

Empathy and Theory of Mind and Body in Evolution¹

Bilyana Martinovski
University of Southern California

Abstract

Three mutually exclusive theoretical explanations have been proposed to describe how Theory of Mind processes work, namely by imitation, by simulation or by representation. This paper claims that all three theories are correct and that the realization of empathy in discourse is a good source of evidence for that. Instead of being three exclusive theories these are three compatible mechanisms, which reflect different stages of cognitive evolution. Furthermore, the somatic and emotive bias of cognition, the complexity of Theory of Mind processes and the fundamental role empathy plays in interaction altogether point to a new metaphor of communication, namely communication as a caress.

Keywords: empathy, Theory of Mind, discourse analysis, communication as a caress

Introduction

In his book 'Descartes' Error: Emotion, Reason, and the Human Brain', Antonio Damasio (1994) explores the unusual case of [Phineas Gage](#), a man whose ability to feel emotion was impaired after an accident in which part of his brain was damaged. Damasio finds that, while Gage's intelligence remained intact after the accident, his ability to take rational decisions became severely handicapped because his emotions could no longer be engaged in the process. Based on this case, the neurologist argues that rationality stems from our emotions, which in turn stem from our bodily senses. The state of the mind is identical to the state of feeling, which is a reflection of the state of the body.

¹ A version of this paper was presented at the Cognitive Science Conference in Vancouver, Canada, 2006.

Other neuroscientists such as Uexkull (1934), Fuster (2003), and Arnold Scheibel (personal communication) observe that evolution gave privilege to the limbic system: emotional feedback is present in lower species, but other cortical cognitive feedback is present only in higher species.

At the same time, contemporary research on the functions of mirror-neurons (Rizzolatti and Craighero, 2004) and the so called Theory of Mind (ToM) point to the importance of understanding of others' and own intentions and states for development of social cognition (Happe et. al, 1998; Iacoboni, 2005). Beliefs about age, gender, language, environment, and so on contribute to the models that individuals form and keep of each other's intentions. Baron-Cohen (1995) went as far as to claim that the human brain has a particular "mindreading" mechanism, specialized module dedicated to prediction and interpretation of others' intentions. He characterized this as a natural and innate capability, which enables social contact to take place: "We mindread all the time, effortlessly, automatically, and mostly, unconsciously" (1995: 3). Communication complements and depends upon "mindreading": "Our mindreading fills in the gaps in communication and holds the dialogue together" (ibid.28)². This ability, according to Baron-Cohen, is the result of a long process of evolution.

Critical evaluation of existing explanations of the ToM reasoning and behavior is an important task to complete, before modeling. One can start with the name: if mental states being identical to emotional states take input from the body then ToM is not just a theory of the mind but also of the body, we might call it Embodied Theory of Mind. Second, if the emotional feedback system in the brain is developed prior to higher cortical functions then emotional ToM processes are expected to function quite early and in many different species. Third, it is not clear what are the mechanisms involved in ToM processes. Three mutually exclusive theories have been suggested to explain how we relate to others: by imitation (e.g. Iacoboni, 2005), by simulation (e.g. Gordon, 1986; Stich, S. and S. Nichols, 1992) or by representation (e.g. Hobbs and Gordon, 2005). Can we find all these processes in human social cognition? What neurological and cognitive capacities do they correspond to? In order to answer these questions, we can study empathy since it is one of those complex processes that involve emotion, rational reasoning, understanding, and feeling of the other also on a visceral and somatic level. Studies indicate that empathy causes helping and pro-social behavior (Stephan, 1999; Davis, 1994) and that lack of empathy is linked to anti-social behavior (Eysenck, 1981) and attitudes. Empathy influences decision taking and it is therefore considered undesirable in certain activities such as wars. Ironically, in a war, it is of crucial importance to be able to put oneself in other's shoes in order to predict their actions. Although empathy has serious impact on society and human development we still don't know how it actually works.

² This view has been criticized both from a philosophical and linguistic perspective (Pinchevski, 2005a; Martinovski, 2004).

Besides neuroscience, also linguistics develops methodology for the study of cognitive-emotive processes. Chafe (1994), Allwood (1976, 1996, 2006), and Edwards (1997) use human interaction and discourse in order to develop insights about the functions and nature of cognitive-emotive phenomena. This study explores empathy in discourse and searches for evidence of imitation, simulation and representation ToM processes in discourse. It utilizes transcribed conversation in order to map the linguistic realization and functions of empathy. I will be looking for linguistic features, which help us recognize eliciting, giving, and receiving/rejection of empathy in discourse in order to understand its interactive-cognitive dynamics. The paper starts with descriptions of the main concepts and then observes an example of a ritualistic successful empathic exchange, followed by analysis of rejection of empathy. The paper ends with a discussion on ToM and ethical implications and summarizes the identified discursive and linguistic features associated with empathy.

Theory of Mind Issues

The term ToM refers to the abilities humans and other higher species have to perceive and reason about their own mental/emotional states and the mental/emotional states of other people. ToM is described as a set of abilities that progressively emerge in normal child development (Wellman & Lagattuta, 2000). Toddlers demonstrate an understanding of the role of intentionality in action and that other people have subjective experiences. It is observed that by the age of four or five children comprehend and use vocabulary to refer to mental states such as thoughts, imaginations, and knowledge. In adults, there is growing appreciation of people as active constructors and interpreters of knowledge, and awareness that others have ongoing thoughts and feelings. There is evidence that ToM capabilities continue to improve into the later adult years, even while non-social reasoning abilities begin to degrade (Happé et al., 1998). In the research area of abnormal psychology, illnesses such as the over-diagnosed autism (Baron-Cohen, 2000) and schizophrenia (Corcoran, 2001) have been related to deficits in ToM abilities. Neuropathology studies of stroke patients have provided evidence that ToM mechanisms may be localized in the brain (Happé et al., 1999) and ongoing functional neuroimaging studies continue to provide further evidence for localization (Frith & Frith, 2000; Iaconi, 2005).

ToM can be illustrated by a game of chess: each player has his own plan for moves but also reasons about the intentions behind the opponent's moves. Based on that, the player might start reasoning about what the opponent is thinking about the player's own intentions. Each of them might also have models of each other's character and disposition to emotions, which may affect the types of strategies and tactics they use in the game. Skilled players can train their mind to have multiple models of other's intentions on number of levels, but in most daily human interactions, such models usually

end on the third level (Figure 1). This type of reasoning is necessary in any cooperative or adversarial situation.

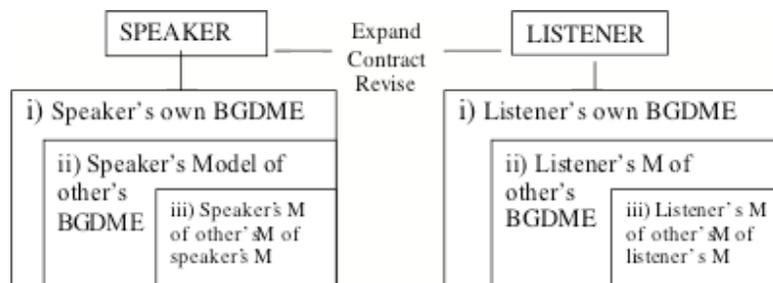


Figure 1. Three Layered Theory of Mind Model (ToMM) of Interlocutor's Goals, Beliefs, Desires, Memories, and Emotional States (BGDME)

When interacting with others, each participant's model of the world must include, at a minimum, i) his own beliefs, goals, desires, memories, and emotions, ii) his model of the other's beliefs, goals, desires, memories, and emotions, and iii) his model of the other's model of his own beliefs, goals, desires, memories, and emotions. Researchers in developmental psychology such as Wellman & Lagattuta, (2000) argue that it is the second and the third levels that develop later in a healthy child's life. The content and relation between the different levels influence and often determine the interaction between the interlocutors, including their language. A complicating factor is that each level includes different modalities, such as both past and present beliefs, desires, memories, and emotions. In a conversation, the speaker may have a correct model of the listener's present beliefs but an incorrect model of his desires or goals and/or wrong model of the listener's memories, etc. In addition, each actor may have levels ii) and iii) for each person they interact with and for groups of interacting people. This becomes a very complex system of embedded models and modalities of models, which show us how extraordinary communication actually is.

Researchers have suggested different mechanisms for dealing with this complexity. For instance, as mentioned earlier, Baron-Cohen talks about 'mindreading' or the ability to monitor others' intentions. He goes to an extreme, claiming that successful communication entails a constant feedback-check between communicators to verify whether the listener's interpretation corresponds to the intended interpretation. In discourse analysis, this feedback-checking is reflected in the concepts of grounding and feedback (Allwood, 1976). In computer science, the concept of grounding has been used for the design of computational models of dialogue (Traum, 1994).

There are three main ToM explanations that claim to be mutually exclusive: imitation, simulation and representation. Originally, the main process for establishing and communication of ToM models was and still is thought to be imitation. There is increasing evidence from neurosciences "that the neural mechanisms implementing

imitation are also used for other forms of human communication, such as language. Indeed, imaging data on warping of chimpanzee brains onto human brains indicate that the largest expansion between the two species is perisylvian. Functional similarities between the structure of actions and the structure of language as it unfolds during conversation reinforce this notion ... Additional data suggest also that empathy occurs via the minimal neural architecture for imitation interacting with regions of the brain relevant to emotion. All in all, we come to understand others via imitation, and imitation shares functional mechanisms with language and empathy.” (Iacoboni, 2005)

According to ‘simulation theory’, we think of the other's experiences by use of mental and even somatic simulation of e.g. our own experience of the same kind (Gordon, 1986). Thus, if you have a stomachache, instead of imitating your experience of a stomachache I can simulate the psycho-somatic processes related to my own previous experiences of a stomach ache and that way form an understanding and a reaction to your state.

Yet a third idea is that ToM is explained as the application of commonsense inferences about the way people think (Hobbs and Gordon, 2005). Here, if you have a stomachache I can understand your state based on ready-made mental representations, which describe what it is to have a stomachache, without going through somatic imitation or mental simulation.

The last two explanations seem mutually dependent. In order to simulate a stomachache one must have some representation of what that is. In order to make inferences about mental representations one may have to play ‘as if’ games.

Generally, the cognitive processes that support social cohesion and creativity require a capacity for understanding and empathizing with others. This capacity involves the understanding of differing beliefs, intentions, emotional and visceral states, ability to react and to draw necessary inferences, to predict and plan given these concerns.

How Does Empathy Work?

Empathy has been observed not only among humans but also among other species e.g. primates³ (De Waal, 2006). In homo sapiens sapiens’ context, it is identified with interactive behaviors such as empathic listening (Salem, 1982), openness, paraphrasing, and reflection (Fuslier, 1988). Empathy is defined by Mead as the “capacity to take the role of the other and to adopt alternative perspectives vis-a-vis oneself” (Mead, 1993). Hogan defines it as the ability to take “the intellectual or imaginative apprehension of another’s condition or state of mind” (Hogan, 1969). Reik (1949) describes four stages of the empathy process: (i) identification – projecting self into the other, (ii) incorporation – introjecting the other into self, (iii) reverberation – interplaying of own and other

³ De Waal describes, for instance, a curious case where apes refuse to eat for days in order to avoid hurting their mates.

experience, and (iv) detachment – withdrawal from subjective involvement and recourse to use of methods of reason. As mentioned above, these stages may involve ToM mechanisms, which have been described as imitation, simulation or representation.

Davis (1994) distinguishes between cognitive and emotive empathy, which refers to empathy as attitude or taking the perspective of the other and empathy as emotional response to the emotions of the other, respectively. He also suggests a distinction between two types of predominantly emotional empathy: parallel empathy (PE) or empathy related to the other's feeling directed to a third person and reactive empathy (RE) or empathy to the other's feelings oriented towards it/her/himself.

Another way of looking at empathy is to describe it as a coping strategy. Under stress people seek what Lazarus (1999) calls problem-focused and emotion-focused social support. Empathy is one of the resources available in the process of seeking and giving social support, whether it is predominantly emotional or problem-oriented.

Empathy can alter decision making processes since taking the perspective of the other may cause changes of initial goals/beliefs and introduce new perspectives to a situation (Martinovski and Mao, forthcoming).

Empathy in Discourse: Analysis

Spoken language discourse is multimodal and thus invites realization on different levels of awareness or intentionality (Edwards, 1997), which is reflected in Allwood's (1976) distinction between indication (when we convey information without intending to do so, e.g. blushing), display (when we intend to show something to somebody) and signal (when we signal that we are displaying something, e.g. lying). The unconscious processes occur via the brainstem and ventral striatum; the conscious ones engage higher cortical structures (Damasio, 1994). Since language is representational, I will be looking for examples of imitation and simulation, which could be realized on lower consciousness levels such as speech order, tone, particular expressions, (gestures, not available in this data set).

Method and Data

Heritage (2005) uses a conversation analysis method in his study of social empathy interplay. Goodwin & Goodwin (1987) use ethno-methodology to study the realization of assessments in talk. Jefferson, Sacks & Schegloff (1987) examine the pursuit of intimacy. In the present study, I will use discourse and conversation analysis methodology in order to observe the relation between linguistic and discourse features and functions of empathy. Conversation analysis uses detailed study of specific and representative

dialogue to isolate generalizable or not features and processes. Before conducting any meaningful statistical analysis and before modeling we need to understand the phenomena we are dealing with and one way to do that is through a sufficiently rich analysis, which will help us to extract the focal features, their function and organization (Martinovski, 2000).

The data types we used are:

- Friends' talk (Heritage, 2005).
- Talkbank Clinical data involve interactions between a healthcare provider and a patient: <http://xml.talkbank.org.:8888/talkbank/file/talkbank/Clinical/Holland/>.

The utilized transcription conventions are: '[]' stands for overlapped speech; ':' stands for prolonged vowel; '=' stands for latching speech; '/' indicates pause; capital letters indicate emphatic speech; '+' indicates cut-off; '()' stands for inaudible speech; '?' stands for rising intonation; '.' stands for falling intonation; ',' stands for continuing intonation; PEG – parallel empathy giving; REG – reactive empathy giving; PEE – parallel empathy elicitation. Each line in the transcription indicates an intonation unit; {0.9} stands for seconds of pause.

Empathic rituals

The following example illustrates a successful but ritualistic 'empathic moment' (Heritage, 2005). The empathy episode starts with an announcement of trouble on line 2. It is welcomed and elicited on line 3 and followed by a narrative background on lines 4-13. Starting with an empathic narrative conjunction, turn 14 gives the punch line, which elicits empathy, both parallel and reactive, cognitive and emotional.

Example 1:

1. Joy: ye-:s I'm alright,
2. Les: oh:. hh yi-m- you know I-I- I'm boiling about something hhhheh [1 heh hhhh]
3. Joy: [1 wha::t.]
4. Les: well that sa:le. {0.2} at- at . the vicarag {0.6}
5. Joy: oh ye[2 :s],
6. Les: [2 t] {0.6} u ih your friend 'n mi:ne wz the:re {0.2}
7. (): (h[3 h hh])
8. Les: [3 mmis] ter: R:,
9. Joy: (oh ye:s hheh) {0.4}
10. Les: and em: we really didn't have a lot'v cha:nge that day becuz we'd been to bath 'n we'd been: christmas shoppin:g, {0.5} but we thought we'd better go along t'th'sale 'n do what we could, {0.2} we hadn't got a lot . of s:e- ready cash t'spe:nd. {0.3} t[4 hh]

11. Joy: [4 Mh].=
12. Les: =In any case we thought th'things were very expensive.
13. Joy: oh did you. {0.9}
14. Les: AND uh we were looking rou-nd the sta:lls 'n poking about 'n he came up t'me 'n be said Oh: hhhello leslie, . still trying to buy something f'nothing,
15. Joy: PEG-> .hhhahhhhhh! {0.8 } oo[5 : : :: LESLI E]
16. Les: PEE-> [5 oo:.ehh heh heh] {0.2}
17. Joy: PEG-> i:s [6 n ' t he]
18. Les: REE-> [6 what] do you sa:y. {0.3}
19. Joy: PEG-> oh isn't he drea:dful.
20. Les: PEE-> eye-:-:s: {0.6}
21. Joy: PEG-> what'n aw::f'l ma::[7:::n]
22. Les: PEE-> [7 eh] heh-heh-heh
23. Joy: PEG-> oh:: honestly, I cannot stand the man it's \ just {no[8 :]}
24. Les: RPEE-> [8 I] bought well I'm gon' tell Joyce that,ehh[7 heh]=
25. Joy: [9 ()]=
26. Les: RPEE=[9 heh-heh he-e] uh: eh [10 eh hhhh]
27. Joy: PEG-> =[10 O H : : : .] I do think he's dreadful
28. Les: PEE-> tch oh: dea-r
29. Joy: PEG-> oh: he r[11 eally i]:s,
30. Les: RPEE-> [11 he dra-]ih-he (.) took the win' out'v my sails c'mpletel(h)y .
31. Joy: REG-> I know the awkward thing is you've never got a ready a:n[12 swer have you. that's ri:ght,]
32. Les: REE-> [12 no: I thought'v lots'v ready a]nswers a:fterward[13 s],
33. Joy: REG-> [13 yes] that's ri::gh[14 t].
34. Les: RER-> [14 yes] .
35. Joy: REG-> but you c'n never think of them at the ti:[15 me a:fterwards I always think. oh I should've said that. or I should've said thi]s.
36. Les: RER-> [15 no:.no:. oh y e s e h - r i : g h t.] {0.7}
37. Joy: REGE-> b[16 ut] I do:'nt think a'th'm at the ti:me
38. Les: RERG-> [16 mm:]. eh h u h h u h {0.8}
39. Joy: oh:: g-oh 'n I think carol is going, t'the [17 meeting t'ni g h t,]

Joy gives her rather emotional empathy on line 15 and Les implicitly accepts it on line 16. The exclamation forms on lines 15 and 16 are similar, in that sense the speakers mirror or imitate each other, although the functions of the utterances are different. Then starts the separation of parallel and reactive empathy. On line 17, 19, 21, 23, 27, and 29 Joy gives a clear example of what is meant by parallel empathy i.e. she expresses a disapproval of the person by whom Les feels hurt in that way mirroring Les' dislike of this person's actions. These expressions of parallel empathy have also degrees; first it starts with a rhetorical question on lines 17 and 19, then the degree rises to clear

assessments such as on line 21 and at last we have an assertive (e.g. 'honestly', 'I do think') and explicit formulations of subjective opinion, e.g. lines 23 and 27. Joy's parallel empathy is predictable and predicted by Les, in fact she motivates (line 24) her expression of a need of emotional support by pointing to Joy's disposition to the negative feelings they both share against mister R. At that point it is not even clear who gives the empathy, Joy or Les. On line 30 Les expresses her internal distress, which changes the character of the elicited empathy: on the next line 31 Joy performs a good example of the so called reactive empathy. This empathy type is realized here by the use of the generalizing pronoun 'you' and by a tag question followed by a confirmative assessment. The utterance functions as a display based on a representation of a personal ToM simulation of what it is to be left speechless. The tag question is an elicitor of consent, which again turns the roles around: Joy is supposed to be the empathy giver but she often becomes the empathy elicitor as a form of empathy giving. Thus, being both the 'empathizer' and the 'empathee' is an important capacity in the process of informal discussion of social values and attitudes, all intertwined with associated and even negotiated emotions. On line 32 Joy exchanges the impersonal "you" with a reference to herself, which in a sense functions as voicing Les' internal discomfort and embarrassment for which she seeks empathy. This voicing is expressed as a quotation of internal dialogue. Thus Joy internalizes Les' inner state i.e. she displays reactive emotive empathy. Line 35 is another example of verbalized ToM simulation process. On line 37 Joy has completely taken Les' internal position and talks about her own experiences of the same state of mind Les complains from, which is another example of cognitive simulation. Les now functions both as a receiver and a giver of empathy, the process has reached its climax and suddenly on line 39 Joy announces a completely new topic.

The empathy process in Example (1) is fulfilled: there was elicitation, giving, and acceptance of empathy and there was also identification (e.g. line 31), incorporation (e.g. line 35), reverberation (e.g. line 37), and finally detachment (line 39). The verbalizations are at first more somatic, uncontrollable and then become more cognitive as they turn to comparisons of experiences and mental representations of experiences. In this empathy process both speakers verify, confirm, and reconfirm for each other the legitimacy of their experiences, values, and attitudes and in the processes they often mirror each other's verbal actions. The sudden change of topic at the end of Example (1) and the repetitive turning of the roles in the process of empathizing suggest that the empathy process is rather ritualistic.

Rejection of Empathy

Empathy is not always accepted. Example (2) illustrates empathy rejection (see also Martinovski et al., 2006c). Unfortunately the transcript is not very elaborate and we have no access to prosody and gestures but we have other expressions, which relate to

the limbic system and lower level of conscious control such as swear words, screaming, and irony.

In this conversation, a patient (P) who suffered a stroke rejects empathy and care from a nurse (N). The patient is not cooperative. He has demonstrated anger especially before going to physical therapy, which he refuses to do anymore. He suffers loss of memory and quality of life, he is tired of worrying for his life. In other words, the patient is giving up feeling anger and despair. The nurse deals with the patient's uncooperative behavior. She intends to ensure the patient's cooperation with the medical personal in the future, which she explicitly states in a few occasions during the long conversation. She has introduced the issue after an initial polite empathic chat and on line 65 below we see part of the patient's explanatory response.

Example 2:

65. P: mhm forget all about it because it don't make no difference. I mean it sounds silly to me and it don't matter what kind of methods I get anyhow.
66. N: you know what ?
67. P: hmm .
68. N: they do have a reason . but I have a feeling + .
69. P: I don't even want to know about it .
70. N: you don't even care, huh ?
71. P: uhuh no .
72. N: ok .
73. P: I got enough problems on my shoulders tonight. I try a little bit I got shoulders by / day by day shoulder to shoulder day . take it now I don't have time for that bull shit .
74. N: I think probably all they want to do is keep track of your improvement .
75. P: mhm honey who cares ?
76. N: well I know a couple people that care .

The nurse is faced with an angry avoidance and rejection of empathy. The rejection here is indicated with an interruption and represented by an explicit verbalization (line 69), confirmations of rejections (line 71), imperative orders, sentence disorder, swear words and screaming (line 73), and rhetorical questions and bitter irony (initial reference 'honey' preceding rhetorical question, line 75). The reaction on line 75 is a rejection of empathy but in effect, given the context, it is also an emotive elicitation of empathy.

The nurse is not offering explicit empathy; she does not use any of the parallel or reactive empathy expressions we observed in Example (1) above. Instead, she uses devices such as ritualistic questions (utterance 66 is a question, which promises introduction of news or surprise, prepares the mind of the listeners to something unexpected or undesired but still true), ToM guessing of mental state ('I have a feeling', 'you don't care', 'I think probably all they want...'), acceptance (line 72), personal

formats and modal ToM expressions ('I think', 'I know'), mitigators or 'softeners' (such as 'probably', initial 'well', final feedback requests such as 'huh') and even rebuts (line 76). The initial 'well' on line 76 is typically used preceding qualification of a statement. Thus the nurse's display of empathy is mildly antagonistic, which reflects her position as a caregiver: she needs to display empathy with the patient's state but also needs to display commitment to the patient's medical treatment. The patient's rejections of empathy are also antagonistic and at first seem to have no bargaining purpose. The patient displays lack of desire to negotiate but also lack of belief in sincerity and true care or at least lack of desire to display trust. This conversation continues for quite a while despite the explicit rejections, which suggests that these rejections have some strategic value for the patient, which might be the reason why the nurse is reluctant to engage in a more emotive empathy episode. In this sense, the conversation evolves like a social cognitive-emotive chess-board where each party is measuring their actions in relation to approximating interpretation and feelings about the other's and own intentions, needs and motivations.

Integrated Empathy Processes

Empathy is described here as a dynamic experience, which involves somatic, emotive and higher cognitive ToM processes. The observed realization of parallel and reactive empathy indicates that imitative, simulating and linguistically represented cognitive processes occur simultaneously in discourse. This means that in the current evolutionary development of the homo sapiens sapiens all three cognitive processes are employed in ToM reasoning/experiences. Thus empathy is realized as an authentic experience, as a strategy, and/or as a ritual. Empathy is, in this context, a process of collective evaluation, appraisal and alignment. It functions as a glue among interactants. Being able to take the role of the 'empathizer' and the 'empathee' is an essential characteristic of empathic communication, even in its most ritualistic formats. Thus, empathy is an important part of what Allwood calls cooperative communication (1976, 1997). Similar to other communicative acts, empathy can be experienced, elicited, given, accepted, refused, and rejected. One may reject given empathy or refuse to give elicited empathy (in our data set we have no example of refusal to give empathy). One may experience empathy or be in the state of experiencing empathy without being prompted to do so and without displaying it. One may also experience no empathy but communicate it anyway.

Giving empathy tends to be realized by communicative acts such as answering questions, display of non-elicited empathy, repetitions of elicited empathy, ritualistic rhetorical questions, guessing of mental state, acceptance, rebuts. All these are often realized with the help of discourse devices such as personal formulations of modal expressions, quoting, and mitigators or 'softeners'. In our data exclamations, extra-linguistic emotional expressions, rhetorical question, assertions, and assessments realize

the displays of parallel empathy. Reactive empathy is verbalized in the material as voicing of other's mental states, comparing of inner experiences, and exchanges of generic and personal pronouns.

Elicitations of empathy tend to be realized by narratives, 'walking out' moves, repetitive deontic declaratives, quoting, exclamations, laughter, rhetorical questions with prolonged such as 'what do you say'.

Rejection of given empathy is realized linguistically by discursive features such as interruptions and cut-offs as well as by communicative acts such as explicit rejections, confirmations of rejections, rhetorical questions, imperative orders, irony, swearing, 'walking out' moves but also display of reception of given empathy followed by rejection. Rejection of empathy may be due to perceived failure in givers' credibility, or to despair caused by negative predictions, but it may also have strategic functions or it may be a combination of the above.

Table 1 below explores the relation between: empathy functions, such as experience, giving, refusal, eliciting, acceptance, and rejection; ToM processes such as imitation, simulation and representation; levels of consciousness, such as indication, display and signal. Some of the relations can be illustrated with the data set used in this study. We have a person A who is in a certain state and we have another person B who is experiencing or not empathy for A. A is the one who elicits, accepts or rejects empathy. B is the one who experiences, gives or refuses to give empathy. For instance, to accept empathy then means that one returns the empathy to the giver. Thus the relation between A and B becomes a reciprocal. If given empathy is rejected we have no reciprocity.

Table 1. Examples of Mapped Empathy Functions, ToM Processes and Levels of Consciousness in Discourse

ToM process /Empathy functions	imitation	simulation	representation
experience	(Indication)	(Indication, Display)	(Display, Signal)
give	Indication: Tone, exclamation, silence, starring, overlap (ex.1 line 15; ex. 2 line 76) Display: Rhetorical exclamation (ex. 1 line 19)	Indication Display: ex.1 line 31, 33, 35, 37	Display, Signal ex. 1, ex. 2
refusal	Indication	Indication, Display	Display, Signal
elicit	-	Indication: ex. 1 line 18 Display: ex. 1 line 16	Display: ex. 1, line 1-14, Signal: ex. 1 line 24, 30 ex. 2 line 75

accept	Indication: Tone, form (ex.1 line 16)	Display: ex 1 line 18	Display, Signal: ex. 1 line 30
reject	Indication: ex. 2 interruption, sentence disorder Signal: Irony (ex.2 line 75)	Display: ex. 2 line 75	Display, Signal: ex. 2 line 69

To give empathy based on imitation means to imitate the other's feeling or acquisition of the other's goals and then indicate, display or signal the experience. To elicit empathy based on imitation does not make much sense (to me) thus eliciting empathy must be based on representation of mental/emotion states or it could be simulated. To accept empathy based on imitation means to imitate the other's need to have their given empathy accepted. This would be communicated as an indication. To reject empathy based on imitation means to imitate negatively the other's need to have their given empathy accepted. Line 75 in Ex. 2 can be interpreted this way because the patient is ironic to the nurse's effort to give him empathy.

To give empathy based on simulation should mean that one simulates how one self would feel (or felt) in the given situation and respond to that. For instance, on Lines 31, 33, and 35 in Example (1) Joy displays how she has a similar to Les' experience of speechlessness when astonished by boldness. To elicit empathy based on simulation could be to simulate what it is for the other to give empathy, which presupposes some representation of their mental states. To accept empathy based on simulation is a version of giving empathy but reversed towards the giver of the empathy. To reject based on simulation should be to simulate negatively what it is to have one's empathy giving accepted.

Language involves conceptual representations and in that sense, human discourse always involves representational realization of ToM processes. Thus it is easy to imagine all functions of empathy displayed based on representational inferences. To subconsciously indicate a representation of a state seems to me a contradiction in terms but it is rather easy to imagine inference based signaling of empathy functions. Thus one can give false empathy, elicit falsely empathy, reject empathy but actually want it, etc. All these processes are possible because they are realized based on mental representations and inferences.

The representational mode gives most freedom for realization of discursive functions and seems effortless if the cortex is sufficiently developed. It skips the somatic moment in imitation and can be realized by what Damasio called 'as if' loops (1994). Empathy based on simulation is clearly communicated on a representational level. Exclamations, sounds, gestures, postures, facial expressions indicate empathic processes of imitation, either parallel or reactive. Thus, in discourse we find all three ToM mechanism of empathy in different levels of consciousness realizing different discursive functions of empathy. In that sense, discourse carries the traces of cognitive evolution.

A lot more work can be done on empathy, Embodied Theory of Mind and its interactive realization. As we do that work it is interesting to throw a glimpse at the ethical possibilities empathy opens up for us.

Ethical Implications

Understanding of the mechanisms and functions of empathy has important ethical and social implications. The dominant theory of communication today is the mathematical theory of communication as exchange of information. However, the somatic and emotive bias of cognition, the complexity of ToM processes and the fundamental role empathy plays in daily interaction altogether point to another description of communication, namely communication as a caress (Levinas, 1969). Communication transpiring between self and Other(s) is not only exchange of information, or participation in a discursive sphere; it is also a manifestation of the fundamental responsibility to and for the Other. Responsibility implies both being response-able to the Other's call and being responsible for the Other in his or her suffering or joy. Responsibility is an expression of an ethical relationship and the reaching out to alterity, beyond the self. A 'failure' in communication, i.e., misunderstanding, interruption and disturbance, do not necessarily denote an ethical failure. To the contrary: if language is seen as a tool by which one might reduce the difference between self and Other, then such failure is precisely what opens up the very possibility for ethics. It is in the unsettling moment of incomprehensibility that one is exposed to the Other's otherness with no guidance as to how to respond. Failures in empathic exchange, as in the case of rejection of empathy, similar to 'failures' in communication, are, in Levinas terms, calls for ethics, invitations to face the otherness of the Other. It is in the moment of miscommunication that we face the meaning of and an opportunity for communication and social creativity.

Acknowledgements

I am in dept to Jens Allwood for years of inspiring discussion on linguistics, philosophy and other dangerous things. I am grateful to Stacy Marsella, David Traum and Jerry Hobbs for exciting talks on empathy and the Theory of Mind. I am deeply thankful to Arne Scheibel, Marco Iacoboni and Joakim Fuster for absolutely delightful, immensely enriching and ethical seminars on the Higher Functions of the Brain. "The project or effort described here has been sponsored by the U.S. Army Research, Development, and Engineering Command (RDECOM). Statements and opinions expressed do not necessarily reflect the position or the policy of the United States Government, and no official endorsement should be inferred."

References

- Allwood, J. (1976) *Linguistic Communication as Action and Cooperation*. Gothenburg Monographs in Linguistics 2, University of Göteborg, Department of Linguistics.
- Allwood, J. (1996) Some comments on Wallace Chafe's "How Consciousness Shapes Language". *Pragmatics and Cognition*, 4(1).
- Allwood, J. (1997) Notes on dialogue and cooperation. In Jokinen, K., D. Sadek and D. Traum (Eds) *Collaboration, Cooperation and Conflict in Dialogue Systems. Proceedings of the IjCAI-97 Workshop on Collaboration, Cooperation and Conflict in Dialogue Systems*, Nagoya.
- Allwood, J. (2006) Cognitive Science 'Consciousness, Thought and Language' In K. Brown (Ed.) *Encyclopedia of Language and Linguistics*, 2nd edition. Oxford: Elsevier, pp 44-53.
- Baron-Cohen, S. (1995) *Mindblindness: An Essay on Autism and ToM*. Cambridge, Mass.: The MIT Press.
- Baron-Cohen, S. (2000) Theory of Mind and autism: a fifteen year review. In S. Baron-Cohen, H. Tager-Flusberg, & D. Cohen (Eds.), *Understanding other minds: Perspectives from developmental cognitive neuroscience, second edition*. Oxford, UK: Oxford University Press.
- Chafe, W. (1994) *Discourse, Consciousness, and Time: The Flow and Displacement of Conscious Experience in Speaking and Writing*. Chicago: The University of Chicago Press.
- Corcoran, R. (2001) Theory of Mind in Schizophrenia. In: D. Penn and P. Corrigan (Eds.) *Social Cognition in Schizophrenia*. APA.
- Damasio, A. (1994) *Descartes' Error: Emotion, Reason, and the Human Brain*. Putnam Publishing.
- Davis, M.H. (1994) *Empathy: A social psychological approach*. Madison, WI: Brown and Benchmark.
- Edwards, D. (1997) *Discourse and Cognition*. London: SAGE Publications.
- Erikson, E.H. (1968) *Identity: youth and crisis*. New York: Norton.
- Eysenck, S. B. G. (1981) Impulsive and antisocial behavior in children. *Current Psychological Research*, Vol. 31-37.
- Frith, C. & Frith, U. (2000) The physiological basis of Theory of Mind: functional neuroimaging studies. In S. Baron-Cohen, H. Tager-Flusberg, & D. Cohen (Eds.), *Understanding other minds: Perspectives from developmental cognitive neuroscience, second edition*. Oxford, UK: Oxford University Press.
- Fuslier, G. D. (1988) Hostage negotiation consultant: Emerging role for the clinical psychologist. *Professional Psychology: Research and Practice*, Vol. 19 175-179.
- Fuster, J.M. (2003) *Cortex and Mind: Unifying Cognition*. Oxford University Press.

- Goodwin, C. and Goodwin, M. (1987). Concurrent operations on talk: notes on the interactive organization of assessments. *IPrA Papers in Pragmatics*, Vol. 1 No. 1 1-52.
- Gordon, R. (1986) Folk psychology as simulation. *Mind and Language*, 1: 158-170.
- Happé, F., Brownell, H., & Winner, E. (1998) The getting of wisdom: Theory of Mind in old age. *Developmental Psychology*, 34 (2), 358-362.
- Happé, F., Brownell, H., & Winner, E. (1999) Acquired 'Theory of Mind' impairments following stroke. *Cognition* 70, 211-240.
- Heritage, J. (2005) *Empathic Moments*. Talk at CLIC/UCLA: California.
- Hobbs, J. and Gordon, A. (2005). Encoding Knowledge of Commonsense Psychology. *7th International Symposium on Logical Formalizations of Commonsense Reasoning*. May 22-24, 2005, Corfu, Greece.
- Hogan, R.T. (1969) Development of an empathy scale. *Journal of Consulting Psychology*, Vol. 33 307-316.
- Iacoboni, M. (2005) Understanding others: imitation, language, empathy. In S. Hurley and N. Chater (Eds) *Perspectives on imitation: from cognitive neuroscience to social science*. Cambridge, MA: MIT Press.
- Jefferson, G., Sacks, H. and Schegloff, E. (1987) Notes on laughter in the pursuit of intimacy. In G. Button and J. R.E. Lee (Eds) *Talk and Social Organisation*. Clevedon, England: Multilingual Matters 152-205.
- Lazarus, R. (1999) *Stress and Emotion*. New York: Springer Publishing Company, Inc.
- Levinas, E. (1969) *Totality and Infinity: An Essay on Exteriority*. Thans. A. Lingis, Pittsburgh: Duquesne University Press.
- Martinovski, B. (2000) *Repetitions and reformulations in court proceedings – a comparison of Sweden and Bulgaria*. Gothenburg Monographs in Linguistics. Department of Linguistics. Goteborg University, Goteborg.
- Martinovski, B. (2004) Communication as reproduction of self vs. ethics of otherness. Talk at Nordic Conference on Intercultural Communication, NIC 2004, Goteborg University, Goteborg, Sweden.
- Martinovski, B., Mao, W., Gratch, J., and S. Marsella. (2005a) An Integrated Theory of Mitigation. *Proceedings of Cog Sci 2005*, Stresa, Italy.
- Martinovski, B. and Marsella, S. (2005b) Theory of Mind and Coping in Discourse. In *Proceedings of Artificial Intelligence and the Simulation of Behavior (AISB), Symposia on Mind-Minding Agents*, Hatfield, U.K.
- Martinovski, B. (2006a) Cognitive and Emotive Empathy in Discourse. In *Proceedings of CogSci 2006*, Vancouver, Canada.
- Martinovski, B. (2006b) Emotion, Language and Negotiation. *Proceedings of GDN 2006*, Karlsruhe, Germany.
- Martinovski, B., Traum, D. and S. Marsella. (2006c) Rejection of Empathy in Negotiation. *Journal of Group Decision and Negotiation*. New York: Springer Publishing.

- Martinovski, B. and Mao, W. Emotion as Argumentation Engine: Modeling the Role of Emotion in Decision Taking. (forthcoming)
- Mead, G.H. (1993) *Mind, self, and society*. Chicago: University of Chicago Press.
- Pinchevski, A. (2005a) *Displacing Incommunicability: Autism as an Epistemological Boundary*. *Communication and Critical/Cultural Studies*, 2(2): 163-184.
- Reik, T. (1949) *Listening with the third ear: The inner experience of the psychoanalyst*. New York: Grove.
- Rizzolatti, G. and Craighero L. (2004) The Mirror-Neuron System. *Annual Review Neuroscience*, 27:169-92.
- Salem, R. (1982) Community dispute resolution through outside intervention. *Peace and Change Journal*, Vol. VIII No. 2/3.
- Stephan, W.G. (1999) The Role of Empathy in Improving Intergroup Relations. *Journal of Social Issues*, Winter.
- Stich, S. and Nichols. S. (1992) Folk psychology: simulation or tacit theory? *Mind and Language*, 7, 35-71.
- Traum, D. (1994) *A Computational Theory of Grounding in Natural Language Conversation*. PhD thesis, University of Rochester, Department of Computer Science.
- Von Uexkull, J. and Kriszat, G. (1934) *Streifzuge durch die Umwelten Von Tieren und Menschen. Ein Bilderbuch unsichtbarer Welten*. Berlin: Spriger.
- De Wall, F. (2006) *Primates and Philosophers. How Morality Evolved*. Princeton and Oxford: Princeton University Press.
- Wellman, H.M., & Lagattuta, K. H. (2000) Developing understandings of mind. In S. Baron-Cohen, H. Tager-Flusberg, & D. Cohen (Eds.), *Understanding other minds: Perspectives from developmental cognitive neuroscience, second edition*. Oxford, UK: Oxford University Press

