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The Two Sides of Mimesis

*Girard's Mimetic Theory, Embodied Simulation
and Social Identification*

Abstract: *Crucial in Girard's Mimetic Theory is the notion of mimetic desire, viewed as appropriative mimicry, the main source of aggressiveness and violence characterizing our species. The intrinsic value of the objects of our desire is not as relevant as the fact that the very same objects are the targets of others' desire. One could in principle object against such apparently negative and one-sided view of mankind, in general, and of mimesis, in particular. However, such argument would misrepresent Girard's thought. Girard himself acknowledged that mimetic desire is also good in itself, because is at the basis of love, and even more importantly because it's the opening out of oneself. Starting from the notion of desire as openness to others I will discuss from a neuroscientific perspective the implications for social cognition of mimesis against the background of Girard's Mimetic Theory, an ideal starting framework to foster a multi-disciplinary approach to the study of human intersubjectivity. It will be posited that a different, not mutually exclusive, account of mimesis leads to social identification henceforth to sociality. Mimesis is neither good or bad, but has the potentials to lead not only to mimetic violence but also to the most creative aspects of human cognition. Results of empirical research in neuroscience and developmental psychology show that such account of mimesis finds solid supporting evidence. It will be concluded that a thorough and biologically plausible account of human intersubjectivity requires the integration of both sides of mimesis.*

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Journal of Consciousness Studies, **16**, No. 4, 2009, pp. ??-??

Introduction

René Girard (b. 1923), French literary critic and anthropologist, has provided us with an incredibly rich, and thought-provoking theory of human culture: Mimetic Theory. What is most fascinating in Girard's Mimetic Theory is its broad and bold scope. According to Girard, human culture sits on the shoulder of religion, which, in turn, stems from the ritualization of social violence through the mechanism of scapegoating. As Girard wrote in *Violence and the Sacred* (1977, p. 310), 'My theory is the first to offer an explanation of the primordial role that religion plays in primitive societies, as well as of man's ignorance of this role'.

Crucial in Girard's theory is the notion of *mimetic desire*, as the main source of aggressiveness and violence characterizing our species. In *Mimesis and Violence* (1979, p. 10) Girard writes: 'It seems to me that a theory of conflict based primarily on appropriative mimicry does not have the drawbacks of one based on scarcity [of resources] or on aggressiveness; if it is correctly conceived and formulated it throws a great deal of light on much human culture, beginning with religious institutions'.

What is the *appropriative mimicry* Girard refers to, and where does it come from? It is the compulsive tendency of mankind to imitate others' desires, so that what is really desired and sought for is whatever is desired and sought for by others. The intrinsic value of the objects of our desire is not as relevant as the fact that the very same objects are the targets of others' desire. To further spell it with Girard's own words, '... violence is the process itself when two or more partners try to prevent one another from appropriating the object they all desire through physical or other means' (1979, p. 9).

The novelty of Girard's approach with respect to more traditional accounts of human violence is worth noting. Girard (1977) is very clear in drawing a distinction between desire and appetite. While the latter is the outcome of instinctual drives, the former, typically, not only requires an object, but also another individual, the model or mediator. Mimetic Theory therefore proposes itself as a key option to solve the problem¹ of social cognition.

An objection could in principle be raised against the apparently negative and one-sided view of mankind, in general, and of mimesis,

[1] As it will become clearer as the paper develops, social cognition is indeed a *problem* because divergent explanations are currently proposed both at the theoretical level by philosophy of mind and cognitive science and at the level of the functional mechanisms supposedly underpinning it by cognitive neuroscience.

in particular, stemming from Girard's theory. Aren't human beings, after all, equally describable as empathic creatures, capable of fellow feelings, love, and altruism? Furthermore, one could argue that mimesis not only generates violence, but also art, culture and creativity.

However, although there is no doubt that Girard's emphasis is mostly on human violence, the above-mentioned arguments would unfairly misrepresent Girard's thought. Girard acknowledged in his work, though perhaps with less emphasis, that mimetic desire is also good in itself, because it is the basis of love, viewed as the imitation of a positive model (see Girard, 1993). Even more importantly, in my opinion, Girard stresses, '... mimetic desire, even when bad, is intrinsically good, in the sense that far from being merely imitative in a small sense, it's the opening out of oneself' (1993, p. 24).

It is from this point — the notion of desire as openness... to others — that I would like to start discussing some of the implications of the notion of mimesis against the background of Girard's Mimetic Theory. I will do so in order to show how empirical research in neuroscience and developmental psychology can shed new light on intersubjectivity, a crucial aspect of the human condition. Girard's Mimetic Theory constitutes an ideal starting framework to foster a multidisciplinary approach to this crucial topic.

Capitalizing upon aspects of the work of Alexandre Kojève, Martin Heidegger, and Helmuth Plessner, I will first illustrate how we can envisage a different, complementary, not mutually exclusive account of mimesis as one of the driving forces leading to social identification, hence to human sociality and intersubjectivity. I will subsequently present a concise survey of empirical research in neuroscience and developmental psychology showing that this account of mimesis finds solid supporting evidence. A neuroscientifically-based model of intersubjectivity, the shared manifold of intersubjectivity and its underpinning functional mechanism, embodied simulation (Gallese, 2005; 2007; 2009), will be discussed in relation to social identification and mutual recognition.

I will argue that social cognition must not be uniquely conceived of as metacognition relying on the use of the propositional attitudes of folk psychology. I will argue that folk psychology is not the sole account of interpersonal understanding. Perhaps not even the most relevant. Before and below metarepresentational mind reading is intercorporeity — the mutual resonance of intentionally meaningful sensory-motor behaviours — as the main source of knowledge we directly gather about others (Gallese, 2007; 2009).

Intercorporeity describes a crucial aspect of intersubjectivity not because the latter is to be viewed as phylogenetically and ontogenetically grounded on a merely perceived similarity between our body and the body of others. Intercorporeity describes a crucial aspect of intersubjectivity because humans share the same intentional objects and their *situated* motor systems are similarly wired to accomplish similar basic goals. Before and below our theoretical take on the world is the pragmatic character of our openness to the world (Gallese, 2007; 2009; Gallese *et al.* 2009). I will argue that human beings are primarily wired to identify with each other and that such process of identification can be neurally grounded since the discovery of mirror neurons and other mirroring neural mechanisms.

Finally, capitalizing upon the empirical evidence here reviewed, I will come back to Girard's notion of mimetic desire, and propose that such notion can fully exploit its heuristic value only by taking into account the fact that the primary object of desire is the Other. It will be concluded that a thorough and biologically plausible account of human social cognition requires the integration of both sides of mimesis.

Mimetic Theory, Desire, the Body and the Other

Alexandre Kojève (1902–1968) can be viewed as an anticipator of the notion of mimetic desire. In his *Introduction to the Reading of Hegel* (1947) he introduces the notion of the 'desiring I' as a void to be filled by the positive content stemming from the action that by negating and destroying the desired non-Self, assimilates it. Eating to satisfy hunger is one example of this type of Self-non-Self interaction. This condition, though, is not uniquely human, but shared with the animal world.

Human desire, though, can exist as such only within a plurality of other desires, that is, within a society of desiring human beings. In fact, when desire is targeting real material objects, it is *human* only to the extent that is *mediated* by the desire of others targeting the same object. Kojève writes: 'It is human to desire what others desire because they desire it' (1947; 1996 Italian translation, p. 20). In Kojève's view, human history is the history of desired desires.

Besides noticing the proximity of this view with Girard's notion of mimetic desire, I think it is important to stress that according to Kojève, the desire that defines the human condition is the desire directed towards another desire. It is only through this type of interaction that self-consciousness can be achieved. In fact the object of this

type of desire is non-natural, because this object, another desire, or better, the desire of someone else, is different from any material thing. A desire before its fulfillment is an oxymoron, nothing but the presence of an absence of reality.

The desire of being the target of others' desire becomes one of the distinctive features of the extreme alterity of humanity from nature and vitality, one of the main themes of Kojève's phenomenological anthropology. To desire another's desire, to be the target of others' desire, means to gain *social recognition*.

It does not interest us here where this notion of desire led Kojève to. What is important for our discussion of mimesis and mimetic desire is the fact that the plurality of humans' mimetic desires is strictly intertwined with the issue of social identification and recognition (for a recent discussion of social recognition, see Honneth, 2005).

This issue surfaces different times in western philosophical thought at the beginning of the twentieth century, and, notably among others, in the work of Martin Heidegger (1925; 1927; 1929; 2002) and Helmuth Plessner (1928). Both philosophers, although starting from different premises, underline the pragmatic nature of human condition and criticize the subject-object dichotomy of traditional ontology.

For Heidegger the facticity of human existence (2002) shapes reality as a field of pragmatic meanings (1925; 1927; 1929). Our relation to the world of things and other individuals is pre-theoretical, as it stems from an original openness to the world, synthesized within the notion of *cure* (*Sorge*), literally, taking care of (1927). The peculiar condition of human nature, according to Heidegger, can be characterized as being-in-the-world, that is, being inherently related to the world through our original being emotionally situated, expressed by his notion of *Befindlichkeit* (1927). Our comprehension of reality always bears an emotional situated character, and it is a precondition for any detached, abstract theoretical analysis of the world, which thus acquires a secondary and derived character. The intrinsic historical dimension of mankind with its constitutive projection into an open and problematic future imposes to man to reduce the number of possible decisions by relying on what others decide for us within the frame of consolidated social habits (1927).

Particularly pertinent is also the position of Helmuth Plessner (1989–1985) on the role of the body in intersubjectivity. According to Plessner (1928/1965) human beings, at difference from other animals are *eccentrically positioned* because they not only *are* a body but they also *possess* it. Such eccentrical position qualifies human relation with himself as well as that with others, and in doing so enables to go

beyond the Cartesian dualism between body and soul. Man is not only at the center of things, seen from a *hic et nunc* egocentric perspective, as animals are. Man entertains at the same time a reciprocal bond with himself and with others.

Plessner's take on intersubjectivity stems from this peculiar view on human eccentric positionality. In Plessner's view, the constitution of the *I* within a given body is anticipated and predetermined by the dimension of the *Thou* and of the *We*. Man's knowledge of neither being just a thing among other things, nor alone in the world but connected to a social community of other human beings is not the outcome of an act of projection outside his life form, but springs from the intrinsic reality of human existence. In other words, intersubjectivity is a constitutive and fundamental element of the human condition.

This brief and sketchy overview suggests a tight relationship between human sociality and the natural and intrinsic pragmatic relatedness we entertain with the world, on the one hand, and our constitutive — ontological — relatedness to others, on the other. In the next sections we will explore what contemporary neuroscience and developmental psychology have to say on these matters.

An Epistemological Overture: Of Neurons and Persons

Before addressing these topics we should first ask — and possibly answer to — a preliminary epistemological question: how can possibly neuroscience shed light on personal-level issues given its peculiar epistemological approach consisting of a sub-personal level of description?

The standard approach of contemporary neuroscience to the problem of social cognition is indeed exposed to what Bennett and Hacker (2003) defined as the 'mereological fallacy', that is, to attribute to one part of a living organism — e.g. the functional properties of the nervous system — characteristics that are proper of the entire organism as a whole. Mentalization and intersubjectivity are competences uniquely describable at the personal level, and therefore not entirely reducible to the sub-personal activation of neural networks in the brain, hypothetically specialized in mind reading, as too many neuroscientists nowadays think. Neurons are not epistemic agents (Gallese, 2007). The only things neurons 'know' about the world are the ions constantly flowing through their membranes. In contrast, mentalization and intersubjectivity are personal-level properties of individuals. We could tentatively define individuals as interconnected

brain-body systems interacting in situated way with a specific environment — our *Umwelt* — inhabited by other brain-body systems.

To make things worse, such epistemological attitude is often combined with a blind reliance on brain imaging techniques like fMRI as the sole method of investigation. This appears to be a highly risky enterprise. fMRI, if not supported by a detailed phenomenological analysis of the investigated perceptive, motor, and cognitive processes, and if not interpreted on the basis of the direct study of the activity of single neurons in the animal model, loses much of its heuristic power. The heuristic power of this approach is further reduced by the instrumental use of empirical data to validate a preconceived model of the mind, considered true a priori. Such model, most of the time, is the one proposed by classic cognitive science, according to which social cognition only consists of metacognition and the use of the propositional attitudes of Folk Psychology. It is highly questionable that this model fully captures the real essence and functional architecture of the human mind.

That said, we must stress that the solution to the mereological fallacy cannot consist in an undifferentiated form of holism. Rather, by means of a careful empirical analysis of the sub-personal mechanisms investigated by neuroscience we can discover the multilayered character of the experience we make of the world. Even if such layers as clarified by neuroscience do not fully exhaust this experience, they enable a description of its genesis and structure. These data, in turn, can fuel and promote a renewed philosophical analysis. This is one of the main reasons why I think that a dialogue between cognitive neuroscience and philosophy is not only desirable but also necessary.

Where Does Mimesis Come From? Neuroscientific Evidence

One of the cornerstones of Girard's Mimetic Theory is the triangular relation between two individuals and the object of their acquisitive desire. How does each protagonist of this triangular relation understand that the 'other' also wants the same object? What are the mechanisms enabling appropriative mimesis? How can each of the human vertexes of the Girardian mimetic triangle realize that the object, the third vertex, is target of the other's purposeful action? The same question can be reformulated in the following way: how do people understand the goals and intentions of the actions of others?

We are now starting to understand what are the neural mechanisms enabling this peculiar quality of human nature. In the early nineties of last century a new class of premotor neurons was discovered in the

pre-motor cortex of the macaque monkey brain. These neurons were defined ‘mirror neurons’ (Gallese *et al.*, 1996; Rizzolatti *et al.*, 1996). Mirror neurons fire both when the monkey performs goal-directed motor acts like grasping objects with the hand and/or the mouth, and when it observes similar acts performed by others. It was proposed that through the activation of these neurons a direct form of action understanding is accomplished. The observed behaviour is pre-reflexively understood because it is constituted as a goal-directed motor act in virtue of the activation in the observer’s brain of the neurons presiding over the motor accomplishment of similar goals.

This account of action understanding is further corroborated by a recent discovery: the motor system of primates is functionally organized in terms of goal-directed motor acts, and not in terms of movements. In a recent study by Umiltà *et al.* (2008) hand-related neurons were recorded from premotor area F5 and the primary motor cortex (area F1) in monkeys trained to grasp objects using two different tools: ‘normal pliers’ and ‘reverse pliers’. These tools require opposite movements to grasp an object: With normal pliers the hand has to be first opened and then closed, as when grasping is executed with the bare hand, whereas with reverse pliers, the hand has to be first closed and then opened. The use of the two tools enabled the dissociation of neural activity related to hand movement from that related to the goal of the motor act.

All tested neurons in area F5 and half of neurons recorded from the primary motor cortex discharged in relation to the accomplishment of the goal of grasping — when the tool closed on the object — regardless of whether in this phase the hand opened or closed, that is, regardless of the movements employed to accomplish the goal. Since mirror neurons share this property with all other F5 grasping-related neurons, they can directly map others’ behaviour in terms of goal-related motor acts. That considered, it appears that goal coding is first and foremost not an abstract, mentalist and experience-independent property, but a distinctive functional feature upon which the cortical motor system of non-human primates is organized. Goal-directed motor acts are the nuclear building blocks around which action is produced, perceived, and understood (Gallese *et al.*, 2009).

After the discovery of mirror neurons in the macaque monkey brain, several studies using different experimental methodologies and techniques have demonstrated that also in the human brain the neural circuits underpinning action execution directly map its perception when executed by others. These parieto-pre-motor cortical networks are defined as the Mirror Neuron System (MNS; for reviews see

Rizzolatti *et al.*, 2001; Gallese, 2003; 2005; 2006; Gallese *et al.*, 2004; 2009; Rizzolatti and Craighero, 2004).

During action observation there is a strong activation of premotor and posterior parietal areas, the likely human homologue of the monkey areas in which mirror neurons were discovered and described. The MNS for actions in humans is somatotopically organized, with distinct cortical regions within the premotor and posterior parietal cortices being activated by the observation/execution of mouth, hand, and foot related acts.

Even more relevant to our discussion of mimesis is the discovery that the MNS in humans is directly involved in imitation of simple movements (Iacoboni *et al.*, 1999; 2001; Nishitani & Hari, 2000; 2002), and in the imitation learning of complex skills (Buccino *et al.*, 2004a; Vogt *et al.*, 2007).² Many interesting phenomena described by social psychologists, like the ‘chameleon effect’ — the unconscious mimicry by the observer of postures, expressions, and behaviours of her/his social partners (Chartrand and Bargh, 1999) — with the MNS can find a neurophysiological explanation. It is worth noting that these instantiations of unconscious mimesis all share a pro-social character, because their occurrence tends to increase during social interactions with affiliative purposes.

Also the perception of communicative actions (Buccino *et al.*, 2004b), and the detection of basic action intentions (Iacoboni *et al.*, 2005; Buccino *et al.*, 2007) activate the MNS. Furthermore, the premotor cortex containing the MNS is involved in processing action-related words and sentences (for review, see Gallese, 2007; 2008), suggesting that the MNS together with other parts of the sensory-motor system indeed plays a relevant role in language semantics (see Pulvermüller, 2002; Gallese and Lakoff, 2005; Gallese, 2007; 2008).

In sum, the MNS is a good candidate for the sub-personal instantiation of what enables appropriative mimesis. This, however, is only one side of mimesis. As I have argued before, another important aspect of mimesis is that of enabling social identification and mutual recognition. To that purpose a mechanism capable of mapping actions and intentions, though highly relevant, wouldn’t suffice. There are other dimensions to be mapped before the status of ‘another Self’ can be attributed to others. These dimensions encompass emotions and sensations. The news is that also emotions and sensations appear to be

[2] In Theodore Lipps (1903) we find a first suggested relation between mimesis — conceived as ‘inner imitation’ (*Innere Nachahmung*, in Lipps’ words) — and the capacity of understanding others by ascribing them feelings, emotions and thoughts.

mapped according to the same resonance mechanisms already addressed for the domain of action.

In fact, other mirroring mechanisms seem to be involved with our capacity to share emotions and sensations with others (Gallese, 2001; 2003; 2006; de Vignemont and Singer, 2006; Sommerville and Decety, 2006). When perceiving others expressing emotions by means of their facial mimicry, the observers' facial muscles activate in a congruent manner, with intensity proportional to their empathic nature. Both observation and imitation of the facial expression of emotions activate the same restricted group of brain structures, including the ventral premotor cortex, the insula and the amygdala.

Finally, in an fMRI study the issue of how the I–Thou experience of a particular emotion is mapped in the human brain was specifically addressed. To that purpose, the brain activity of healthy participants was investigated during the phenomenal experience of disgust, by having them inhaling disgusting odorants. The same participants in the same experiment were also brain scanned during the observation of disgust as displayed in video clips of other individuals dynamically expressing it with their facial expression. The results showed that witnessing the facial expression of disgust of others activates the left anterior insula at the same location activated by the first-person subjective experience of disgust (Wicker *et al.*, 2003).

The production and perception of emotion-related facial expressions or body postures, both impinge upon common neural structures related to visceromotor, somatomotor and affective aspects of the emotion experience. It appears therefore that there is a we-centric dimension in the experience of a given emotional/affective state, and that it is underpinned by the activity of a common neural substrate.

When we witness a given facial expression, and comprehend that expression as characterized by a particular emotional state, we do not accomplish this type of comprehension through explicit inference from analogy. The other's emotion is first constituted and directly understood by means of embodied simulation producing an 'as-if' experience engendered by a shared body state. It is the body state shared by the observer and the observed to enable direct understanding.

This view appears to be congruent with the perspective proposed by Mead (1934), and more recently by Paul Dumouchel (1995), which considers emotions primarily from the output or expressive side. As argued by Dumouchel (1995), the universality of emotions resides in the universality of the social bonds they help constituting. According to Dumouchel (1995) being in a given emotional state (say, being angry at someone) is not an intrinsic psychological property of a

subject, but the relational property of an individual within a given social context. This means that the expression of emotions constitutes a system of social communication with the main purpose of facilitating social coordination. Facial and bodily movements reveal preferences about available behavioural options.

Similar direct mapping mechanisms have been described for the perception of pain and touch (see Gallese, 2006). These results altogether suggest that the same neural circuits underpinning our own actions, intentions, emotions and sensations also underpin our capacity to recognize and identify with the actions, intentions, emotions and sensations of others. Recent studies suggest that these mechanisms could be deficient in individuals affected by the Autistic Spectrum Disorder (for review, see Gallese, 2006; Oberman and Ramachandran, 2007).

The specific social cognitive flexibility of our species, as reflected in our propensity for pedagogy, and in the sophisticated quality of our social understanding, likely exceeds the functional properties of the MNS. However, I posit that a proper development of the MNS is a necessary pre-requisite for scaffolding the development of the proper human social cognitive skills leading to mutual recognition and social identification.

Where Does Mimesis Come From? Evidence from Developmental Psychology

At the onset of life, interpersonal relations are readily established within a primitive shared 'we-centric space' (Gallese, 2001; 2003; 2005a,b). Neonates share this space with their caregivers. The physical space occupied by the body of the caregiver — the mother, in the first place — is 'hooked up' to the body of the infant to compose a shared space. This we-centric space becomes richer and multifaceted, due to the wider range and meaning of interpersonal relations in the course of development.

Already at birth humans appear to be engaged in interpersonal mimetic relations. The seminal study of Meltzoff & Moore (1977) and the subsequent research field it opened (see Meltzoff, 2007a, b) showed that newborns are capable of reproducing mouth and face movements displayed by the adult they are facing. That particular part of their body replies, though not in a reflex-way, to movements displayed by the equivalent body part of someone else. As Meltzoff recently wrote (2007b, p. 27), 'the bedrock on which commonsense psychology is constructed is the apprehension that others are similar

to the self. Infants are launched on their career of interpersonal relations with the basic perception: “Here is something like me.” These results suggest that neonates are innately prepared to link to their caregivers through imitation, clarifying yet another of the various capacities that locate human infants in the social world from the very beginning of life.

Infants, very early on show unequivocal signs of social interaction sequences. They actively solicit their caregivers’ attention and engage themselves in body activity displaying ‘protoconversational’ turn-taking structure, that is, characterized by a structure remarkably similar to adult conversations (Braten, 1988; 1992; 2007; Meltzoff and Moore, 1977; 1994; Meltzoff and Brooks, 2001; Stern, 1985; Trevarthen, 1979; 1993; Tronick, 1989; for a recent updated survey, see Reddy, 2008).

Trevarthen (2009) recently defined these early mother-child interactions as ‘primary musicality’, where ‘[...] protoconversations and games with infants carry narratives in cycles of effort and excitement, with predictable harmonies and pauses, and the infant anticipates the steps and remembers the distinctive melodies and rhyming cadences well, becoming an increasingly skilled co-performer’.

Furthermore, as beautifully shown by Reddy (2008), few months-old pre-verbal infants when engaged in social interactions show even signs of so-called ‘self-conscious emotions’ like embarrassment, pride, and coyness at a developmental age preceding the onset of self-reflective consciousness, definitely well before they are capable of self-recognition when looking at their reflection in a mirror. As Reddy writes ‘...engaging with other minds is an emotional process from start to finish’ (p. 41). Immediately after, she adds [Self-conscious-emotions] ‘...rather than derive from conceptual development in the second year of human infancy, exist in simple forms as ways of managing the exposure of self to other from early in the first year and are crucial for shaping the infant’s emerging conception of self and other’ (p. 41).

I think that these results suggest that prior to any triangular mimetic relationship, the main object of infants’ mimesis is the affective behaviour of the Other. In sum, as pointed out by Beebe *et al.* (2005), developmental psychology has shown that the mind begins as a shared mind. I posit that mirroring mechanisms and the functional mechanism they underpin — embodied simulation — are a crucial component of what makes of our mind in the first place a *shared mind*.

The shared we-centric space enabled by the activation of mirroring mechanisms is paralleled by the development of perspectival spaces

defined by the capacity to distinguish self from other, as long as self-control develops. Infants progressively carve out an agentive, subjective perspective onto the world. However, such process of personal identification anchored to an egocentric perspective, contains and depends upon a contrastive element. 'In the absence of reciprocity there is no alter Ego', writes Merleau-Ponty (1962, p. 357).

It is not possible to conceive of oneself as a Self without rooting this process of appraisal in an earlier stage in which sharing prevails. Also in adulthood a shared manifold of intersubjectivity underpins, scaffolds and enables our social transactions.

**Why We Embody a We-Centric Space:
The Shared Manifold of Intersubjectivity,
Embodied Simulation and Social Identification**

How can we explain the ease with which we normally understand other people when interacting with them? The hypothesis put forward here is that the I-Thou relation provides the basic ground for our cognitive/affective development, hence for our intimate and truest being social individuals capable of mutual recognition and understanding.

The MNS together with the discoveries of developmental psychology here concisely and partially summarized, provide a new empirically based image of intersubjectivity viewed first and foremost as *intercorporeity*. Intercorporeity, in turn, leads to social identification. Social behaviour is not peculiar of humans. Nevertheless, central to all human social cultures of whatever complexity, is the notion of *social identification* with the members of those cultures. All levels of social interaction that characterize cognition in single individuals, in a way or the other, intersect or overlap with the notion of mutual recognition and intelligibility, that is, with the notion of social identification.

Social identification can be articulated on different levels of complexity. As human beings, we implicitly 'know' that we all share certain features: we have four limbs, walk in a certain way, act in peculiar ways, etc. People sharing the same culture will, for example, tattoo their body in a peculiar fashion, wear the same regimental necktie at sorority meetings, or share political values like being against death sentence, etc. Social identification is the membership-fee all individuals pay in order to self-guarantee the sense of belonging to a larger community of other individuals.

Social identification is adaptive, because it grants the capacity to better predict the consequences of the ongoing and future behaviour

of other members of a given social group. The attribution of the status of ‘another Self’ to other individuals automatically contextualizes their behaviour. This, in turn, reduces the variables to be computed, thus optimizing the employment of cognitive resources by reducing the ‘meaning space’ to be mapped. By contextualizing content, identification reduces the information our brain is supposed to process. Beside — and likely before — the ascription of any mental content to others, we entertain a series of ‘implicit certainties’ about the content-bearing individuals we meet (see Gallese, 2003; 2007; 2008). These implicit certainties are constitutive of interpersonal relations, in that they deal with the sense of oneness, of identity with the other that enables the possibility to ascribe any content to the individuals we are inter-acting with.

Anytime we meet someone, we are implicitly aware of his/her similarity to us, because we literally embody it. Meltzoff and Brooks (2001) suggested that the ‘like me’ analogy between infant and caregiver is the starting point for the development of (social) cognition. The ‘like-me status’, though, is neither the outcome of an inference by analogy nor the result of our conscious reflexion on a perceived external similarity. Our social identification with others is a constitutive endowment of what it means being human.³ The I–Thou relation (see Buber, 1958) is shaped by bi-directional interaction processes (Reddy 2008), hence Self and Other are originally co-constituted. Infants use the observed behaviour of their human partners as a mirror to gain more knowledge about themselves. But the same process works also the other way around: it enables infants to know about others.

It has been proposed that a *shared manifold* characterizes our interpersonal relations (Gallese, 2001; 2003; 2005a,b). This term characterizes what happens when we witness the actions of others, or their overt behaviour expressing the sensations and emotions they experience. Basically, it describes our capacity for direct and implicit access to others as subjects of experience, as we are. The shared manifold of intersubjectivity can be described at three different levels: the phenomenal level; the functional level; and the sub-personal level (Gallese, 2001; 2003; 2005).

[3] Social identification, though, probably falls short of providing a comprehensive account of what it means to be human. Perhaps reciprocity, spelled out in terms of *responsiveness*, is precisely what marks the difference between non-human primates and humans. Only among humans the actions of others imply a *response* rather than a mere *re-action*. It must be added that this dimension of intersubjectivity has been so far very little explored by cognitive neuroscience.

The *phenomenal level* is responsible for the sense of social identification — of being part of a larger social community of persons like us — normally experienced during our encounters with others. This phenomenal state generates the peculiar sense of familiarity with other individuals, our intentional attunement to them, produced by the collapse of others' intentions into those of the observer.

The *functional level* can be characterized in terms of *embodied simulation* of the actions we see and/or of the emotions and sensations whose expression we observe in others.

The notion of simulation is employed in many different domains, often with different, not necessarily overlapping, meanings. Simulation is a functional process that possesses certain content, typically focusing on possible states of its target object. In philosophy of mind, the notion of simulation has been used by proponents of the Simulation Theory of mind-reading (see Goldman, 2006) to characterize the pretend state adopted by the attributer in order to understand another person's behaviour. Basically, according to this view, we use our mind to put ourselves into the mental shoes of others.

At difference with standard accounts of Simulation Theory, I qualify simulation as *embodied* in order to characterize it as a mandatory, pre-rational, non-introspectionist process. The Folk-Psychological model of mind reading proposed by standard accounts of Simulation Theory (Goldman, 2006), which Gallese and Goldman (1998) utilized to frame the functional relevance of mirror neurons, in my opinion does not apply to the non-representational character of embodied simulation, as spelled out in Gallese (2003; 2005a,b; 2006) and in the present article. Embodied simulation model is in fact an attempt to avoid Folk-Psychology as the sole account of interpersonal understanding. Before and below mind reading is *intercorporeity* as the main source of knowledge we directly gather about others (Gallese, 2007; 2009).

A direct form of understanding of others from within, as it were, — intentional attunement — is achieved by the activation of neural systems underpinning what we and others do and feel. Parallel to the detached third-person sensory description of the observed social stimuli, internal non-linguistic 'representations' of the body-states associated with actions, emotions, and sensations are evoked in the observer, *as if* he or she were performing a similar action or experiencing a similar emotion or sensation.

It must be stressed that the term 'representation' is used here very differently from its standard meaning in classic cognitive science and analytic philosophy. It refers to a particular type of content, generated

by the relations that our situated and inter-acting brain-body system instantiates with the world of others. Such content is pre-linguistic and pre-theoretical, but nevertheless has attributes normally and uniquely attributed to conceptual content.

Finally, the sub-personal level of the shared manifold is instantiated as the activity of a series of mirroring neural circuits. The activity of these mirror neural circuits is, in turn, tightly coupled with multilevel changes within body-states. Mirror neurons in monkeys and the MNS in humans instantiate a multimodal shared space for actions and intentions. As we have seen, other data show that analogous neural networks outside the motor system are at work to generate multimodal emotional and somato-sensory ‘we-centric’ shared spaces (Gallese, 2003; 2005a,b; 2006).

To put it in simpler words, every time we relate to other people, we automatically inhabit a we-centric space, within which we exploit a series of implicit certainties about the other. This implicit and pre-theoretical, but at the same time contentful state enables us to directly understand what the other person is doing, why he or she is doing it, and how he or she feels about a specific situation.

This, of course, doesn’t imply that we experience others the way we experience ourselves. The I–Thou identity relation constitutes only one side of the intersubjectivity coin. As posited by Edmund Husserl (1969; 1989), and recently re-emphasized by Dan Zahavi (2001), it is the alterity of the other to guarantee the objectivity we normally attribute to reality. Our lived experience (*Erlebnis*) of the ‘external’ world is determined by the presence of other sentient agents.

It must be noted that the alterity character of others as we experience them also maps at the sub-personal neural level, because the cortical circuits at work when *we* act neither completely overlap, nor show the same activation intensity as when *others* are the agents and we are the witnesses of their actions. The same logic also applies to emotions (see Jabbi *et al.*, 2008) and sensations (see Blakemore *et al.*, 2005).

It must also be stressed that the functional mechanism of embodied simulation is not to be conceived as a rigid, reflex-like input output coupling. Several brain-imaging studies conducted on human beings have shown that the intensity of the MNS activation during action observation depends on the similarity between the observed actions and the participants’ action repertoire. In particular, one fMRI study (Calvo-Merino *et al.*, 2006) focused on the distinction between the relative contribution of visual and motor experience in processing an observed action. The results revealed greater activation of the MNS

when the observed actions were frequently performed with respect to those that were only perceptually familiar but never practised.

Every instantiation of mirroring or interpersonal resonance, in a word, embodied simulation, is always a process in which others' behaviour is metabolized by and filtered through the observer's idiosyncratic past experiences, capacities, and mental attitudes. Future research will have to focus on the role played by factors like specific personality traits, gender, professional expertise, etc. in modulating these neural mechanisms.

Why not to employ the term *empathy* to characterize the basic level of relatedness and social identification described so far? It is certainly possible, provided that empathy is re-defined along the extended lines I suggested, but one must bear in mind that in doing that there is a price to be paid. First, the use of the notion of *empathy*, in virtue of its different connotations employed in different contexts, systematically exposes one to misunderstandings (see de Vignemont and Singer, 2006; Stueber, 2006). Second, the notion of empathy is nowadays almost exclusively referred to the emotional/affective aspects of interpersonal relations, thus without covering important aspects of interpersonal relations, such as actions and intentions, nowadays traditionally ascribed to the propensity of mankind for theorizing.

In contrast, by means of the shared manifold model we can accommodate and account for most — if not all — different expressive behaviours enabling us to establish a meaningful link with others. This provides a unified account of important aspects and levels of description of intersubjectivity mainly viewed as intercorporeity.

Mimetic Desire Revisited

Let us finally go back to where we started from, that is, to Girard's powerful idea of mimetic desire. According to Girard human beings imitate others' desires. This means that what really matters when we desire something is not the intrinsic value of the objects of our desire but the fact that the very same objects are the targets of others' desire, where the others are to be conceived as models or *mediators*. We shouldn't forget, however, that mimetic desire starts as desire to be the Other. Indeed Girard himself expresses the very same idea when in his first major work, *Deceit, Desire and the Novel* (1965), writes '...The impulse toward the object is ultimately an impulse toward the

mediator'⁴ (p. 6) and later on, '... Imitative desire is always a desire to be Another' (1966, p. 83). The desire of taking possession of any given object is always derivative of the desire to be as the model. It is only because of man's desire of being someone else that objects become potential targets of acquisition. Girard in that respect, referring to Max Scheler, writes '...Max Scheler himself is not far from the truth when he states in *Ressentiment* that the fact of choosing a model for oneself is the result of a certain tendency, common to all men, to compare oneself with others' (1965, p.16).

Girard's perspective, by underlining the ambivalent character of mimesis with its potentiality to lead mankind either to escalating violence or to symbolic-cultural transmission (see Antonello and de Castro Rocha, 2007) provides a very stimulating, broad in scope, and challenging contribution to our understanding of the evolution of human culture.

The idea I am trying to put forward here is that at the origin of mimesis ambivalence is man's ontological openness to others. Our 'ontological' desire to be as the Other, the model, stems from our *ontological* openness to the Other, which, in turn, is determined by the fact that the Other is already a constitutive part of the Self. From that follows that we should abandon the Cartesian view on the primacy of the Ego, and adopt a perspective according to which the Other is co-originally given as the Self. Both Self and Other appear to be intimately intertwined because of the intercorporeity linking them. Self-individuation is a process originating from the necessity of disentangling the Self from the we-centric dimension in which it is originally and constitutively embedded (Gallese, 2001; 2003a). Our constitutive openness to others, of which mimesis is one of the main expressions, can be declined both in terms of social violence and social cooperation.

As recently emphasized by De Prester (2008, p. 137) following Merleau-Ponty (1945), the body of intercorporeity is primarily perceived as a systematic means to go towards objects. This is the reason why, argues De Prester '...the other is seen as a behavior and the "I" is primarily a "motor I"' (2008, p. 137). A direct form of understanding others from within, as it were, is achieved by the activation of neural systems like the MNS underpinning what others and we do and

[4] In this work Girard defines the Other as the *mediator*, which, according to his/her degree of proximity to the subject is considered either as *external mediator* (when belonging to a different relational domain in space, time, or social status) or as *internal mediator* (when among the subject's peers or close acquaintances). It is the latter, according to Girard, normally perceived by the subject as an obstacle or opponent, to trigger mimetic rivalry.

feel. Our own acting body thus becomes the main source of information about others' behaviour and intersubjectivity is at its roots chiefly intercorporeity.

The main ambition of this paper was to show that today we can ground man's openness to others on neurobiological bases.

Conclusions

We have examined empirical results showing how interpersonal relations are made possible — in the first place — by resonance mechanisms that provide the common ground upon which the I–Thou relation can be established.

It could be tempting to use such evidence to assert the neurobiological basis of the supposed natural proclivity of mankind to sympathy, fellow feelings, good will and altruism. I think we must resist such temptation, and look at human nature as it really is and not as we would like it to be. In this respect, Girard's Mimetic Theory is illuminating, because it shows that mimesis when declined as mimetic desire has the intrinsic potentiality of driving humans to aggression and violence.

Mimesis, as I have been trying to show throughout this paper, is neither intrinsically good nor bad. It is a basic functional mechanism at the core of our diversified social competencies and activities. Nevertheless, mimesis has two sides. Any serious neuroscientific attempt to shed light on the truest and deepest nature of human condition cannot neglect either side. I posit that the empirical evidence here briefly summarized and future research stimulated and driven by the currently available evidence have the potentiality to shed further light on both sides of mimesis.

I would like to conclude with a provocation. I submit that Girard's Mimetic Theory leaves one crucial question open. What pushed humans to scapegoating and sacrifice? We cannot think this was merely due to an instinct for self-preservation or, even less likely the outcome of a rationality-driven utilitarian stance (for a discussion of this point, see Dupuy, 2004). I posit that what most likely originally led our human ancestors to temper violence within their social communities through scapegoating was social identification and mutual recognition.

There is an original experience we make of other human beings, no matter what their ethnicity, religion, socio-economical or cultural status is. Such original experience appears to be rooted in neural

mechanisms connecting different brain-body systems as *human beings like us*.

In the present historical times, characterized by the vehement resurgence of ethno-religious particularism, when *identity* and *difference* are key problems at a global scale as well as at the level of our local communities, to establish that the universal status of human being is produced by social identification and mutual recognition and that is biologically grounded, shows the potential ethical relevance of neuroscientific research.

This is why I think it is important to address the most typical philosophical problem — who are we — from a multidisciplinary perspective that incorporates what disciplines like neuroscience and developmental psychology can teach us about it.

Acknowledgments

This work was partly supported by MIUR (Ministero Italiano dell'Università e della Ricerca), by the EU grant NESTCOM, and the EU Marie Curie — Research Training Network 035975 'DISCOS — Disorders and coherence of the embodied self'.

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Paper received September 2008