In today's world, the U.S. auto industry seems to show a very high level of crystallized culture where change is avoided more than

passively gotten. Behaviors show a high degree of formalization and so are social relations. We understand from the model that, given these preconditions, we expect to find many bandwagons. The model is very straightforward on this point.

Conclusions and future directions

One of the major strengths of this model is that it links bandwagon to a series of individual and organizational variables. So that the *why* of bandwagons (table 1) are not limited to those presented in the literature. We have argued that bandwagon is related to factors such as (1) learning, (2) taking and giving advices, (3) docility, and (4) trust and distrust, at the individual level; also, it depends on (1) observable and recognizable behaviors and norms that are culture-based, (2) docility intensity, (3) defensive routines, at the organizational level. These can be defined as determinants of bandwagons and we believe they improve the existing conceptual categories.

The second important strength of the model is that it offers testable hypotheses (called propositions here) to scholars who are willing to test bandwagon. Our next step will be a computer simulation to test relations between variables and parameters in the model and empirical testing.

One issue that we haven't addressed in the paper is that of avoiding bandwagons. We believe that this is an important challenge that organizations face and it is also an interesting step further in this research: What could managers and organizations do to avoid bandwagons? In times of great change, organizational sclerosis or defensiveness could be very harmful. The determinants we presented and especially docility could offer interesting suggestions and insights.

In summary, the contribution of the paper is to introduce a concept of bandwagon that takes into consideration the many levels of human social interactions, from individual cognition to the organization and, maybe, society.

REFERENCES

- Abrahamson, E., and L. Rosenkopf.** 1990. "When Do Bandwagon Diffusions Roll? How Far Do they go? And When do they roll backwards? A computer simulation." *Academy of Management Best Paper Proceedings*: 155-159.
- Abrahamson, E., and L. Rosenkopf.** 1993. "Institutional and competitive bandwagons". *Academy of Management Review*, 18: 487-517.
- Anderson, M. H.** 2006. "How can we know what we think until we see what we said?" A citation and citation context analysis of Karl Weick's 'the social psychology of organizing.' *Organization Studies*, 27(11):1675-1692.
- Argyris, C.** 1986. "Reinforcing organizational defensive routines: An unintended human resources activity." *Human Resource Management*, 25(4): 541-555.
- Ariely, D.** 2008. *Predictably Irrational. The Hidden Forces That Shape Our Decisions.* New York: Harper Collins.
- Ariely, D. and G. Loewenstein.** 2006. "The heat of the moment: The effect of sexual arousal on sexual decision making". *Journal of Behavioral Decision Making*, 19(2): 87-98.
- Bonaccio, S. and R. S. Dalal.** 2006. "Advice taking and decision-making: An integrative literature review, and implications for the organizational sciences." *Organizational Behavior & Human Decision Processes*, 101(2): 127-151.
- Bornmann, L., and H. -D. aniel.** 2006. "What do citation counts measure? Counts measure? A review of studies on citing behavior." *Journal of Documentation*, 64(1):45-80.
- Case, D. O., and G. M. Higgins.** 2000. "How can we investigate citation behavior? A study of reasons for citing literature in communication." *Journal of the American Society for Information Science*, 51(7): 635-645.
- Chiang, Y.-S.** 2007. Birds of moderately different feathers: Bandwagon dynamics and the threshold heterogeneity of network neighbors. *Journal of Mathematical Sociology*, 31: 47-69.
- Clark, A.** 2004. *Natural-Born Cyborgs. Minds, Technologies, and the Future of Human Intelligence.* Oxford: Oxford University Press.
- Clark, A., and D. J Chalmers,** 1998. "The extended mind," *Analysis*, 58(1): 7-19.
- Deephouse, D. L.** 1996. "Does isomorphism legitimate?" *Academy of Management Journal*, 39: 1024-1039.

- Fiol, C. M., and E. J. O'Connor.** 2003. "Waking up! Mindfulness in the face of bandwagon." *Academy of Management Review*, 28(1): 54-70.
- Gabbay, D. M., and J. Woods.** 2007. *Seductions and Shortcuts. Fallacies in the Cognitive Economy*. Book in progress (retrieved online at <http://www.dcs.kcl.ac.uk/staff/dg/SeductionsandShortcuts-complete.pdf>, September 24, 2009 4:18 PM).
- Gigerenzer, G. and P.M. Todd.** 1999. *Simple Heuristics That Make Us Smart*. New York: Oxford University Press.
- Gladwell, M.** 2002. *The Tipping Point: How Little Things Can Make a Big Difference*. New York: Back Bay Books.
- Granovetter, M.** 1973. "The strength of weak ties". *American Journal of Sociology*, 78(6): 1360-1380.
- Granovetter, M.** 1978. "Threshold models of collective behavior". *American Journal of Sociology*, 83(6): 1420-1443.
- Granovetter, M.** 1985. "Economic action and social structure: The problem of embeddedness." *American Journal of Sociology*, 91: 481-510.
- Grove, A.** 1999. *Only the Paranoid Survive: How to Exploit the Crisis Points That Challenge Every Company*. New York: Broadway Books.
- Hansen, H. H.** 2002. "The straw thing of fallacy theory: the standard definition of 'fallacy.'" *Argumentation*, 16(2):133-155.
- Hutchins, E.** 2000. *Distributed cognition*. Working paper. Available online at: <http://eclectic.ss.uci.edu/~drwhite/Anthro179a/DistributedCognition.pdf> . Accessed September 24, 2009 4:18 PM.
- Hutchins, E.,** 1995. *Cognition in the Wild*. Cambridge, MA: MIT Press.
- Kahneman, D.** 2003. "A perspective of judgement and choice. Mapping bounded rationality." *American Psychologist*, 58(9): 697-721.
- Katz, M. L., and C.Shapiro.** 1985. "Network externalities, competition, and compatibility." *American Economic Review*, 75: 424-440.
- Kavanaugh, A.,and D. Reese, J. Carroll, M. Rosson.** 2005. Weak ties in networked communities. *Information Society*, 21(2): 119-131.
- Khalil, E. L.** 2004. "What is altruism?" *Journal of Economic Psychology*, 25: 97-123.

- Krackhardt, D., and M. Kilduff.** 2002. Structure, culture and Simmelian ties in entrepreneurial firms. *Social Networks*, 24(3): 279-290.
- Laland, K. N.** 2001. Imitation, social learning and preparedness as mechanisms of bounded rationality. In Gigerenzer, G., & Selten, R. (Eds.). *Bounded Rationality. The Adaptive Toolbox*: 233-247. Cambridge, MA: MIT Press.
- Langer, E. J.** 1989. "Minding matters: The consequences of mindlessness-mindfulness." In L. Berkowitz (Ed.), *Advances in Experimental Social Psychology*, vol. 22: 137-173. San Diego: Academic Press.
- Leibenstein, H.** 1950. "Bandwagon, snob, and Veblen effects in the theory of consumers' demand." *Quarterly Journal of Economics*, 64(2): 183-207.
- Magnani, L.** (Ed.) 2006. *Model-Based Reasoning in Science and Engineering. Cognitive Science, Epistemology, Logic*. London: College Publications.
- Magnani, L.** 2007. *Distributed Morality in a Technological World. Knowledge as a Duty*. Cambridge: Cambridge University Press.
- Magnani, L., and N. J. Nersessian** (Eds.) 2002. *Model-Based Reasoning. Scientific Discovery, Technological Innovation, Values*. New York: Kluwer Academic/Plenum Publishers.
- Magnani, L., and N. J. Nersessian, P. Thagard.** (Eds.) 1999. *Model-Based Reasoning in Scientific Discovery*. New York: Kluwer Academic/Plenum Publishers.
- Merton, R. K.** 1996. The Matthew effect, ii. In P. Sztopka (Ed.), *On Social Structure and Science*: 318-336. Chicago: Chicago University Press.
- Meyer, J., and W.R. Scott** (Eds.) 1983. *Organizational Environments: Ritual and Rationality*. Beverly Hills, CA: Sage.
- Newton, K.** 1997. Social capital and democracy. *American Behavioral Scientist*, 40(5):575-586.
- Oh, H., Labianca, G., and M.-H. Chung.** 2006. A multilevel model of group social capital. *Academy of Management Review*, 31(3): 569-582.
- Pahor, M., and M. Škerlavaj, V. Dimovski.** 2008. "Evidence for the network perspective on organizational learning." *Journal of the American Society for Information Science & Technology*, 59(12): 1985-1994.
- Schein, E. H.** 1990. Organizational culture. *American Psychologist*, 45(2): 109-119.
- Schein, E. H.** 1996. Culture: The missing concept in organization studies. *Administrative Science Quarterly*, 41: 229-240.

- Scott, W. R.** 1995. *Institutions and Organizations*. Thousand Oaks, CA: Sage.
- Scott, W. R.** 2003. *Organizations. Rational, Natural, and Open Systems*, 5th edition. Englewood Cliffs, NJ: Prentice-Hall.
- Secchi, D.** 2007. "A theory of docile society: The role of altruism in human behavior." *Journal of the Academy of Business and Economics*, 7(2): 146-160.
- Secchi, D.**, and E. Bardone. (in press), Super-docility in organizations, *International Journal of Organization Theory and Behavior*.
- Simon, H. A.** 1993. "Altruism and economics." *American Economic Review*, 83(2): 156-161.
- Small, H.** 2004. "On the shoulders of Robert Merton: Towards a normative theory of citation." *Scientometrics*, 60(1):71-79.
- Staw, B. M., and L.D. Epstein.** 2000. "What bandwagons bring: Effects of popular management techniques on corporate performance, reputation, and CEO pay." *Administrative Science Quarterly*, 45: 523-556.
- Sunstein, C. R.** 2005. "*Conformity and dissent*." Public Law and Legal Theory Working Paper No. 34, University of Chicago.
- Thagard, P., and J. Woods.** (Eds.). *Philosophy of Psychology and Cognitive Science*. Amsterdam: Elsevier.
- Thaler, R. H., and C. R. Sunstein.** 2008. *Nudge. Improving Decisions About Health, Wealth, and Happiness*. New Haven & London: Yale University Press.
- Van der Veer Martens, B., and A. A. Goodrum.** 2006. "The diffusion of theories: A functional approach." *Journal of the American Society for Information Science and Technology*, 57(3):330-341.
- Woods, J.** 2004. *The Death of Argument*. Dordrecht: Kluwer.

TABLE 1.
Bandwagon Traits According to the Literature

Who	What	Why
individuals	ideas	cost-benefit analysis
organizations	techniques	social pressure
	products	mindlessness
	behaviors	
	innovations	

FIGURE 1.
Organizational culture dynamics ($n = 100, k \in \{-1, 1\}, c = 0.08$)

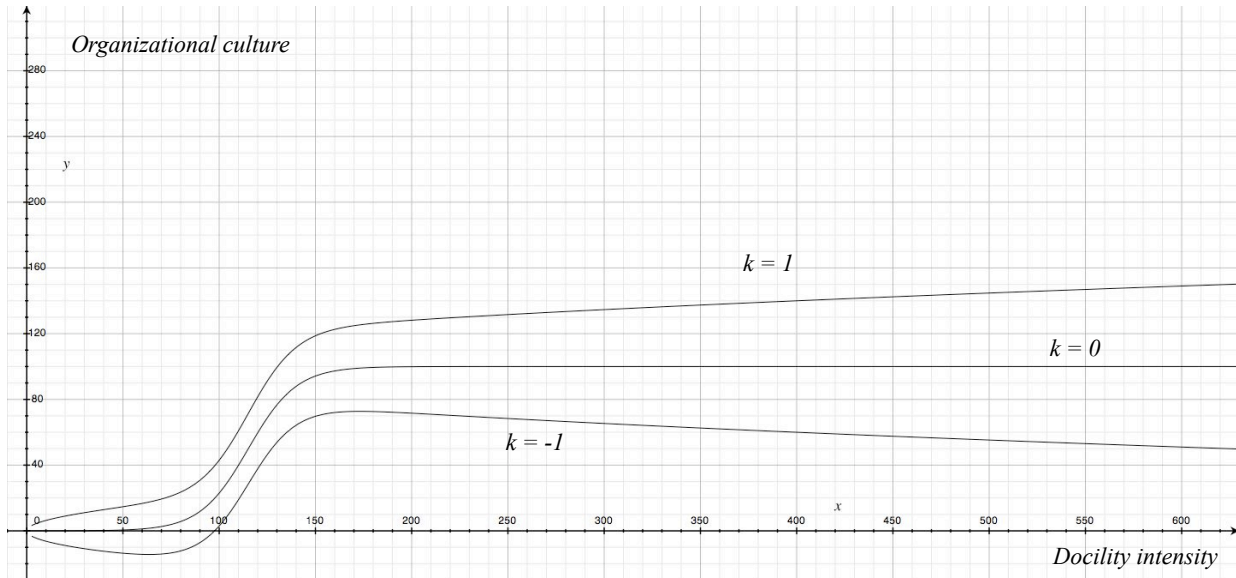


FIGURE 2.
Social relations and docility intensity ($n = 100, c = 0.08, i, w$)

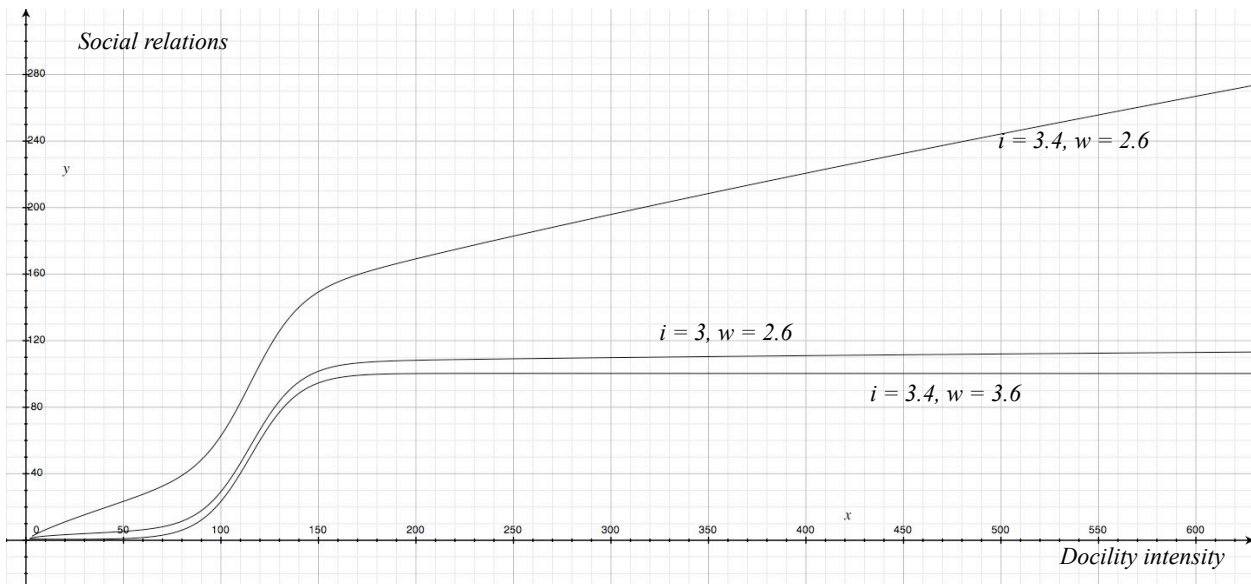


FIGURE 3.
Social relations and docility intensity ($n = 100, c = 0.08, i = 1.7, w = 2.6$)

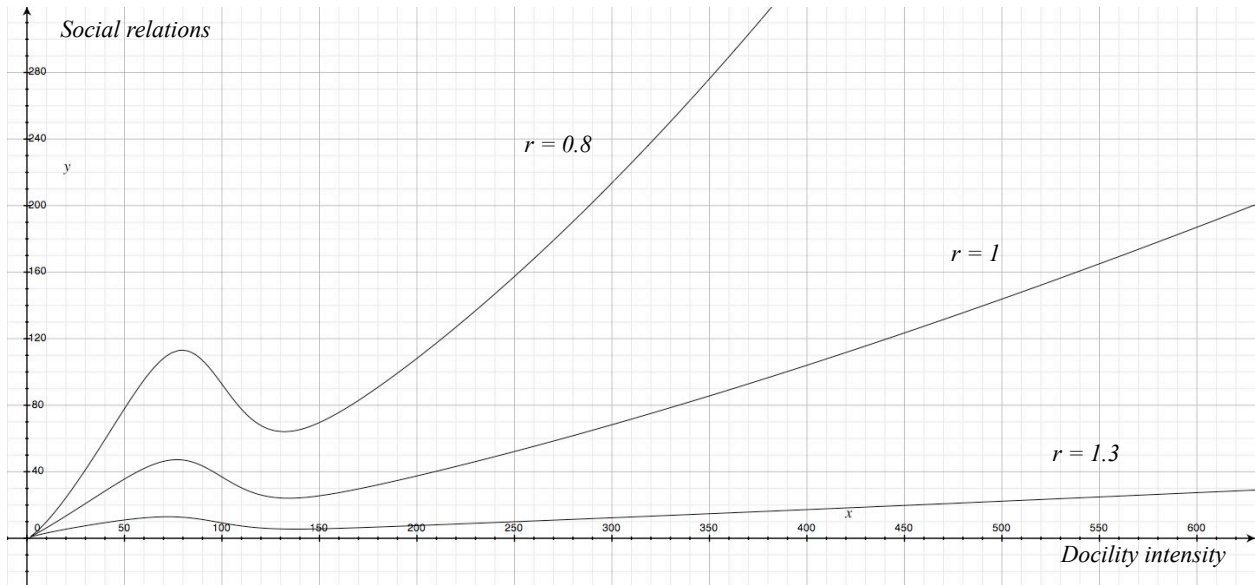
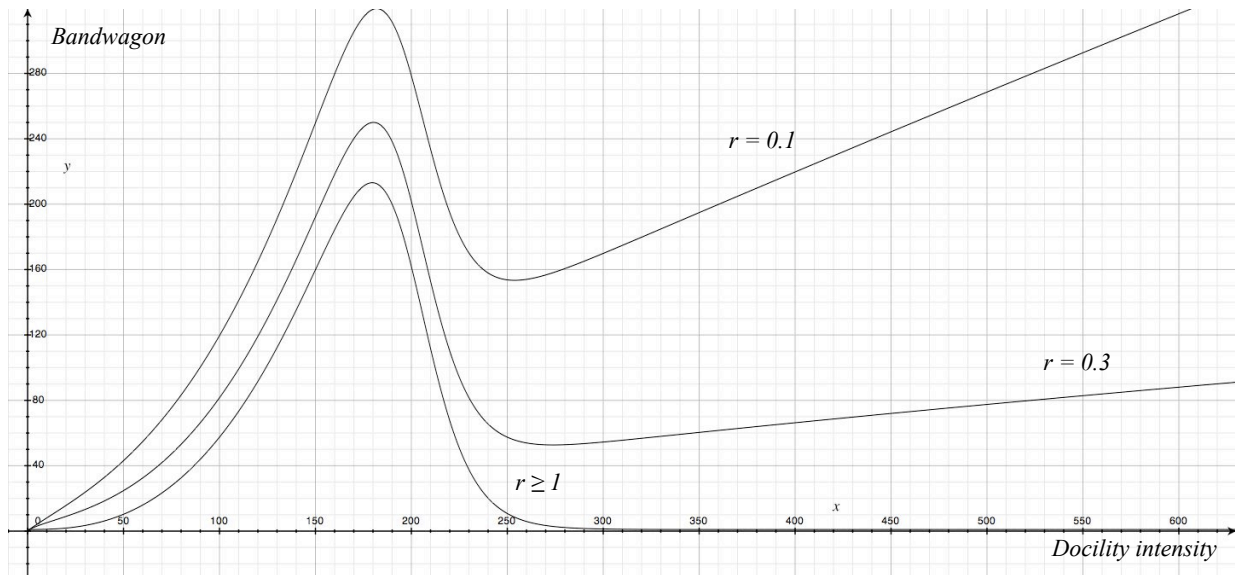


FIGURE 4.
Bandwagon and docility intensity ($n = 100, c = 0.08, i = 1.7, w = 2.6$)



APPENDIX A
Mathematical Appendix

The discount and boosting factors that multiply equation 4 are:

$$\frac{\left(n + \frac{e^{cx}}{n}\right)^2 x^w}{e^{cx} \left(e^{cx} + 2kx^{\frac{1}{2}} \cdot \left(n + \frac{e^{cx}}{n}\right)\right) \left(n^i + \frac{e^{cx}}{n^i}\right)} + \frac{\left(n + \frac{e^{cx}}{n}\right)^2 x^{w-r}}{e^{cx} \left(e^{cx} + 2kx^{\frac{1}{2}} \cdot \left(n + \frac{e^{cx}}{n}\right)\right)} x^{i-w} \quad (3.1)$$

This is the starting point for equation 5 (5.1):

$$y = \left(\frac{e^{cx}}{\left(n + \frac{e^{cx}}{n}\right) + 2kx^{\frac{1}{2}}} \right) \left(\frac{\left(n + \frac{e^{cx}}{n}\right) x^w}{\left(e^{cx} + 2kx^{\frac{1}{2}} \cdot \left(n + \frac{e^{cx}}{n}\right)\right) \left(n^i + \frac{e^{cx}}{n^i}\right)} + \frac{\left(n + \frac{e^{cx}}{n}\right) x^{w-r}}{e^{cx} + 2kx^{\frac{1}{2}} \cdot \left(n + \frac{e^{cx}}{n}\right)} \right) \quad (5.1)$$

Let:

$$e^{cx} = \alpha, n + \frac{e^{cx}}{n} = (n^2 + e^{cx})n^{-1} = B, 2kx^{\frac{1}{2}} = A, (n^{2i} + e^{cx})n^{-i} = E \quad (10.1)$$

So that equation 2 and equation 6 become equation 10.2 and 10.3:

$$z = \frac{\left(n + \frac{e^{cx}}{n}\right) x^w}{\left(e^{cx} + 2kx^{\frac{1}{2}} \cdot \left(n + \frac{e^{cx}}{n}\right)\right) \left(n^i + \frac{e^{cx}}{n^i}\right)} + \frac{\left(n + \frac{e^{cx}}{n}\right) x^{w-r}}{e^{cx} + 2kx^{\frac{1}{2}} \cdot \left(n + \frac{e^{cx}}{n}\right)} \quad (4)$$

$$z = \frac{Bx^w}{\alpha + AB} \frac{1}{E} + \frac{Bx^{w-r}}{\alpha + AB} \quad (10.3)$$

We can now multiply C and z so to get y

$$y = \frac{(\alpha + AB)}{B} \cdot \left(\frac{Bx^w}{\alpha + AB} \frac{1}{E} + \frac{Bx^{w-r}}{\alpha + AB} \right) \quad (10.4)$$

$$y = \frac{x^w}{E} + x^{w-r} \quad (10.5)$$

And if you substitute again, you get the equation that is in the body of the paper:

$$y = \frac{x^w}{n^i + \frac{e^{cx}}{n^i}} + x^{w-r} \quad (5)$$

or its alternative:

$$y = \frac{x^w}{n^i + \frac{e^{cx}}{n^i}} + x^{1-r} \quad (5a)$$