



# theFuture ofScience andEthics

Rivista scientifica a cura del Comitato Etico  
della Fondazione Umberto Veronesi

Volume 1 numero 2 ■ novembre 2016



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# Call for papers

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Call for papers: "Reputazione"

# *The power of gossip*

# Il potere del gossip

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## ABSTRACT

*In this work a theory of gossip as a mean for social control is proposed. Exercising social control roughly means to isolate and/or to punish cheaters. However, punishment is costly and it inevitably implies the problem of second-order cooperation. Moving from a cognitive model of social control and gossip, data from ethnographic studies and agentbased simulations are reported to support the claim that gossip reduces the costs of social control without lowering its efficacy. Considerations about the enticement of gossip, and the contribution of the two genders to its provision are included.*

## ABSTRACT

In questo lavoro, viene proposta una teoria del pettegolezzo come artefatto per l'esercizio del controllo sociale. Effettuare controllo sociale sostanzialmente significa isolare e/o punire i non altruisti o non cooperatori. Tuttavia, chi punisce si carica dei costi della punizione e questo inevitabilmente crea le condizioni per il problema della cooperazione di secondo livello. Partendo da un modello cognitivo del controllo sociale e del pettegolezzo, dati etnografici e simulativi vengono offerti a supporto dell'ipotesi che il pettegolezzo riduca i costi del controllo sociale senza contrarne i benefici. Il lavoro include speculazioni sulle cause di attrattività del pettegolezzo e sul contributo offerto dai due generi alla sua trasmissione.

## KEYWORDS

*Gossip*  
Pettegolezzo

*Social control*  
Controllo sociale

*Reputation*  
Reputazione

*Punishment*  
Punizione

*Evolution of cooperation*  
Evoluzione della cooperazione

## "A Rosaria Conte e al potere delle sue idee"

In other languages, it has many names, fatuous talk, otiose, or even malignant talk; hearsay, ear-duster, tittle tattle. In science, it is called gossip, with a sound more modern and less guilty – that because hearsay can be thrilling and those who fall for its lure may feel guilty. Gossip is irresistible, exciting, despicable. Gossip exists across media, in the pantry just as on the Internet. Gossip is pervasive: happens in high and low society, in business, in politics. A lethal weapon, gossip can destroy careers, shatter financial empires and topple governments. But what is the purpose of gossip and what favoured its evolution? Our thesis, developed within the LABSS-ISTC research group, identifies gossip as one of the oldest social institutions in humans. In large social networks, where informational exchanges happen, gossip reduces costs and incentives the circulation of preventive knowledge about cheaters, non-reciprocators, exploiters. In turn, this knowledge is instrumental for the application of social control as isolation or punishment of cheaters. To understand how this is possible, we have to examine how gossip really works, and what characteristics of human intelligence it relies on.

## A DOUBLE ADAPTATION PROBLEM

Altruists are a varied category. They include people that pay taxes and bus tickets, people obeying norms, for example contractual norms, paying off loans, and finally those who honour pacts and answer requests for help. However, life inside society is easy for no one. It has been shown in several ways how, without controls and sanctions, altruists come off worst when compared to the others – cheaters, exploiters, and so on. A small number of cheaters can overcome a majority of altruists in terms of wealth, resources, reproductive capacity and so on, slowly removing them from the environment.

Some evolution researchers (Maynard Smith 1982), who are interested in the biological bases of social behaviour, have shown that in doing so the cheaters or, in their language, *hawks*, arrive at a disastrous ending. After exploiting the altruists to the bone, they find themselves in

the company of their own peers, eating up each other's resources until their social group starves and dissolves.

How can *doves* defend themselves? How to avoid the self-destruction of the group? One of the things that we know is that the dimensions of the group play a role. When the population is composed of a few dozens of individuals, with frequent exchanges and high probability of re-encounter after the first interaction, doves learn easily how to employ knowledge learned, although at a price, and keep away from hawks. They won't be able to avoid all the consequences of those interactions – for example, the depletion of common resource pools – but they will be able to control individual exploitation, which is better than nothing. But what happens when the group grows in numbers and the chance of repeated meetings decreases? Personal experience is not enough anymore; doves are continually exposed to dangerous interactions. Something else is needed, something allowing the single altruist to recognise hawks before a potential fatal encounter happens. That something else is communication.

Thanks to communication, doves gain access to the collective knowledge that, with altruistic knowledge, he or she contributes to create.

Communication seems to be a good investment: at the cost of one's own knowledge, everybody comes to bear two sets of information: direct personal experience with partners of direct interaction, and the larger group of knowledge diffused by the information sharers. On these terms, the solution seems to have been found. Not so; in fact, communication alone improves on the dove's destiny only up to a point.

Communication, which might appear to be inexpensive, bears hidden costs. These include the use of personal resources to acquire the experience to be shared, and might include retaliation from the discovered cheater. Errors in communication might stick and become a fatal stigma with no real ground. How to reduce these costs without destroying the benefits of communication and favouring instead the enlargement of social networks?

This is one of the major problems that humans have met and resolved in the course of evolution.

The enlargement of groups and of exchange networks is essential for a

species in which individuals have low self-sufficiency and wide variety of needs, needs that require heterogeneous resources. Under this premise, it is evident that the probability to satisfy one's need depends directly from the dimensions of the group where one can perform a search. The larger the group, the higher the probability of finding a useful partner. How to solve this double problem? If communication is not enough, what else can be added?

We suggest that gossip played that role exactly: a solution to the double problem of adaptation, allowing humans both to endure in the presence of cheaters and to expand. How could such a miracle happen?

### **GOSSIPER DOVES AND HARMLESS HAWKS**

Those who gossip don't report the opinion of someone else, let alone their own. He or she just reports the voice that is being spread, without specifying the identity of the original source, or of the previous referrer. No commitment exists to validate the truth of the gossip and nobody accepts responsibility for the consequences that the voice would have on its target, or on the next receiver. The gossip is by definition unaccountable; he or she doesn't answer for the truth value of the transmitted rumour. He or she could be deemed indiscreet, careless, rash, but not a liar, nor liable to a sin of omission. This is why gossip can enlarge the exchange of networks and favour the satisfaction of the diverse needs of group members.

### **GOING BACK TO HAWKS AND DOVES**

The exchange of information on direct experience doesn't produce a substantial improvement in the reproductive capacity of doves. In fact, if the costs of social control reach or exceed the costs of cooperation, doves are bound to succumb to hawks, even when they gain more information than the one coming from direct experience. What costs are those, exactly?

Social control is a complex activity that includes two specific actions, the identification of cheaters and their punishment or isolation. Let us assume that doves do not punish hawks with an explicit sanction, but confine themselves to avoiding them, a reaction exempt from the costs of the sanction (sanctioning is normally done at a cost to oneself), but also

with lower deterrence value, and thus less effective. However, what about the cost of identification? If a dove spreads to the other doves his or her opinion on a group member, a harm might be caused, and this amounts to a risk. A hawk whose reputation is attacked, even if justly so, could result in retaliation. In both cases, errors would be dangerous. On the one hand, a hawk could be mistaken for a dove, thus receiving precious information, maybe favouring the exploitation of another dove.

On the other hand, a dove could be mistaken for a hawk, getting his or her reputation stained, in some cases irremediably so. Receiving and passing on gossip gives a remarkable reproductive advantage to doves: they manage to avoid some hawks without paying for the information received. This means that the gossip becomes a sort of "reinforcement activity", improving under certain circumstances the reproductive capacity of doves. They will have an incentive to gossip, thus also relaying on some unverified rumours and a certain amount of calumnies. However, if the quantity of useful knowledge that gossiping doves transmit is larger than the quantity of harm done, the advantage of doves will increase, making them competitive with hawks.

**MINDREADING:  
THE SOCIAL BRAIN**

What is special about human intelligence, and how did this favour the

evolution of gossip? Already 250.000 years ago, between hominids, settlements dimensions were one order of magnitude larger than those of other primates. This fact motivated some anthropologists (e.g. Dunbar 1996) to formulate the hypothesis of a positive correlation between the size of the brain and the size of the networks in which the members of a specie connect in personal relationships, to different levels of intimacy.

Data confirm the correlation: our brain has a complexity that allows to establish solidarity relations with a group of individuals that goes from 50-60 individuals (network of intimate relation) to 150-200 individuals at maximum. In particular, the complexity of the human brain allows the formation of social meta-representations. Representing beliefs, goals, emotions and evaluations of other individuals ends at the fifth level of nesting (for example: I want that you believe that Ann wants that John knows what James thinks).

The fifth level allows potentially to perform *mindreading* with a large number of individuals, which corresponds to the average dimensions of human groups. We illustrate that in Figure 1, up to the second level of nesting only. This mindreading ability is exactly the specific cognitive skill, typical of our species (we don't yet know if this is present in other species) that has permitted, between other things, also the evolution of gossip.

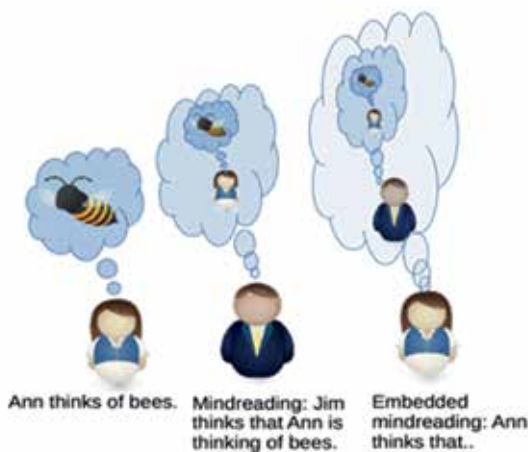


Figure 1. Levels of mindreading.

## **"JUST TALK"**

The ethnographic research on gossip has a quite recent history. Before the now classic study from Max Gluckman (Gluckman 1963), no description of gossip in traditional societies existed. Since then, anthropologists have bestowed description after description of this behaviour and its local variants. Today, we know that gossip in traditional societies matches quite closely the theory presented above. In many spoken languages, gossip deserves a specific denomination. This is the case of the Talanoa (telling stories without concealment, pacific storytelling), a complex and sophisticated social practice of the inhabitants of the Fiji Islands. Talanoa is used in public ceremonies (Brenneis 1978) and also, more recently, online, and conveys indirect information, in the form of gossip, for example with the purpose of accusing publicly some relevant figure, under the protection of indirect, relayed information. It has even developed a specific impersonal form, *bole*, meaning "it is told that".

Generally, hearsay transmitted in traditional cultures do not need nor receive confirmation or disclaimers, because the relaying party is not held responsible. Between the Kwanga in Papua New Guinea, in front of a request for evidence against an accusation, inevitably the answer is provided: it was just hearsay, just talk as in the title of Karen J. Brison's book (Brison 1992).

Often, responsibility dissolves inside the group: the Talanoa makes it so that the accusation turns out to be a collective creation, participated both by the speaker and by the listeners, so that no-one had to answer individually.

## **BUT, WHAT KIND OF DOVES?**

Escaping from the appeal of gossip is nearly impossible for anyone. One, then, wonders why this behaviour wields such an irresistible spell.

There are many possible answers. Some would say that gossip appeals to the hidden voyeur (or even to the patent one): it feels like entering, unseen, in someone else's bedroom (Muzzarelli 2010).

Actually, it is not just about spicy information but any kind of information about others can be mouth-watering. We would all be curious to delve into tax reports or police reports of co-workers, neighbours, acquaintances; we

all would like to know if the statements made into one's *curriculum vitae* are genuine.

An interesting explanatory hypothesis is the one that considers gossip as a protected *aggression*. Indeed, we must specify that gossip is used more often to transmit negative evaluations than positive ones (Conte, Paolucci 2006; Labianca, Brass 2006). Because of this, gossip represents a form, more or less justified, of aggression against the goal of the target in maintaining a good image. We all aspire to be positively evaluated by others, or at least to enjoy a good and broad reputation: we want people to talk about us, and we want people to say good things about us. If we become aware that voices circulating on our account are negative, we suffer: we feel bad, insulted, offended, scorned. Gossip is cruel and victims – the same that quickly associate to it when the voice is directed against others – pay the price without being able to counter it, to defend against it. It happens to the children in Kinshasa, when they are subject to an unfalsifiable accusation of witchcraft. This case started attracting media attention in 2015, when around 50,000 children living on the streets of Kinshasa, a fast-growing city in Congo, turned out to be abandoned after being accused of sorcery. The communities say they are capable of horrific crimes, drinking the blood and eating the flesh of their relatives.

From all this, it should be clear why gossip can be defined as a *protected aggression*: the evolutionary advantage, here, lies in the prevention of a violent escalation. Through incomplete narration and through the undefined, implicit and insinuating style of gossip, the aggressor is shielded from retaliation. Now, where is the pleasure or fun in this protected aggression? Where does the excitement and thrill originate? We can propose some conjecture.

There's nothing new about the pleasure of aggression; the market success of detective stories and crime novels in literature, horror movies, and the such, testifies this. Even the act of whispering, in the context of gossip, can be thrilling because it allows the whisperer a sense of awareness that he/she is joining into a mechanism that is dangerous. At the same time, this is a form of protected aggression, and then one also shares the relief, the reassuring feeling given from a blow inflicted from under cover. As in watching rain through the window of a cozy environment, staying



warm and dry. Or, more strongly, to attend the execution of a death sentence, to tease and laugh at an offender secured on the pillory.

Indeed, gossip is an effective form of pillory, in which the target has no way to defend him or herself, now or never. And thus is even more reassuring and pleasurable. The thrill factor comes together with another element: the partial or total reversal of roles, and the partial reestablishment of power balance. Gossip is the weapon of the doves, of the resourceless; of those who cannot exert their power, who cannot bear the costs that social control demands. By discharging the accumulated frustration accumulate by the means of protected aggression, dumping it over the designated target, doves enjoy a temporary reversal of the power structure; for once, they would not play the role of the victim, thus re-establishing an apparent equality. Both factors, thrill and role reversal, contribute to create incentives in favour of gossip participation. Social control, a public good, is not so different from taxation; everybody enjoys it when it is working, but nobody wants to uphold the costs of its production and maintenance. This state of facts should increase free-riding: passengers with no ticket. To the contrary, gossip incentives participation to social control by lowering not only material costs (by avoiding retaliation), but even granting emotional benefits – that is, the relief of not being, for once, in the role of the victim.

If gossip is the weapon of doves, or, to be more precise, the weapon of the weak, this also constitutes the main reason why it is despised. Those who resort to gossip are automatically classified as weak, because the logic of natural reasoning lies on a bias, a deforming disposition, to transform implication in equivalence (e.g. Geiss, Zwicky 1971; Oaksford, Stenning 1992; Cathcart Wason, Johnson-Laird 1972).

From the implication "if p then q" one passes to the equivalence: "if p then q and if q then p". For example, from the statement "if you're weak, then you can only attack by use of gossip" to the statement "if you use gossip, then you must be weak." Thanks to this bias, gossipers are identified with a weak party. Consequently, gossiping is equated to a base, vile practice, subject to collective despise. That is a strange fate for a behaviour that plays an important pro-social role, the role of

favouring social control and at the same time avoiding an escalation of violence. It is true that the implications are unpleasant. The victim cannot defend against it. Accusations are often unfalsifiable, sticky. Sometimes terrible, as in the ostracism of the Congolese children in Kinshasa mentioned above. Examples abound of social practices, emerged from the need to answer a precise function, that reveals to be not adaptive with respect to another one. In spite of the optimising vision of evolutionary theory, which has dominated the approach in the last decade, adaptation to environmental pressure can generate hideous practices.

A vision maybe mawkish of gossip makes it a practice used by the female gender only.

This attribution collimates in part with the evolutionary explanation that we are suggesting: women are the weak part of society, the part that does not have resources to spend for social control. To participate in the social control exercise, they can only do it when under the protective shield of gossip. Now, is it really true that gossip is mainly a matter of women? Such an expectation could be reinforced by the fact that woman have a stronger capacity for communication and social reasoning, and an earlier development of the same capacities.

Data, however, is controversial. Even if negative gossip indeed prevails between pairs of women when compared to pairs of men or mixed pairs (Leaper and Holliday 1995), reports from ethnographers put the matter under a different light. Phenomena like the *FatuFatu* of the *Nakulaelae* or the same *Talanoa* are defined in the respective cultures, between a connivent smile and an amused glance, as "women's language," "fatuous talk," "just rumours," "women things", and so on. Yet, in some cases they require (as in the case of *Talanoa*) a skilful art, cultivated and publicly exhibited by the most salient figures of society. Thus, gender doesn't enter much into the actual performance of the practice, but only into the representation of it, into the idea diffused between the members of the culture where the practice is rooted. With a daring logical somersault, this reasoning first identifies the gossiper in the weak, and then, with another twist, in the woman, the socially weak figure *par excellence*.



In truth, the distal or evolutionary cause of gossip is likely to be the reproductive advantage that it provides to those who participate into social control. But the proximate cause, that is, the individual motivation to the performance of gossip, lies in the benefit, both emotional and reputational, that the gossiper draws from it, including the relief produced by the protected aggression and from the recovery of the equilibrium, although momentary, between the parts.

The cultures where gossip has evolved tolerate it for its benefits, even if they stigmatise it. Anyway, the stigma falls for the most part on the weaker sex, which unburdens the male part of the population from the most ignominious imputation, that of cowardice. At the end of the process, women end out taking it upon themselves to preserve the image of the stronger sex, to the detriment of their own. Just as doves with hawks.

### THE STORY OF "IF..."

One of the problems with historical or evolutionary approaches lies in the difficulty of checking them experimentally. It is hard to make experiments with processes happened centuries or millennia ago. How can we

trust the validity of an explanation when we don't even know exactly the conditions of the system, or the systems involved in the process under exam, and we only have a few hints about the environment where it did happen? Under these conditions, the margin for speculation is pretty wide.

The only method that allows for experimental validation of retrodictive hypotheses is simulation, that is, the performance of imaginary experiments, in which you ask what would have happened if things had turned in one way instead of another. This amounts overall to making history with "what ifs", a method reprehended, more than warned off, from historians. But it is only from this method that we can expect an empirical basis for the sciences of phenomena not yet or not anymore observable. For ease of execution, it is convenient to run imaginary experiments on the computer, to facilitate both the manipulation of variables and the observation of their effect, to understand the process that connects the ones to the other. In the wake of cellular automata, computer experiments of this kind have been run to study social phenomena as segregation, altruism, and so on. Thomas Schelling had become famous long

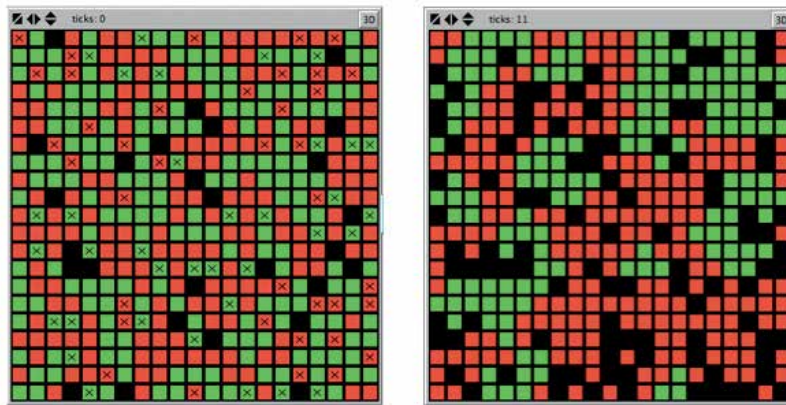


Figure 2. On the left, the Schelling segregation chessboard. On the right, segregation emerges.

before winning the Nobel prize for having provided this new method to the social sciences (Schelling 1971).

In the famous Schelling model of segregation, which has inspired so many successive studies, society is represented on a chessboard where its members, the agents, constitute units of computation. They interact on

the basis of simple rules, and thus they modify the state of society as a whole, determining the emergence of new phenomena, for example segregation in the space of two social groups (represented by the green and the red squares in Figure 2) which were initially distributed randomly on the chessboard. If we assume that the groups follow the happiness rule

stating that you will stay where you are when you are satisfied of your neighbourhood, otherwise one moves at random on the chessboard. Even a very tolerant threshold, that makes agents happy as long as they have at least one neighbour of the same colour as them, without the need to have a majority of their colour, a segregation effect appears, as shown in Figure 2.

A simulative research (Quattrociochi, Paolucci, Conte 2009) has shown the positive effect of gossip on economic transactions in a stylised artificial market, where buyers acquire goods of variable quality from sellers. What makes this market interesting is that sellers are always in a lesser number with respect to buyers, and that buyers cannot ascertain the quality of goods at purchase time, but only later. Moreover, sellers have limited stock: after selling their products, sellers exit the market, to be replaced by new entries with unknown (randomly generated) quality. Buyers are thus incentivised to ask each other for information to avoid the risk of direct experience, but are also incentivised to lie to each other, especially if they have found a good seller, to avoid sharing a scarce resource.

In essence, results seem to confirm the proposed theory. In the simulation, gossip has allowed the identification of the best sellers, so that a larger number of buyers (including the liars) could access them. If we wanted to extrapolate from the simulated market to reality – procedure, we are aware, quite arbitrary in the absence of real data – we could say that, thanks to the gossip, humans have learned to defend themselves from material exploitation by tolerating deception. But the results show also that gossip is sensitive to the amount of deception. Beyond the threshold of 60% of liars, the simulation shows that it is better to ignore circulating voices and rely on your own experience only.

How robust and generalizable are these results? To what other contexts, other spheres of action, can they be extended? This is hard to say. Thanks to simulation, it has become possible to falsify evolutionary theories, but there is still much way to go.

## BIBLIOGRAFIA

- Brenneis, Donald (1978), «The matter of talk: political performances in Bhatgaon», in *Language in Society*, Vol. 1.
- Brison, Karen J. (1992), *Just talk. Gossip, meetings, and power in a Papua New Guinea village*, Berkeley, University of California Press.
- Cathcart, Wason, Peter, Johnson-Laird, Philip, Nicholas (1972), *Psychology of reasoning. Structure and content*, Cambridge (MA), Harvard University Press.
- Conte, Rosaria, Paolucci, Mario (2002), *Reputation in artificial societies. Social beliefs for social order*, Boston, Kluwer Academic Publishers.
- Dunbar, Robin (1996), *Grooming, gossip, and the evolution of language*, Cambridge (Mass.), Harvard University.
- Dunbar, Robin (2004), *The human story. A new history of mankind's evolution*, London, Faber and Faber.
- Geiss, Michael C., Zwicky, Arnold M. (1971), «On invited inferences», in *Linguistic Inquiry*, 2, 561-566.
- Giardini Francesca, Conte Rosaria. (2012), «Gossip for social control in natural and artificial societies», in *Simulation*, 88, 18-32.
- Gluckman, Max (1963), «Gossip and scandal», in *Current anthropology*, 4, 1963, n. 4, 307-316.
- Labianca, Giuseppe, Brass, Daniel J. (2006) «Exploring the social ledger: negative relationships and negative asymmetry in social networks in organizations», in *Academy of Management Review*, 31, n. 3, 596-614.
- Leaperand, Campbell, Holliday, Heithre (1995) «Gossip in same-gender and cross-gender friends' conversations», in *Personal Relationships*, 2, 1995, n. 3, 237-246.
- Maynard Smith, John (1982), *Evolution and the theory of games*, Cambridge-New York, Cambridge University Press.

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- Muzzarelli, Federica, a cura di (2010), *Gossip. Moda e modi del voyeurismo contemporaneo*, Bononia, University Press, 2010. In Italian.
- Oaksford, Mike Stenning, Keith (1992), «Reasoning with conditionals containing negated constituents», in *Journal of experimental psychology. Learning, memory, and cognition*, 18, 835-854.
- Quattrocioni, Walter, Paolucci, Mario, Conte, Rosaria (2009), «Image and Reputation coping differently with massive informational cheating», in Miltiadis D. Lytras, Ernesto Damiani, John M. Carroll, (eds.), *Visioning and engineering the knowledge society. A web science perspective*, New York, Springer, 574-583.
- Schelling, Thomas (1971) «Dynamic models of segregation», in *Journal of mathematical sociology*, 1, 1971, 143-186.



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