Language Sciences 63 (2017) 44–59

Contents lists available at ScienceDirect

Language Sciences

journal homepage: www.elsevier.com/locate/langsci

The role of the lie in the evolution of human language

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ARTICLE INFO

Article history:
Available online 8 February 2017

Keywords:
Autism
Co-evolution
Communication
Co-operation
Deception
Human evolution
Imagination
Language
Language evolution
Lie-detection
Lying
Mimesis
The handicap principle
The social brain hypothesis
Variability

ABSTRACT

The literature on language evolution treats the fact that language allows for lying as a major obstacle to the emergence and development of language, and thus looks for theoretical means to constrain the lie. In this paper, I claim that this general formulation of the issue at hand misses out on the fact that lying made an enormous contribution to the evolution of language. Without the lie, language would not be as complex as it is, linguistic communication would be much simpler, the cognitive requirement of language would not be so heavy, and its role in society would be radically different. The argument is based on Dor's (2015) theory of language as a social communication technology, collectively-designed for the *instruction of imagination*. The theory re-thinks the essence of lying, and suggests that the emergence of language did more to enhance the human capacity for deception than it did to enhance the human capacity for honest communication. Lying, then, could not be constrained, but language did not collapse. The conception of lying as a threat to language, as it is formulated in the literature, is based on a series of unrealistic assumptions. Most importantly, the cognitive, emotional and social capacities required for lying, lie-detection and moral enforcement are never equally spread within communities: they are highly variable. Lying and language came to be entangled in a never-ending co-evolutionary spiral, which changed the map of communicative relationships within communities, and participated in shaping our languages, societies, cognitions and emotions. We evolved *for* lying, and *because of* lying, just as much as we evolved for and because of honest communication.

1. Introduction

The literature on language evolution treats the fact that language allows for lying as a fundamental obstacle to the emergence and stabilization of language itself, and thus looks for theoretical means to reduce the interference of lying in the evolution of language to minimal levels. The underlying argument is based on a set of foundational conceptions from evolutionary theory, having to do with the conditions under which *honest signaling* (and other types of co-operative behavior) could emerge and stabilize in the biological world (Trivers, 1971; Krebs and Dawkins, 1984; Gintis, 2000): every system of honest communication also allows for *cheating*, which from the point of view of natural selection seems to be a more advantageous strategy than honest communication; other things being equal, selfish cheaters (*free-riders*) raise their gains at the expense of their co-operative interlocutors, and thus increase their reproductive success; other things being equal, then, we should thus expect communicators to cheat, but that would immediately cause the collapse of the entire communication system; for honest communication to be evolutionarily stable, additional assumptions concerning the interactions between

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http://dx.doi.org/10.1016/j.langsci.2017.01.001
0388-0001/

communicators need to be are introduced. One such assumption is that honest communication is evolutionarily stable when the signal's reliability is guaranteed by its energetic cost (the *handicap principle*; Zahavi and Zahavi, 1997; Grafen, 1990). This, however, only seems to aggravate the problem in the case of language: while honest signals used by other animals are often expensive, speaking seems to be energetically cheap, which makes linguistic cheating, i.e., lying, much easier to produce.

Different authors, then, suggest that different mechanisms evolved before or together with language to constrain the option of lying: human societies and individuals became more co-operative and morally-aware already before the emergence of language (Tomasello, 2008, 2009, 2016); honest communication was ensured by conformist learning and moralistic enforcement of norms by punishment (Richerson and Boyd, 2005; Boyd and Richerson, 2009); language evolved on the basis of a rise in social trust and the emergence of the rule of law (Knight, 1998, 2007); societies won the war against individual deception by inventing the *collective lie* (Knight, 1998); language evolved as a kin-selected system, which ensured honest communication within the kin group (Fitch, 2004, 2010); human reasoning, with its specific properties, evolved mainly for argumentative communication, whose function was to make information flow more reliable (Mercier and Sperber, 2011); language itself was helpful in the struggle against free-riding (Smith, 2010); and the all-important linguistic activity of *gossip* evolved, among other things, as a form of collective defense against free-riding (Dunbar, 2004). All these arguments undoubtedly capture important facets of the dynamics of lying in the evolution of language in particular, and human co-operation in general, and I will get back to them as the argument unfolds.

In this paper, however, I will claim that the general formulation of the issue at hand, i.e., the conception of the lie as an obstacle to the evolution of language, misses out on the fact that lying made an enormous direct contribution to the evolution of language. Without the lie, language would not be as complex as it is. Linguistic communication would be much simpler, and the cognitive requirements of language would not be so heavy. The role of language in society would be radically different. In many ways, we are who we are not because we constrained the lie, but because we never quite managed to do that. Lying cannot be theoretically constrained, and it does not need to be: it needs to be incorporated into the story of the evolution of language as a major and direct driving force.

The option of lying, moreover, should not just be thought of as a major driving force in the evolution of language. It should be acknowledged as a crucial facet of its uniqueness, of what makes it so different from all the other forms of communication in the biological world. This uniqueness suggests that the honest signaling paradigm, which defines the evolutionary game in a way that is suitable for animal communication, may need to be re-thought for human language. I will get back to this issue as the argument unfolds, especially in section (5). Here, I would like to make four preliminary points.

The first has to do with the very definition of the distinction between honest and deceitful signaling. Within the paradigm, the distinction does not concern the truthfulness of the signal, but the benefits and costs incurred by the signaler and receiver as a result of the event of signaling. Thus, the signaler signals honestly when the signal also benefits the receiver, and cheats when the signaling benefits the signaler at the cost of the receiver. In animal communication, this distinction may indeed be correlated with the truthfulness criterion: the signal benefits the receiver if it is truthful, and harms the receiver if it is false. In language, however, the correlation is no longer there. On the one hand, as we shall see below, lying is very often performed with the intention to benefit the receiver. On the other hand, and as importantly, honest communication is very often driven by the intention to harm the receiver: to insult and humiliate, frighten and control, and so on. The evolutionary game in the case of language, then, may remain the same in terms of costs and benefits (as, for example, in Desalles' (2014) analysis of linguistic communication as a means to attract strategic allies), but it changes quite radically in terms of the distinction between lying and honest speaking. As I will claim, individuals would be selected to the extent that they manage to maximize their capacity for the flexible and context-dependent maneuvering between the four available options: co-operative honesty, harmful honesty, co-operative lying and harmful lying. Every individual, in every social circumstance, eventually has a different maneuvering space available.

The second point, which is related to the first, has to do with the fact that lying, lie-detection and social enforcement are almost always based on intentions and their evaluation.[1] Signaling theory bypasses the problem of intention and defines honest communication and deception as statistical generalizations over sets of signals, which may be the right way to go as far as animal communication is concerned. With language, however, this is no longer an option. It is still true that if all members of a community conclude that all the rest communicate with them with harmful intentions, this could cause a general communicative breakdown. The breakdown, however, would eventually be based not on the evaluation of truthfulness, but on the evaluation of intention, harmful or co-operative. The evolutionary game, that up to now had to do with the signal itself, is now concerned with *two* levels of intention behind the signal, their camouflaging and exposing: the intention to persuade the interlocutor of a false claim, and the intention to harm the interlocutor. As we shall see, what this means, among other things, is that individual variability in the cognitive, emotional and social capacities involved in the competition over the evaluation of intention becomes much more crucial.

The third point has to do with the handicap principle. On the one hand, as the evolutionary literature already shows very clearly, the cost of signaling is neither a necessary nor a sufficient condition for honest communication in much of the signaling that takes place in the animal world (Számadó, 2011; Higham, 2013; Zollman et al., 2013, Johnstone and Grafen, 1993; Lachmann et al., 2001). On the other hand, while uttering a sentence may indeed be energetically cheap, the process of language acquisition that makes it possible is far from that. While it is true that language makes deception much easier,

[1] As we shall see below, the Mopan Maya seem to provide an interesting counter-example to this generalization (Danziger, 2005).

this does not seem to be causally related to the economy of energetic costs. As I will show below, it is based on the fact that the specific communicative strategy employed by language radically changes the relationship between deceivers and deceived, allowing the former to deceive without providing their interlocutors with false experiences to perceive, and preventing the interlocutors from verifying the message in real time.

The fourth and last point has to do with the calculation of the signaler and receiver's interests in the evolutionary game. The original paradox of honest signaling is only relevant in situations where the participants' interests conflict. It is quite clear that the problem does not arise where the participants' interests converge (Maynard-Smith, 1991, 1994), especially where their mutual interests in the coordination of action are sufficiently significant (Silk et al., 2000). Everything that we seem to know about the evolution of pre-linguistic human societies (to be discussed in section 3) implies that by the time language appeared on the stage, human survival was already dependent in unprecedented ways on the coordination of action. As I will claim, language probably emerged as the best tool ever invented exactly for such coordination, in circumstances of *epistemic dependency*, where the survival of both speaker and interlocutor depended on the speaker's ability to provide the interlocutor with the information that allowed for the appropriate action. This new capacity that language brought about ensured its value for its speakers, and guaranteed honesty in circumstances of epistemic dependency, regardless of the fact that when it was used in other circumstances, in which the pressure of epistemic dependency was less immediate, language allowed for rampant lying. This distinction between different communicative circumstances, then, is also unique to language. The game-theoretic approach underlying the current discourse defines the parameters of the game in ways that are applicable to animal communication – but not to language. The entire logic of language and its evolution implies that language changed the parameters of the game in a range of essential ways, all of which require a new perspective on lying of the type suggested here.

The argument to be presented below is based on the general theory of language that I develop in Dor (2015). According to the theory, language is best described, analyzed and explained as a socially-constructed communication technology, designed by cultural evolution for the specific function of the *instruction of language*: language allows speakers to communicate directly and systematically with their interlocutors' imaginations. I will present a skeletal outline of the theory in section (2). Then, in section (3), I will show how the theory opens the way towards a new conception of the evolution of the technology of language and its speakers (Dor and Jablonka, 2001, 2010, 2014; Jablonka et al., 2012).

In (4), I will show how the theory re-frames the essence of lying in a way that makes it immediately clear that the lie is simply too big and multifaceted to handle: the emergence of language, with its reliance on imagination, did *more* to enhance the human capacity for deception than it did to enhance the human capacity for honest communication. No other collective project in human evolution has revolutionized its own form of deception in this manner.

At first sight, this might strengthen the impression that the most pressing issue we need to take care of is indeed to explain how the revolutionary option of lying did not collapse the entire project of language. In section (5), however, I will claim that the very conception of lying as a threat to language is based on a series of unrealistic assumptions. The conception concentrates on a very particular communicative situation, in which an individual lies to other individuals from his or her own community, with the exploitative intention to make a profit at their expense in ways that would carry real detrimental consequences for the entire community. This may be the type of situation that most attracts our moral attention, but it is far from being representative of the dynamics of lying in linguistic communication. Individuals very often lie with non-exploitative intentions, sometimes with pro-social intentions, and such lying does not fracture trust: it actually contributes to social cohesion. In many other social configurations, the interests of speakers and their communities coalesce to allow for exploitative lies, and even to encourage them. Most importantly, the cognitive, emotional and social capacities required for lying, lie-detection and moral enforcement are never equally spread within communities: they are highly variable. The doomsday scenario of everybody lying to everybody else is virtually impossible.

Coupled with the foundational fact that linguistic communication is useful for collective action and identity in many other ways than just the transfer of propositional information, these considerations imply that even without the mechanisms suggested in the literature to constrain lying, the scenario of the destruction of language by rampant lying is very unlikely. The mechanisms undoubtedly participated in the drama of lying, and probably contributed much to the *social mapping* of deception: who lies to whom, about what, in what ways, under which conditions. Lying as such, however, was never constrained, and language did not crumble: lying and language came to be entangled in a never-ending co-evolutionary spiral.

In section (6), I will discuss some properties of this co-evolutionary dynamic, and show how lying must have created an array of new communicative relationships – between efficient liars and inefficient lie-detectors, between inefficient liars and efficient lie-detectors, and most importantly, between the best liars and the best lie-detectors. Each of these relations evolved to play a significant role in human life. In section (7), I will try to show how the dynamic eventually shaped our languages (with their specialized tools for rhetoric, argumentation, politeness and identity-marking), our societies (including the smaller, traditional ones), and our cognitions and emotions (most importantly our capacity for imagination). We evolved *for* lying, and *because of* lying, just as much as we evolved for and because of honest communication.

2. The instruction of imagination

The general theory of language developed in Dor (2015) attempts to re-think language as a collectively-constructed communication technology, designed for the systematic instruction of imagination. No other system of intentional communication in the biological world allows for instructive communication: this is the key to the uniqueness of language.

All the other systems, which are obviously different from each other in various ways, nevertheless share the same principled communicative strategy, that of *experiential communication*. As experiencing creatures, we all go through a life time of mental dynamics that are private and individual: we are separated from each other by *experiential gaps*. The systems of experiential communication that we share with other animals – vocal expression, manual and bodily gesture, demonstration of physical strength and so on – work to overcome the gap in ways that are in and of themselves experiential: the communicative intent emerges in the mind of the communicator in experiential form; the communicator translates the communicative intent into perceptible output (visible or audible behavior); the interlocutor perceives and experiences.

We humans have upgraded our capacity for experiential communication in various ways, most importantly, for our purposes, with the development of *mimetic communication* (Donald, 1991; Zlatev, 2008). This uniquely-human combination of pointing, mimicry, imitation, gesture, tone of voice, facial expression, bodily movement, and eye contact emerged in all certainty before language, and it has allowed humans to do what no other species seems to be able to do: systematically *direct* their interlocutors' attention towards experiences, and towards ways of experiencing. In terms of Clark (2016), mimesis allows for *depicting*, i.e., showing things to others. This, as we shall see, was the foundation upon which language could eventually emerge.

Experiential communication, especially with the mimetic upgrade, is extremely efficient when the experiential gap is momentarily reduced by shared experiencing, when the object of communication is available for experiencing to both communicator and interlocutor. Experiential communication, however, is useless when the object of communication is not present for the communicators to experience at the time of communication, and this is exactly where language gets into the picture.

Language abandons the experiential strategy in principle: it allows speakers to systematically instruct their interlocutors in the process of imagining the intent – instead of experiencing it. The communicator does not try to make some of his or her experience perceptibly present to the receiver. Instead, the communicator provides the receiver with a coded set of instructions for imagination, a structured list of the basic coordinates of the experience – which the receiver is then expected to use as a scaffold *for experiential imagination*: follow the encoded instructions, raise past experiences from memory, and then reconstruct and recombine them to produce a new, imagined experience. In making this strategy possible, language actually builds imagination-based bridges over the experiential gaps between communicators. This is the key to its enormous success.

It is important to see that the issue here is not simply that of *displacement* (Hockett, 1960; Bickerton, 2009; Mufwene, 2013; Corballis, to appear). Modern humans have invented quite a few technologies of experiential communication – such as painting and photography, filming and recording – which also allow for displacement. What is unique to language is displacement of that which cannot be experientially communicated. Language may play an auxiliary role where experiential communication is at its best, but it begins to show its uniqueness where experiential communication reaches the limits of its expressive envelope. This is also the story I will tell about the origin and evolution of language: it emerged when ancient humans brought experiential communication to the limits of the envelope, and needed more.

Language, then, is capable of the unique achievement of instruction exactly because it is a genuinely collective project. It is constructed in the never-ending, collective effort of what I call *experiential mutual identification*. In this process, groups of speakers carefully identify and mark those points in experience, and those ways of speaking, which they mutually decide are similar enough for them to count on in the process of instruction: "when I use this word, imagine a thing of this type (not that)"; "when I use this word together with this one, imagine this type of experiential relationship (not that)"; and so on. Language itself may sometimes be used in this process, for example when we suggest definitions to new words, but the process is essentially based on experiential-mimetic communication – most importantly on the uniquely-human activity of *pointing*.

Experiential mutual-identification, then, is a process of meaning discretization done together: the analog complexities of private experience are sacrificed for the construction of common-ground. No other mode of communication requires this collective effort, but here it is necessary – because the instructive strategy is extremely *precarious*. The listener is not invited to share an experience with the speaker. The listener is invited to create an independent, imagined experience, on the basis of the skeletal formulation of the received code, within his or her own experiential world – in isolation from the experiential world of the speaker. In the creative activity of imagination, the listener may in principle imagine in a wide variety of ways, all of which would always follow the analogue complexities of his or her own experiential world, never that of the speaker. The code should thus be able to instruct the listener in a process in which he or she has to create not only a more or less focused interpretation, but also a focused interpretation that more or less corresponds to the original intent of the speaker: an experience of the same type. This is a very ambitious goal. Language achieves the goal, where it does, when speakers manage to mutually identify to sufficient levels. It takes enormous social energies, and it is precisely in this sense that language is a technology: each of its components has to be built before it can be used.

In Dor (2015), where this general conception is technically explicated in ways I will not be able to present here, I show how it offers new answers, solves persistent problems and opens new venues for research around the major problem-clusters of the linguistic sciences – from semantic and syntactic analysis, through language acquisition and the psycholinguistics of production and comprehension, all the way to linguistic relativity and language and power. The theory thus suggests a new way towards the re-unification of the linguistic sciences, and the re-assembly of the puzzle of language. In the next section, I will show how the theory opens the way towards a new dynamic perspective on the evolution of language and its speakers, from the social, communicative and cognitive that prepared the ground for the first prototype of the technology to languages and speakers as we know them today.

3. The evolution of language and its speakers

As the literature on human evolution shows very clearly, the ancient human communities (mainly *Homo erectus*), that inhabited the earth from around 2 million years ago until around 400 thousand years ago, achieved a level of social, technological, and communicative sophistication much closer to our own than to ape societies. The achievements of this period include the control of fire and the invention of cooking (Wrangham, 2009); collaborative foraging and the tool manufacturing industry it required (Sterelny, 2012; Tomasello et al., 2012); the emergence of alloparenting (Hrdy, 2009); apprentice learning and pedagogy (Sterelny, 2012); and social ritual (Knight, 2014). As Sterelny (2012) emphasizes, all these developments were connected to each other through feedback loops, re-enforcing, directing, and shaping each other. Together, they created a new type of human community, in which survival gradually came to depend less on individual behavior and more on collective co-operation and inter-subjective understanding (Zlatev et al., 2008). Individuals gradually came to depend more on the others.

All this could not be achieved without a serious upgrade in experiential communication, and this was achieved with mimesis. Mimetic communication was revolutionary because it turned the individualistic capacity of *Theory of Mind* (ToM) into a collective, mutualistic and dialogical capacity – the capacity for experiential mutual-identification that would later provide the basis for language. As research shows, the apes already have an impressive level of ToM: they understand that the other may have a different picture of the world, and they are capable of reading the other's intentions, follow the other's gaze, and so on (Call and Tomasello, 2008). The apes are already partially aware, in other words, of the experiential gaps between them and the others. This, however, is still an *individualistic* capacity. When individual A reads the mind of Individual B, B is not co-operatively involved. He or she might even not be aware of the process. Interestingly, there is some indication that apes are aware of the others reading their minds in *deceptive* situations, for example when they try to direct their attention to another location, where there is no food (Premack and Woodruff, 1978). With mimesis, then, something completely new emerged: A and B reading each other's minds, directing each other's attention, influencing each other's perceptions, mapping the differences and similarities between their experiential worldviews, learning from each other and teaching each other. Our pre-linguistic ancestors managed to achieve what they did because they spent enormous amounts of collective effort in the struggle for mutual understanding. They gradually spent more and more of their time doing things together, solving problems together, sharing and comparing experiences. This was already uniquely-human.

All this, then, suggests a new type of answer to the twin questions of how the invention of language became possible, and why it became necessary. The invention became possible because experiential mutual-identification is the machinery required for the construction of language. The machinery, in other words, was already there before language emerged. The invention must have gradually become necessary because the growing dependency on experiential mutual-identification locked humanity in a vicious circle: the ever-growing dependency of the community members on mutual-identification required a constant rise in the amount and quality of communication within the group; the rise in the level of communication, however, only contributed to the deepening of the dependency.

At a certain point in time, then, the vicious circle must have forced human collectivities to begin their explorations into a new realm of communication. What these explorations looked like we will never know, but the principled challenge can be stated quite specifically. Consider a simple scenario, in which individual A point at *x* (a prey, a predator, other people, fire), and accompanies the pointing with some mimetic sound associated with *x*; then B follows the pointing and looks at the right direction. Now, in the realm of experiential-mimetic communication, if B sees x all is well. But if B doesn't see x, the act of communication fails. Turning this failure into success was the challenge. The failure would turn into success if B managed to interpret A's communicative act not as an invitation to experience – but as an invitation to *believe and imagine*. B would have to understand (without words): "A is intentionally attempting to turn my attention to something by pointing. His or her vocalization indicates that it is of the type *x*. As for myself, I cannot see anything there. I will, however, choose to go against my own experiential judgment, trust A's experiential judgment, *imagine there is something there of the type* x, and act upon my imagination."

This, then, was the essence of the linguistic revolution: the emergence of the will and capacity to imagine what you cannot see with your own eyes, simply because you believe somebody else. The problem of truth, in other words, was born together with language.[2] It is important to see that the will and capacity to believe and imagine, which are already in our nature as modern humans, could not have been easy to achieve at the beginning. Like all biological creatures, these ancient humans only knew how to count on their own experiences (along or together). This is why at the very beginning, events such as the one describe above probably occurred in extreme situations of *epistemic dependency* (Dor, 2014), where (i) A experienced something that called for action, but he or she could not act alone on the basis of the experience; (ii) another individual, B, was in a position to act but had not experienced the call for action; and (iii) the survival of *both* depended on A's capacity to get B to do what was needed.

What this means, among other things, is that what appeared in the moment of origin was not the technology, but the *function*. What the inventors of language began to experiment with was not the construction of a new system, but the use of the old tools of experiential-mimetic communication for a new type of communicative function – based on experiential trust.

[2] Note that the problem of truth that emerged with language includes more than the issue of lying. Speakers may simply be mistaken, both in terms of their interpretation of their experiences and in terms of the confusion between their memories of their own experiences and their memories of what they were told about. Among other things, this confusion gave rise the problem of *false memory* (Jablonka, to appear).

Whenever they managed to pull this off – and it must have been immensely difficult – they actually turned their mimetic signals into proto-linguistic signs, still holistic and analogue, but already performing the task of instruction. This is why, in the beginning, there was probably nothing perceptively different about the explorations: they looked and sounded like regular events of experiential-mimetic communication.

The new function, however, must have asserted itself quite quickly as a revolution. Gradually, it began to be used in situations where the pressure of epistemic dependency was less immediate, most importantly in social communication (Dunber, 1998; 2004). The epistemic reach of the inventors of language began to expand beyond what they experienced themselves – alone or together. More and more elements of the world began to penetrate their worlds from the outside: things they had not experienced by themselves (alone or together), but had been told about. For the first time in the evolution of life, humans began to experience *for others*, and let others experience *for them*. The consequences were obviously enormous. The Rubicon of experience was crossed.

As I show in Dor (2015, 2016), all this is allows for a very specific hypothesis concerning the further evolutionary development of the technology of language, from the stabilization of the first exploratory beginnings to the stabilization of the specialized, autonomous technology that we know today, with its fundamental characteristics. The technology was shaped by the function, not the other way: the entire process was pushed forward by the constant need to raise the levels of success in instances of instruction. The enormous success of instructive strategy forced the emergence and further improvement of components and properties of the technology; it created new problems that had to be solved; and it directed the path of development from beginning to end.

The innovative individuals who began to experiment with the instruction of imagination, at the very beginning, did not have to be already-adapted to the new form of communication at the genetic level as we are. Participation in the explorations was made possible by cognitive (and emotional) plasticity. The new communicative strategy, however, must have immediately exposed new patterns of variability between individuals – at all the relevant levels. Among other things, different brains turned out to be variably compatible with the strategy. As the instruction of imagination asserted itself as a communicative game changer, the technology and its users came to be entangled in co-evolutionary spirals, in which generations of individuals gradually accommodated their cognitions and emotions, brains and physiologies, and eventually (partially and variably) their genes, to the technology as it looked like at their time (Dor and Jablonka, 2001, 2010, 2014, Jablonka et al., 2012). This allowed later generations to further develop the technology, which exerted new selection pressures on their offspring, and so on and so forth. Throughout the process, the technological development of language at the collective level remained ahead of the individuals who were involved in it. Speakers were struggling to keep up with language, and whenever they managed to adapt to it, it was already somewhere else, further down the road of evolutionary development.

From a certain point on, the technology must have begun to aggressively change its own inventors. The result was a new species adapted to language: *Homo sapiens*.[3] The new species was adapted to language in a variety of ways, among these the emergence of cognitions, anatomies, and physiologies specifically adapted to fast speech (Lieberman, 1991, 2007), and the emergence of full-fledged, creative human imagination (Mithen, 2007).

Mithen (2007) makes the distinction between basic and full-fledged imagination. It seems that other animals, apart from humans, use basic imagination for the planning of action and similar goals. As Corballis (to appear) puts it, these animals are capable of some degree of *mental travel*, bringing back from memory experiences from the past and re-experiencing them internally. It stands to reason that pre-linguistic humans, with their complex culture and mimetic communication, developed the capacity further. In all these, however, imagination is only activated on the spot, by experiential problems that require the retrieval of past experiences. The imagined experience combines real-time experience with materials from memory, and the imagining animal has to calculate the relevant intersections between what it experiences at the moment and what it remembers. Language, however, requires something radically different: the construction of an imagined experience on the sole basis of the creative assembly of pieces of experiential memory – in isolation from real-time experience. It requires listeners to calculate the intersections between sets of memories. For the first time, imagination is activated independently of experiencing. What this means is that language must have been a major – maybe *the* major – engine pushing the emergence of full-fledged imagination in the human species. As I will claim below, lying must have played a more substantial role in this process than honest communication.

4. The deception revolution

The perspective on language and its evolution sketched above makes it clear that the emergence of language is probably the most dramatic turning point in the evolution of deception in the biological world.

The intent to deceive as such was already there before language. Other animals, especially our primate relatives, deceive as well, and at least some of the deception seems genuinely intentional (Krebs and Dawkins, 1984; Premack and Woodruff, 1978; Byrne and Whiten, 1988; Hauser, 1992; de Waal, 2005; Hare et al., 2006). The capacity for deception manifested by the apes, however, is severely limited exactly because they can only use their tools of experiential communication. They seem to be

[3] The hypothesis that language was invented by *Homo erectus*, or another hominin species of its time, implies that all of its descendants may have inherited language – not just *Homo sapiens* but also *neandertalensis* and *denisova*. Dediu and Levinson (2014) argue very convincingly that this was indeed the case for *neandertalensis*.

quite good at *hiding* information: when they find food they may repress the food call, or deliberately avoid looking at the location of the food as long as competitors are around. As already indicated, there are some indications of minimal attempts to go beyond the hiding of information and actually provide the others with false information – by directing attention to another location, for example, where there is no food (Premack and Woodruff, 1978). This, however, is already very hard to do with experiential communication: it only allows for the communication of meanings that are available for perception in the here and now of the communication event. Fabricating false perceptions seems to be beyond the apes' capacity. In experiential communication, moreover, whatever is communicated may be verified or rejected by the others in real time, or within a very short period: individuals who repress food calls and are then caught eating, for example, may be punished by the group (Hauser, 1992).

The mimetic upgrade to experiential communication of our pre-linguistic ancestors obviously also allowed them to sharpen their capacity for deception. Their improved intentional control over gestures and facial expressions, which was required for mimesis (Donald, 1991), coupled with the new capacities for mimicry and imitation, probably allowed them to begin experimenting with what we call *acting*: behaving as if you're angry, for example, to threaten the others, or deceptively mimic the behavior of other people for a variety of purposes (Gambetta, 2005). To this very day, the great actors that we admire are the best experiential deceivers on earth. Mimesis, however, did not free deception from the inherent limitations of experiential communication. To go beyond hiding, deceivers still had to provide the interlocutors with false materials for perception, which they could reject or accept in real time.

With language, however, the limitations simply disappear. To begin with, the deceiver no longer needs to present false materials for perception. What is required is a good *story*: an object for imagination.[4] Telling stories is hard to do, but it's much easier than fabricating perceived reality. And because the instruction of imagination allows for displacement of everything that cannot be immediately perceived, the set of possible contents for deception explodes: it is no longer constrained by the contingencies of the immediate context of communication. Second, and even more importantly, language allows communicators to tell their interlocutors about things that they cannot experience – and thus cannot verify or reject at the time of communication. Language deprives the listeners of the single most important tool that they could use to defend themselves against deception: the critical judgment of what they just heard on the basis of what they experience with their own senses.

Taken together, these considerations carry a rather amazing implication: the emergence of language eventually did *more* to enhance the human capacity for deception than it did to enhance the human capacity for honest communication. This is why: the functional envelope of experiential deception is *narrower* than that of honest experiential communication, but the functional envelope of linguistic deception is *wider* than that of honest linguistic communication. Language allows speakers to communicate experiences from out of the here and now, to the extent that their components are mutually-identified, but as long as the speakers are honest, they may still only communicate, at every given moment, those experiences they *did* experience: this is what honesty is all about. Honest speaking is bound by the contingencies of the experiential world of the speaker (both external and internal). In lying, however, the speaker is for the first time truly released from the bounds of experience: everything that can be said can be lied about. Language is deceivers' heaven.

So much so, as a matter of fact, that it seems tempting to postulate that language was originally invented *for* lying – that it was born as a tool of deception. This, however, could not possibly be the case. The collective effort of the invention and stabilization of the new technology must have been based on high levels of reliability and trust between the inventors: otherwise, indeed, they would not have been able to get the system going. But when language was stabilized in its most rudimentary form, when certain levels of trust for language were achieved, the door was opened – and as I will claim below, it remained open for good.

My first point, then, is quite simple: different collective projects give rise to different forms of free-riding, with their particular complexities, opportunities and risks. Sterelny (2012), for example, compares collective hunting to collective defending: "(F)or a hunting party to be effective, its members must both coordinate with one another and suppress free-riding. Hunting involves effort, and often risk, so some may be tempted to let others pay the costs. Then, once hunting has been successful, a further problem arises. The spoils must be divided, and that creates a potential flash point, a potential site of conflict that would undermine any further co-operation. Collective defense likewise depends on coordination and the prevention of free-riding. But there is no extra problem of dividing the spoils. When collective defense has succeeded, the profit – safety – is automatically distributed to the defending coalition. There is no danger of the coalition imploding as it squabbles over the spoils of victory" (p. 76). All this is important, but there is another thing. In both cases, the form of free-riding seems quite similar: to be able to get away with it, the free-rider should put on a convincing act, pretending to put in the effort and take some risks. What is required is a deceptive communicate act of the mimetic-experiential type, which is quite hard to fake and quite easy to detect. Collective hunting and defending, then, revolutionized human life in many crucial ways, but they did not, in and of themselves, revolutionize their own deception. Language, on the other hand, revolutionized deception. It radically changed the entire game of risk and opportunity involved in the attempt to deceive. This is where we should start.

[4] Fictive stories may obviously be told without the intention to harm the listeners, and also without the intention to persuade the listeners that the story is true. As Coleman and Kay (1981) show, intuitions on whether such stories should be called lies vary considerably. In cultures where intentions do not seem to count, moreover, such stories are categorized as lies (Danziger (2005). I would like to thank an anonymous reviewer for discussing this point with me.

5. Lying and the free-riding problem

Language, then, revolutionized the human capacity for deception. As opposed to the presupposition accepted in most of the discourse, however, this does not necessarily imply that the new form of deception posed a real threat to the survival of language. Four interrelated considerations are involved:

(i) Most of the discourse concentrates on one particular type of lie – the *anti-social* or *exploitative* lie. The anti-social liar provides the interlocutor with information that the liar knows is false, attempting not just to deceive the interlocutor – but also to make an unjust profit at his or her expense. This is the type of lie that most attracts our moral attention, but it is not representative of the scope of lying in human communication. Other types of lying, which are probably much more frequent, are produced with either non-exploitative or genuinely pro-social, altruistic intentions (Bok, 1978; DePaolo et al., 1996; Knight, 1998; DePaolo and Kashy, 1998; Bavelas et al., 1990, Camden et al., 1984, DePaolo, 2004; Iñigues et al., 2016, Levine and Schweitzer, 2015; Meltzer, 2003). Pro-social lying is intended to either protect interlocutors from insult and losing face (*white lies*), or to deceive an anti-social individual for the benefit of the group. Iñigues et al. (2016) show, with their agent-based model, that "while anti-social dishonesty … places strong constraints on the size and cohesion of social communities", pro-social lies "can prove to be beneficial in smoothing the flow of interactions and facilitating a larger, more integrated network" (p. 1). Levine and Schweitzer (2015) use large-scale, on-line trust games to show that "pro-social lies increase the willingness to pass money in the trust game, a behavioral measure of benevolence-based trust." In one of their experiments, participants "trusted counterparts more when the counterpart told them an altruistic lie than when the counterpart told the truth" (p. 102). Much of human communication, moreover, consists of what we may simply call *small lies* – little exaggerations, omissions, evasive framings and so on – which are very often intended to save face for the *speaker*, or avoid unnecessary conflict over trivialities. Small lying does not necessarily enhance social trust, but an impressive amount of it seems to be tolerable in human communication without serious detrimental implications. As Levine and Schweitzer (2015) show very persuasively, the effect of lying on social trust depends more on the others' evaluation of the speaker's intention than on the mere fact that the speaker lies. The real issue is what the others think the speaker is trying to achieve, and how what they think about it.

(ii) The fact that the effect of lying on social trust depends on the evaluation of intentions implies that things are more complicated than usually assumed even with respect to anti-social lying. When one individual lies to another with a clear intention to benefit at his or her expense, other members of the community may still accept it, and even encourage it, if the damage to the victim of lying serves their interests too. For a community to act against an exploitative liar, the lie should be perceived as damaging for the entire community, or at least as damaging for many others around the interlocutor. Even when they are small, communities are never totally homogenous: there are always power struggles between subgroups. As long as speakers lie in order to exploit members of other subgroups, in ways that benefit their own subgroup, they may expect support and protection from their allies. As Levine and Schweitzer (2015) put it, "individuals can place enormous trust in individuals who have demonstrated low integrity," as long as the lying is only directed at out-group members. Communication, moreover, does not only take place between individuals: communities lie to communities, subgroups lie to subgroups (Barnes, 1994), and communities also lie to themselves: social cohesion is very often supported by *collective lies* (Knight, 1998). For Knight, this is the real difference between humans and the other primates: "the key point … is that primates do not engage in collective deception. Humans by contrast deceive collectively, recurrently establishing group identity in the process … far from embodying self-evident truth, symbolic culture may be better understood as a world of *patent fictions* held collectively to be true on some deeper level" (pp. 76–7).

(iii) The conception of lying as a threat to language concentrates on the assertive speech act, i.e., the usage of language for the transfer of information about the world. Language, however, allows for a whole set of speech acts, each of which maintains a different relationship with co-operation and trust on the one hand, and factual veracity on the other. Promises, for example, seem to fit very well into the free-riding conception, probably much better than assertions: a promise creates strong factual expectations for the future, and if it turns out the promise was broken social trust does fracture. We intuitively think of the breaking of promises as a lie. Orders, on the other hand, are quite different. Ordering someone to perform a practical task, for example, does not as such carry a truth value, but it interestingly requires a truthful (even if not necessarily full) description of the task, otherwise the ordered party would not know what to do. This is so regardless of the overall pro-social or anti-social intentions of the ordering party. Unjust orders may indeed destroy social trust, because they burden the ordered party with more than his or her fair share of the work, or because the ordered party does not eventually get his or her share of the gains, but the domain of orders is much less complicated by the option of lying. Performatives, to take another example, which are obviously crucial in social life, do not describe the world but change it (Austin, 1962). We easily identify performatives that are performed with anti-social intentions, but these are not lies. Language is extremely useful in the coordination of collective work, collective defense and so on, where it is used not just for the exchange of information but also for collective planning, division of labor, ordering and requesting, where lying as such does not seem to play a major role.

Even in the very unlikely doomsday scenario, then, where all the members of a community lie to each other in their factual statements, and eventually refrain from sharing information with each other, there is no reason to assume that they would stop using language for all these other purposes, especially where their survival, whether they like it or not, depends on collective action. Language, once stabilized, would not crumble so easily.

(iv) Finally, and most importantly for our purposes, the conception of lying as a threat to language ignores the crucial fact that the capacities required for the different roles in the social lying game – the cognitive, emotional and social capacities involved in lying, lie-detection and enforcement – are not equally distributed within communities. They are highly *variable*.

To begin with, lying requires a whole array of cognitive and emotional capacities, beyond what it required for honest speaking, which are obviously not equally shared by all speakers (Vrij et al., 2011; Walczyk et al., 2014). Honest speakers communicate their own experiences, but liars have to *imagine* a fabricated experience and tell it. Speaking honestly is essentially an automatic process, but liars have to intentionally suppress what they would say had they been honest, and prevent it from penetrating their speech: *Freudian slips* are the prototypical example. Actual experiences, by definition, are always self-consistent, but liars have to make sure that their imagined experiences do not contradict themselves. They also have to be much more attentive to the reactions of their interlocutors, to assess their success and change tactics and contents in real time. They have to keep track of their lies and remember what they said to whom, in order to maintain consistency in future conversations and prevent semantic leakage. Liars have to monitor and control their behavior at the level experiential communication, and make sure that their voices, bodies and facial expressions do not betray their intentions. This requires high levels of emotional control. Finally, while deciding whether to speak honestly or not often requires some strategic calculation, deciding whether to lie or not is much more complex: it requires calculating the probability of detection, and the costs and benefits associated with successful or failed deception (Sakamoto et al., 2013). What all these requirements seem to have in common is the fact that they necessitate higher levels of activation of top-down, executive processes in the brain (Walczyk et al., 2014). This is confirmed by fMRI research (Spence et al., 2004): "truthful responding may comprise a relative 'baseline' in human cognition and communication. The subject who lies may necessarily engage 'higher' brain centers, consistent with a purpose or intention (to deceive) … a consistent finding has been that of increased activity in executive brain regions".[5] The option of strategic lying, then, is never open to all speakers in the same way: lying positions speakers along a long axis of variability, from the worst liars to the masters – imaginative, rigorous and emotionally-controlled individuals, with good memories and high levels of social sensitivity.

The capacities required for lie-detection, beyond the mere interpretation of an honest utterance, are as variable as those required for lying (Vrij et al., 2011). In many ways, the best lie-detectors are similar to the best liars (some of them are the best liars): their conversation style is characterized by high levels of what Sperber et al. (2010) call *epistemic vigilance*. They notice minute changes in the speakers' experiential behavior and language style, detect contradictions in the speaker's messages, keep track of former conversations, compare the speaker's assertions with their world knowledge, exercise emotional control and systematically calculate the speaker's intentions. Most importantly, they are masters of *argumentation* (Mercier and Sperber, 2011): they interrogate, refute and construct counter-arguments in the effort of deconstructing the lie and exposing the liar.

Finally, variability in social status heavily influences the capacity of individuals to lie and get away with it, or to recruit the community to punish others who lied to them (Barnes, 1994). Other things being equal, higher status guarantees more immunity and more control over the conversational dynamics. The effort of epistemic vigilance, in other words, pays more dividends when the liar's rank is lower than that of the lie detector. Cummins (1999) is the only study I know of that takes this foundational fact into account. In her experiments, "people were far more likely to look for cheaters when monitoring compliance of lower-ranking individuals on a social norm reasoning task than higher- or equal-ranking individuals … more cheater detection was observed when reasoners adopted a high-ranking than a low-ranking perspective." The options of strategic lying and strategic lie-detection, then, are variably distributed within the community: all the way from those who can take full advantage of the lie to those who find it very difficult and/or dangerous to even try; all the way from those who can easily detect a lie and punish the liar to those who find it very difficult and/or dangerous to even try.

What these four considerations amount to is this: the discourse on lying as a serious threat to linguistic communication seems to capture very well what is actually happening in a very specific scenario, in which an individual lies systematically, but not very successfully, to many people from his or her own community, including higher-ranking individuals, with exploitative intentions that go against the interests of major parts of the community. In this scenario, indeed, linguistic communication *with the liar* may eventually be terminated. Take each of these parameters out of the story, however, and things immediately become much more complex. Non-exploitative lying often enhances social trust; talented liars may

[5] This continues the pattern manifested by the apes, where neocortex size correlates with deception rate (Byrne and Corp, 2004).

safely deceive listeners with less talent for lie-detection, and undetected lying, whether we like it or not, does not fracture trust; lying across social boundaries is a major component of social struggle; lying down the social rank is a major tool of control; and linguistic communication is very often continued even when trust is broken: language is simply too valuable to give up on.

Instead of attempting to constrain the lie for the sake of language, then, it seems more realistic to assume that the lie was never seriously constrained, and try to understand how it must have actively participated in the evolution of language, speakers and communities. In the next two sections, I will try to make the first steps towards this goal.

6. The emergence of lying

In section (4), I suggested that the first explorations into the instruction of imagination must have taken place under conditions of epistemic dependency, where the immediate survival of both communicator and interlocutor depended on their ability to go beyond the functional envelope of experiential-mimetic communication. Under such conditions, deception attempts are highly unlikely. It stands to reason, then, that lying did not appear at the moment of origin (a very long moment, to be sure). When speakers started to instruct the others' imagination in more relaxed contexts, most importantly in social communication, honesty was no longer necessary. The urge to deceive was obviously already there, and so were the upgraded capacities required for *acting* (intentional mimetic deception). At some point, some of the more intelligent members of some ancient human communities must have realized that the new communicative function could also be used with deceptive intentions (exploitative or not).

When that began to happen we will never know, but one thing is clear: the fact that lying revolutionized deception does not mean that it was immediately very easy to do. Lying did not just require the capacities needed for experiential-mimetic deception, such as emotional control and the suppression of automatic, honest responses. It required another huge step up the ladder of imagination. Language as such has already presented individuals with an unprecedented challenge: listeners had to construct in their minds an imagined experience on the basis of the speaker's utterance, in isolation from real-time experience. As long as they were honest, however, individuals did not have to imagine in their role as speakers.[6] Lying, for the first time, required speakers to imagine too, to say something that from their experiential point of view was counterfactual. A new dimension of variability was created, from those who began to find ways to do this, to those who weren't even aware of the possibility. A parallel dimension was created on the receiving end, all the way from the first lie-detectors to those who found it very hard to interpret linguistic utterances in the first place, and could not cope with the additional level of deception.

The new dimensions of variability, then, must have gradually begun to re-arrange communicative relationships along new lines. Ignoring the social status factor for a moment, we may assume that in every round of a lying game, in which speaker S provided interlocutor I with a false piece of information, one of the following three schematic options had to be true: (i) S's capacity for lying exceeded I's capacity for lie-detection, in which case S was more likely to profit from lying than to get caught; (ii) I's capacity for lie-detection exceeded S's capacity for lying, in which case S was more likely to get caught; and (iii) the two were more or less equal in their respective capacities, in which case they had a similar chance of winning the round. If we now let everybody inform everybody else in the community, and position all the rounds on a simple graph such as Fig. 1, we can easily see the three options generalizing into three principled types of relations (the demarcating lines between the areas in Fig. 1 are there for demonstration purposes only; obviously, the three types of relations form a continuum).

In relationships of the A type, gifted liars could begin to build sustained relationships with individuals whose capacity for lie-detection was not up for the task. Such lying could be exploitative or not, but in both cases the relationships would be at least partially founded on undetected lying. Exploitative lying in this case could begin to develop into a systematic tool of sustained symbolic coercion. In relationships of the C type, efficient lie-detection would impose serious constraints on the deception capacities of inefficient liars. Rational speakers in this case would avoid lying, and irrational speakers would be easily caught and punished (if social conditions allow). High levels of honesty in linguistic communication could thus be maintained. In both cases, then, unequal capacities on the two sides of the communicative relationship would eventually form two types of relatively stable relationships. In relationships of type B, however, the struggle between equally-talented liars and lie-detectors would gradually develop into a full-fledged arms race. The liars would have to work harder, sophisticate their techniques, control themselves better, and develop new linguistic tools for manipulation. Lie-detectors would have to develop into better listeners at all the relevant levels. In this case, the levels of stability required for the transfer of information would probably be constantly fractured and rehabilitated, betrayed and strengthened.

If we now add the social dimension to all this, I believe we may finally come close to a realistic view of the dynamics of the emergence of lying. Other things being equal, higher-ranking speakers must have found it easier to establish symbolic coercion in A, win the struggles in B and get away with exploitative lying even when getting caught in C. Higher-ranking lie-detectors suffered less from the consequences of lying in A, won more struggles in B and found it easier to impose honesty in C (Cummins, 1999). Lower-ranking speakers must have gradually found it useful to produce white and small lies in their interactions with higher-ranking individuals, to protect themselves from the consequences of unpleasant truths. Alliances could

[6] There is a sense in which honest speakers do have to imagine, because speakers also have to listen to themselves and check whether what they said was what they wanted to say. Only lying, however, requires imagination for the construction of the message itself.

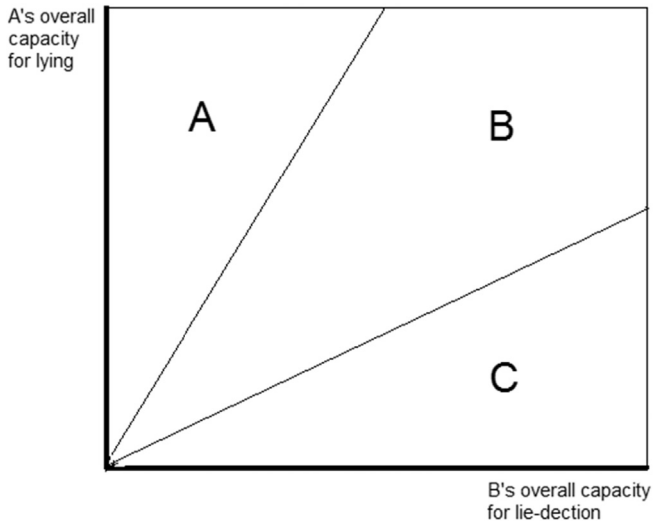

Fig. 1. Lying relationships between variably-gifted liars and lie-detectors.

begin to rely on the maintenance of higher levels of honesty within the group (especially with respect to information that is vital to survival of the group) and the parallel establishment of lying as a major tool against the others. Collective lies could begin to construct a new level of social identity (Knight, 1998). The problem of exploitative lying within the group could gradually become a moral issue.

From a certain point on, then, all this must have come to be entangled with the other evolutionary dynamics around language. In the next section, I will try to show how it contributed to the development of languages, societies and speakers. One additional point needs to be made, however, before we get there. It is sometimes assumed, implicitly more often than explicitly, that a dynamic of the type described above could not have begun in earnest as long as our ancestors lived in very small communities. Sterelny (2012), for example, says that "… detecting cheats in mass society is indeed cognitively difficult, for we will often be interacting with strangers. But in small-scale, intimate social worlds, our ancestors were awash with information about one another … It is hard to keep a secret in a village. In small-scale social worlds, the problem is not detecting cheats; the problem is controlling them, for effective sanctions are rarely free" (p. 102). We will obviously never know, but I believe there is good reason to believe that efficient lying did not have to wait for mass society.

The ancient communities in which language itself first emerged were in all probability already larger than the bands of the apes, which are rarely larger than 80 individuals. Robin Dunbar and his colleagues estimate that these communities included around 150 individuals (Dunber, 1998, 2004, 2009; Gowlet et al., 2012; Iñigues et al., 2016). They were already dependent on complex networks of co-operation and division of labor, which required high levels of specialization. As Sterelny himself shows, only "larger groups can afford to support specialization; smaller groups cannot" (p. 59). For Dunbar, this rise in group size was the main driving force for the emergence of language, because group cohesion could no longer be maintained by grooming. As Gowlet et al. (2012) make clear, however, the issue was not just the rise in the number of individuals: importantly, it also had to do with the fact that all the members of the community were "rarely together in one place in one time … at any given moment the community (was) dispersed into subgroups of varying size that forage and rest independently of each other" (p. 698). The dispersed nature of the community forced individuals to "think about absent individuals and their potential influence" (p. 697), which required a new system for the communication of information about people in their absence: language thus evolved to allow for gossip as a tool for the controlling of free-riding (Dunbar, 2004). Two points, then, are crucial. First, for every individual in such a dispersed community, there were always some others who were at least half-strangers: people with whom the individual did not have close experiential relationships. In the terms of Anderson (1983), these ancient human communities were already (at least partially) *imagined communities* (cf. Dor, to appear).[7] Second, gossip was indeed the main tool for the dissemination of the types of information required for such imagining, but it probably worked both ways from the very beginning – as a tool for the controlling of free-riding as well as a tool of free-riding. Distinguishing honest from deceitful gossip is far from easy, even in small communities. I don't see a good reason to assume that lying didn't start there.

[7] Strangers may also arrive from the outside, through migration, at least for the maintenance of *exogamy*. Most of the formal models in the literature on lying and evolution of language assume little migration, but as Boyd et al. (2003) indicate, "when the migration rate increases, levels of co-operation fall precipitously" (p. 3533). It should be noted, though, that individual migration for mating creates a complex situation, where the migrating individual could lie more easily on issues outside his or her new community, but would also have to work hard to be accepted into the inside discourse.

It is also important to remember, however, that even if it turns out that language began to be used as a tool for systematic deception at a later point in its evolution, this would have no substantial implications for the line of argumentation presented in this paper. It is possible, for example, that for a certain amount of time after the invention of language, the capacity for imagination of the best speakers was not sufficient for the construction or the understanding of a counter-factual message. Breaking away from the confines of actual experience could not have been easy. But in this scenario, lying was not a problem as long as it wasn't there, and when the usage of language for honest purposes eventually pushed the capacity for imagination, in the best speakers, beyond a certain point, lying appeared and began to participate in all the relevant evolutionary dynamics.

7. The co-evolution of lying, language, speakers and communities

In section (4), I described a co-evolutionary dynamic in which, following the stabilization of the first prototype(s) of the new technology, language, speakers and communities gradually pushed each other forward towards their present state: language was gradually developed at the collective level, constantly raising the overall efficiency of imagination-instruction; the growing success of the new communicative strategy changed social life and deepened the reliance of communities on language; speakers were gradually selected for their capacity to join the linguistic game; later generations developed the technology further, and so on and so forth. The entire line of argumentation presented in this paper implies that in this complex dynamic, language, speakers and communities evolved for lying, and because *of* lying, just as much as they evolved for and because of honest communication. This is evidenced at all the relevant levels:

(a) Language itself, and linguistic communication, would probably not be as complex as they are if it weren't for lying. The arms race that was launched at the beginning between the best liars and the best lie-detectors eventually created entire layers of complexity that would probably not be necessary otherwise. We are used to thinking about the linguistic tools of *rhetoric* as means of persuasion, but in a parallel universe, where linguistic communication would be an essentially honest affair, both the goals and means of persuasion would be very different. Honest differences of opinion would still need to be negotiated, but without the ever-growing need to find new ways to outsmart increasingly sophisticated lie-detectors in the attempt to sell increasingly complex lies, the subtle means of rhetorical manipulation that language as we know it allows for would be neither required nor possible. The language-based capacities of *critical interrogation*, with their heavy reliance on logical analysis, would still be needed in this parallel universe, for the correction of honest mistakes and the negotiation of honest disagreements, but without the constant pressure to find new ways to detect and counter increasingly sophisticated lies they would probably not shape language and linguistic communication the way they eventually did. And consider the complex forms of *politeness* conventionalized in the languages of the world (Levinson and Brown, 1987): in our parallel universe, insult would shape social relations in very different ways. The very fact that forms of politeness are so heavily conventionalized may actually testify to their origins in the first attempts to lie in order to avoid conflict. Coming up with a creative lie on the spot, while suppressing the urge to say something honest and damaging, is a very difficult challenge. Fixed expressions, that are mutually-identified by the community as tokens of politeness, allow for a much easier way to meet the same goal.

Even the fact that languages and dialects are so different from each other may be causally related to lying. Fitch (2004) notes "the otherwise curious fact, that language seems more complex than necessary for communication, in the sense that our ability to recognize regional or class dialects far exceeds the needs of semantic communication" (p. 290). He suggests that language evolved as a system for the sharing of vital information among kin, which means that early speakers had to develop ways to distinguish between their trustworthy relatives, including their distant relatives, with whom they could share, and everybody else who should have been considered a potential free-rider. Acquiring a particular accent at an early age, and keeping it for life, "could provide a reasonably reliable (though not perfect) marker of distant kinship and thus help circumvent the free-rider problem" (p. 291). I certainly agree that much of the complexity of languages at the sound (and sign) level is there for the marking of identity. But the fact that languages and dialects (even close ones) are as different from each other as they are seems to testify not to a simple binary distinction between kin and non-kin, or more generally between community members and strangers, but to a never-ending struggle over these boundaries, in which individuals also (sometimes) lie to their relatives (with exploitative intentions) and tell the truth to strangers, and communities invest collective energies in the attempt to minimize both by clarifying the boundaries.

(b) If it weren't for lying, human societies and human relationships the way we know them could not have evolved. The claim that lying plays a crucial role in modern societies needs no elaborate justification, but as the ethnographic literature begins to show, in direct opposition to the assumption implicit in much of the language evolution literature, relationships within small, traditional societies are also far from being based on honesty and trust. In many societies in the pacific and elsewhere, for example, people subscribe to the doctrine of the *opacity of other minds*, the idea that "it is impossible or at least extremely difficult to know what other people think or feel" (Robbins and Rumsey, 2008, 407–8). As Rumsey (2013) makes clear, the doctrine "is not just about opacity per se, but about *deceit* as a prevalent human

disposition through which the opacity is produced and maintained" p. 337. Gilsenan (1976), quoted in Umbers (to appear), describes a Lebanese village society as based on the dictum that 'everything is *kizb* (lying)'. Danziger (2005) analyses the Mopan Maya's strict ideological view of lying, in which the intentions of the speaker do not count: false statements are categorized as lies even if the speaker made an honest mistake. The Mopan believe that false statements as such undermine the order of the universe, hold speakers responsible of the truth even if they only report what other people have said, and frown upon guessing. None of this, however, implies that the Mopan are exceptionally honest: "not only is verbal deception a fact among the Mopan … the suspicion of it is widespread" (p. 268).

It is fascinating to see, moreover, that as part of their struggle against deception, the Mopan seem to have placed a ban on all forms of imagination, including all those that other societies consider appropriate. They forbid children from playing pretend-games, the genre of fiction does not exist, and while they enjoy verbal puns they forbid jokes that tell patently false stories. Most significantly, "traditional Mopan theatrical dances oblige performers to adopt the personae of deer, jaguar and monkey. But Mopan do not talk about these things as cases of metaphoric or symbolic representation … the dancers really are deer. Supernatural consequences attend to this fact" (p. 272). In a parallel universe, where linguistic communication would be essentially honest, all these cultural functions of imagination would not need to be banned: they would simply not exist. Language would only be used for the instruction of the imagination of the others with respect to *facts*. Symbolic culture as we know it would not evolve. There would be no myths, no collective lies, no symbolic performances, no fairytales, no jokes. As Knight (1998) puts it, "an ability to handle fictional representations …is the essence of human symbolic competence".

(c) Finally, if it weren't for lying, some of the unique characteristics of individual human cognition would never evolve. After all, the main difference between ape ToM and human ToM is the capacity to understand false belief (Baron-Cohen et al., 1985, Perner et al., 1987, Call and Tomasello, 1999, Baillargeon et al., 2010, Atance et al., 2010, but also see Krupenye et al., 2016). Interestingly, most of the research on false belief in humans used an experimental paradigm involving the understanding of honestly-mistaken beliefs, not false beliefs expressed with deceptive intentions. It is hard to see, however, how the need to detect the honest mistakes of the others could exert the type of selection pressure on human cognition that is required for the accommodation of this unique capacity that separates us from the apes. Understanding false beliefs in honest communication, moreover, is mainly a challenge for interlocutors. In lying, it is also a major challenge for speakers: they have to construct false beliefs in order to express them. If we let lying participate (together with honest communication) in the construction of the selective environment for individuals in the course of language evolution, we may come closer to an explanation. The same argument holds of Sperber et al.'s (2010) insight that some of the uniquely-human properties of reasoning emerged for argumentative communication, to allow epistemically vigilant speakers to detect misinformation. If we agree that the need to detect misinformation is much more pressing in the case of lying than in the case of honest mistakes, and that the relevant tools of reasoning serve liars just as much as they serve lie-detectors, we may begin to see how the arms race of lying must have pressured human cognitions to gradually accommodate themselves and develop the capacities required. In terms of the social brain hypothesis, if "the cognitive demands of gossip are the very reason why such large brains evolved in the human lineage" (Dunbar, 2004, 109), then the acknowledgment that gossip has always been a two-edged sword – honest and deceitful, stabilizing and destabilizing – and that distinguishing between truthful and deceitful gossip has always been the most difficult cognitive challenge, takes us closer to an understanding of the selection pressures underlying the emergence of the large human brain.

All this should be enough to show the effect of lying on the evolution of our cognitions, but for me, the most significant contribution of the lie to the evolution of human cognition has to do with our capacity for imagination. As I suggested above, language itself revolutionized human imagination, because for the first time, it required interlocutors to imagine the intended meaning of the utterance – to let the utterance instruct them in the process of calculating the intersections between their own experiences to construct an imagined experience. In a parallel universe, where language would be mainly used for honest communication, the pressure to constantly develop the capacity of imagination would still be there, but it would not be as strong. First, speakers would only describe what they actually experienced, which means that the range of possible meanings that their interlocutors would have to decipher and imagine would be narrower, and much of it would also be more familiar, and thus easier to imagine. Second, as long as the instruction of imagination is done with honest intentions, only the interlocutors are forced to imagine. Speakers do not have to. They may imagine for the sake of planning and then describe their conclusions, but lying is the only function of language that requires a serious effort of imagining-for-speaking. Throughout the evolutionary process, then, every minute advance in the capacity for imagination improved individuals' performance both as lie-detectors and as liars. As both sides of the lying arms race consistently improved their performance, the selection pressure for better imagination remained constant throughout. We would not be as imaginative as we are if it weren't for the lie.

The tight relationship between lying and imagination shows itself very clearly in *autism spectrum disorders* (ASD). First, as opposed to typically developing children, who usually master the capacity for lying by the age of four (Lee, 2013), children

with ASD find it much more difficult both to tell lies and understand them (Barrett et al., 2004, Li et al., 2011, Yi et al., 2014). In some cases, explicitly teaching the children to lie seems to improve performance to a certain extent (Ranick et al., 2013). Higher functioning children with ASD sometimes learn to tell very simple lies, both anti-social and white, but fail to prevent semantic leakage in later conversations (Li et al., 2011). As Yi et al. (2014) show, children on the spectrum do not "generalize their distrust of a previously untrustworthy person to a new situation, as if with a change of setting, an originally untrustworthy person would become trustworthy again" (p. 1752). Second, while children and adults with ASD are definitely better than previously assumed in *spontaneous imagination* of the type required for artistic work (Alderson, 2011), they clearly have serious difficulties in using imagination in social and communicative settings (Low et al., 2009). They find it hard to elaborate a story on the basis of an imaginary theme (Craig and Baron-Cohen, 1999, 2000) and to participate in imagination-based pretend-games (Wolfberg, 2009). In a fascinating paper, Barnes (2012) compares the reading preferences of highly-functioning adults with ASD to those of adults without ASD. While the latter showed preference for stories with social content, but did not care whether the stories were fictional or real, the adults with ASD did not care whether the stories had social content in them, but clearly preferred non-fiction. More than anything else, they enjoyed "encyclopedia entries about objects" (p. 312). From the point of view developed in this paper, this correlation is far from accidental: lying and imagination are co-dependent, both in ontogeny and phylogeny.

8. Conclusion

In this paper, I suggested that the theory of language developed in Dor (2015) allows for a new understanding of the role of lying in the evolution of language. Language is a collectively-designed communication technology, specifically constructed for the instruction of imagination: it allows speakers to communicate directly with their interlocutors' imagination. The emergence of this communicative strategy, following the stabilization of mimetic communication, revolutionized honest communication – but it did even more for deception. For the first time, deceptive communicators no longer needed to find ways to provide their interlocutors with false experiences to perceive, and interlocutors could no longer experientially verify what they received in real time. It may have taken lying some time to appear after the stabilization of the first prototypes of language, but once it did it could not be constrained. Language, however, did not collapse. The levels of trust it required were sometimes maintained by lying, as a new tool for the management of social relationships, and sometimes despite the lie. The new capacities (both cognitive and emotional) required for lying and for lie-detection, way and above what was required for honest speaking and understanding, were highly variable from the very beginning. Together with social variability, this variability created the uniquely-complex character of human sociality, in which some relations are founded on lying, others on honesty (coerced or not), and all the rest are constantly locked in the struggle between lying and its detection and punishment. Throughout the evolutionary process, the reality of lying was an integral part of the selection environment for both language and its speakers. Language would be much simpler had it evolved just for honest communication, and we would be much less imaginative, suspicious and inquisitive, and emotionally-controlled. We would probably have very little symbolic culture, no myths, no propaganda, and we would also probably insult each other much more often.

In his analysis of deception as social agency, Umbres (to appear) claims that the emphasis in the current literature on the shared and co-operative aspects of society may have overshadowed the foundational role of lying as a form of social agency:

> "Few scholars if any would disagree with the fact that deception is a form of social agency, yet it is conspicuously absent or undervalued in major works in the philosophy and psychology of social agency. As illuminating as they are, developments in the burgeoning field of studies and theoretical proposals dealing with shared agency might suggest an unwarranted identity between "shared" and "social" agency by overlooking a vast realm of sociality" (p. 224).

I think this is just right. There is no doubt that the major story in human evolution is that of the emergence of inter-subjective co-operation as a new organizing principle, but the story is not as simple and linear as the literature often assumes. It is dialectic. As Sterelny (2012) puts it, humans "are contingent, judicious, and wary cooperators" (p. 101). Every advance in the collective capacity for sharing, and the emergence of language more than everything else, brought with it new opportunities for free-riding, manipulation and coercion. Humanity as we know it evolved from the never-ending struggle between these two foundational forces.

Acknowledgements

I would like to thank the editors, the anonymous reviewers, Eva Jablonka, Oren Harman, Nick Evans and Nick Enfield for their comments and suggestions.

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