

Close the gap please

Citation for published version (APA):

Van Hezewijk, R., & Verheggen, T. (2007). *Close the gap please*.

Document status and date:

Published: 08/09/2007

Document Version:

Peer reviewed version

Please check the document version of this publication:

- A submitted manuscript is the version of the article upon submission and before peer-review. There can be important differences between the submitted version and the official published version of record. People interested in the research are advised to contact the author for the final version of the publication, or visit the DOI to the publisher's website.
- The final author version and the galley proof are versions of the publication after peer review.
- The final published version features the final layout of the paper including the volume, issue and page numbers.

[Link to publication](#)

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal.

If the publication is distributed under the terms of Article 25fa of the Dutch Copyright Act, indicated by the "Taverne" license above, please follow below link for the End User Agreement:

<https://www.ou.nl/taverne-agreement>

Take down policy

If you believe that this document breaches copyright please contact us at:

pure-support@ou.nl

providing details and we will investigate your claim.

Downloaded from <https://research.ou.nl/> on date: 29 Nov. 2023

Open Universiteit
www.ou.nl



Close the gap, please; On the claims of evolutionary psychology to explain romantic love¹

René van Hezewijk, Open University of the Netherlands

Theo Verheggen, Open University of the Netherlands



Mate choice, courting, parental investment, attractiveness, and love are a few examples of phenomena in the sphere of human interactions in which evolutionary psychology has a keen interest .

Buss, for instance, after having done much research in several countries with different cultures, has suggested several preferences in partner selection that reflect the adaptive problems to be found for members of primates in general, and the human species in particular (Buss, 1989, 1999). Buss based himself on theories adopted from evolution theory – the biological one, of course – especially Trivers’ parental investment theory. Roughly it says that

¹ Paper presented at the bi-annual conference of the International Society for Theoretical Psychology, Toronto, CANANDA, 17-22 June 2007

For any member of the sexes it will select a mate that is (showing to be)

- able to invest in the relationship and in their offspring
- willing to invest in the relationship and in their offspring
- able to physically protect the self, the partner and offspring
- having good parenting skills
- compatible (has similar values, age, personality) etc.

if the individual is interested in long-term mating

(Buss, 1989; 1999)

For any member of the sexes it will select a mate that

1. Is (showing to be) able to invest in the relationship and in their offspring
2. Is (showing to be) willing to invest in the relationship and in their offspring
3. Is (showing to be) able to physically protect the self, the partner and offspring
4. Is (showing to be) having good parenting skills
5. Is (showing to be) compatible (has similar values, age, personality) etc.

if the individual is interested in long-term mating

Theoretically it is interesting to see that the theory is formulated such that the actual sex (gender) is not at issue. It is the stronger sex (as a genotype) that will dominate the choice as far as hypothesis 3 is concerned, whereas the 4th hypothesis will have a stronger effect as a mechanism for the one member of the sex that will be most involved in parenting.

Although often it is the male in the third, and the female sex in the fourth hypothesized mechanism that will dominate the selection of mate, the formulation is completely neutral. In the spotted hyena -- to mention one species it is the female that in the third mechanism dominates the relationship with offspring and partner.

This is only one example of how evolutionary theories in psychology that were suggested by if not deduced from evolution theory in biology, shed light on mate selection preferences in human beings. Not only these

theories are interesting, they have quite strong empirical support as well. In many ways researchers cooperating with Buss' program, or investigating on their own the consequences of the theories involved in parental investment and mate selection in human beings and other primates, have found remarkable demonstrations and proof of the predicted behavior (cf Part III of Buss, 2005) for some substantial overviews by David Symons, by David P. Schmitt, by Lawrence S. Sugiyama, by Gangestad, Thornhill and Gaver-Apgar, by Shackelfor et al, by Malamuth et al and by Campbell and Ellis.

Studies like these focus on the social psychology of mate selection and sexual interests. They all have produced insight in our sexual behaviour and interests in general. There are remarkable resemblances of these preferences over many countries and cultures, within and between the sexes, within and between age groups, social economic classes etc. People all are, to a certain extent alike, alike in what they like and dislike. The *interpretation* of what *is* alike, however, is a matter of debate. That is, "resemblance" always is resemblance in the eye of the persons or animals that compare. A human being resembles eels because they are less hairy than chimps, or aren't they? Nevertheless we tend to answer that chimps resemble humans more than eels, for instance because they seem more close to us in movements, mate selection, etc.

A preference for a certain body shape, for instance, presupposes that the body items that can be seen as resembling each other in shape (let alone beauty or attraction), can be identified as resembling. This, however, is an issue that has not been resolved yet, not even by the philosophers. All that can be said is that resemblance is in the eye of the beholder, and in the present subject it is in the eye of the organism involved, or at least in the eye of the sex of the organism involved, or at least in the eye of the

members of a certain age, culture, historical period of the sex of the organism involved, or at least...etc.

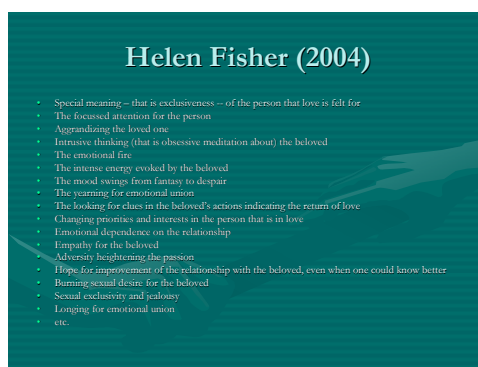
Anyways, body and face symmetry, sharp male facial contours and soft contours in the female face, a particular waist-hip ratio are similarly favoured features world wide. Evolutionary theory has been quite successful in explaining and predicting these preferences. Nevertheless, it is not so difficult to point out local differences in what is considered attractive (or beautiful) here as well, depending on the social group one is part of. The sensorium is sophisticated in the group, whether it is about wine or women, men or heavy metal music. We will elaborate on this point in a minute.

Other studies of romantic love have surfaced in recent years that involve the role of the brain in love. At least they are concerned in the role of the brain and other favourite organs (W. Allen, 19..) involved in sexual activities. For instance fMRI studies have shown remarkable involvements of brain regions and other regions involved in sexual intercourse, sexual interest and sexual imagery (.....) but for the sake of decency, if not police work load, we cannot go into details here.

Doubtless, understanding the human organism is indispensable in understanding the relationships between the sexes and behavior associated with the species' reproduction. Also it is clear from numerous sources that the way the members of the human species have evolved – with all its special physiological, neurological endocrinological and other mechanisms involved in sex, reproduction and investment in partner and offspring, is a condition for understanding romantic love.

For instance Helen Fisher's work on separate neurological circuits for love, lust and attachment is a good example of how knowledge of the

(evolution of the) human body partially accounts for romantic love in humans. Focusing on the experiences of human beings concerning romantic love, she reports – again – remarkable regularities in and resemblances of feelings between human beings from different countries, cultures, ages, sexes and even, apparently, between human beings and other animals – primates, and some other mammals in particular. Among the resemblances in *reported* feeling (in the case of animals attributed feelings) associated with romantic love are



- Special meaning – that is exclusiveness -- of the person that love is felt for
- The focussed attention for the person
- Aggrandizing the loved one
- Intrusive thinking (that is obsessive meditation about) the beloved
- The emotional fire
- The intense energy evoked by the beloved
- The mood swings from fantasy to despair
- The yearning for emotional union
- The looking for clues in the beloved's actions indicating the return of love
- Changing priorities and interests in the person that is in love
- Emotional dependence on the relationship
- Empathy for the beloved
- Adversity heightening the passion
- Hope for improvement of the relationship with the beloved, even when one could know better
- Burning sexual desire for the beloved

- Sexual exclusivity and jealousy
- Longing for emotional union
- etc.

(Fisher, 2004)

Loss of appetite, nervousness near the beloved, expressing wild energy, persistence of behavior, affection, choosiness, love at first sight or smell, at least some of them have been found in elephants, orangutangs, chimpanzees, giraffes or butterflies if one is willing to assume that, if certain behaviors found in humans reflect the reported feelings, the resembling behaviors in animals reflect resembling emotions in animals.

Also Antonio Damasio's neurologically supported – Spinozistic, if not Jamesian -- theory on emotions and feelings seems to enhance evolutionary psychology's claims. As may well be known by now Damasio suggests that vision, hearing, touch, taste and smell result from nerve activation patterns that reflect states of the *external* world. Emotions, on the other hand, are nerve activation patterns that correspond to the state of the *internal* world. The experience of sexual attraction is recorded in nerve cell activation patterns obtained by the brain from neural and hormonal feedback, and is experienced as a body state. This is at one stage the information to go on when adapting one's behaviour appropriately to the circumstances.

So, in Damasio's view emotions reflect inner states of body and brain that are shown or can be observed from outside (although you might need modern instruments for that). He introduces "feelings" as the emotions' counterparts that *reflect* states of the mind. Emotions are public, feelings are private: they are the pure experience *of* the emotions and they are not observable from the outside.

Damasio (2003)

- "Emotion and related reactions are aligned with the body, feelings with the mind." (p.7)

"Emotion and related reactions are aligned with the body, feelings with the mind." (Damasio, 2003, p. 7) The organization of the human brain is crucial in understanding how emotions and feelings come about. And certainly Damasio tried to elucidate how humans not only survive, but *live their lives consciously* because they have feelings -- the shadows of the emotions. Emotion and feeling play an important role in the construction of the self (Damasio, 1999).

Whereas for Damasio (2003) emotions pertain to bodily reactions such as a quickened heart beat and tense facial muscles, *feelings* are associated with a *representation* of the body affected by emotions. In other words, one could argue, feeling is the mental perception of emotion – and just like emotions, feelings affect the entire body.

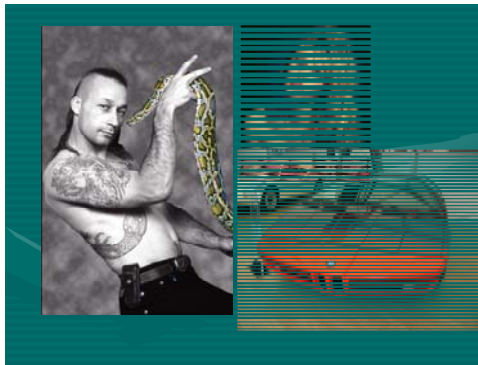
We argue

the way we interpret or represent our feelings, depends on how feelings are stylized and expressed in communities.

Now, we argue, the way we interpret or represent our feelings, depends on how feelings are stylized and expressed in communities. From (socially) skilled members of the group we learn how to appropriately deal with affects. Partially, we learn what to feel and how to feel, and

how to express this, when there is an emotion. In this respect, a certain norm resides or comes to reside in the group we are a member of. "Boys are Indians and Indians don't cry", "hysteria and ecstasy are for the weak", or "total ecstasy is ultra cool". To be sure, how we can feel will be bound to the possible states of our bodies and the possible perceptions of our brain/mind. But within those ranges, there is local variety in how to represent similar emotional states. In other words, because there is an ideational dimension to feelings they are partially subject to training or social styling.

Now we return to a point we mentioned earlier: A general inherent preference for a strong symmetric male body may nevertheless be 'modified', sophisticated, if not 'moderated', by what is considered attractive by the local group. As such, a girl growing up in a lower middle class neighbourhood may fancy the bald and tattooed body builder driving this impressive BMW.



An upper middle class woman may however ridicule such a man and instead fall in love with a distinguished gentleman driving his Jaguar Mk II.



Likewise, a woman's oval face partially covered in an oriental scarf may not be as attractive to some Western men as a similarly oval face covered in lush peroxide curls. Here too, the 'cultural form of feeling' – that is the calibration of ones feelings in concordance with what is appropriate in the group – is under discussion.

With respect to our central theme, romantic love, the social styling of feeling is salient. In the Netherlands, and we assume here in Canada too, romantic love is the ultimate form of love. It's authentic, and involves a partner of our very own choice. Moreover, marriage or another form of long term commitment is reserved for that special person with which we experience this romantic love. Notwithstanding the fact that we can choose our romantic partner freely, our preferences are often colored. What we like, dislike, adore and find frustrating in another person, bears the stamp of the social environment. More often than not, a romantic partner is found in the same social circle of family, friends, colleagues or perhaps fellow students. It is with these people that we often 'share' similar values en preferences; not limited to what we believe, but also to how we dress, walk, talk, eat and so forth.

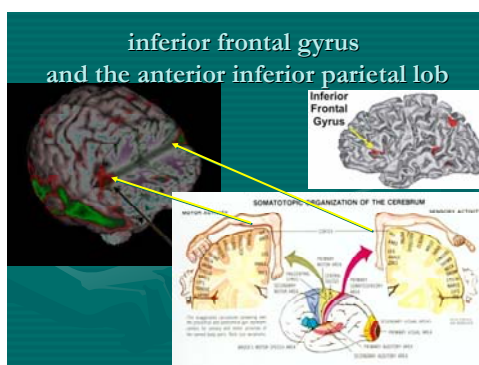
As stated before, Buss' also stresses the importance of shared interests of mating partners. How these interests come about, is nevertheless a case of upbringing and social arrangements. The feeling that we should marry the boy or girl we deeply fell in love with, is not as evident for adolescents in Egypt, for example, as is it for a young woman or man in

The Netherlands. Likewise, the family's verdict about the fiancée often is not as compelling in the Netherlands nowadays, as it was only two generations ago, or as it is in most families in Morocco or India. The social styling of feelings with respect to romantic love varies across communities and era's. This is possible because of the ideational dimension to feelings, relative to emotions. So, here, a biological or evolutionary perspective needs some more handshaking with a social or cultural perspective.

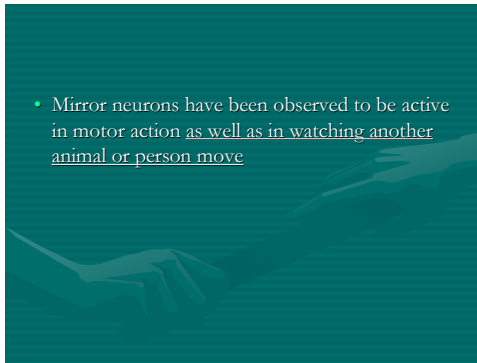
This idea may be counter intuitive, as most of us got used to the idea that feelings, especially feelings of love, are very private affairs that originate somewhere in our deepest selves. But feelings are socially styled *par excellence*, we argue.

How could they? How could the most private affairs be so vulnerable for social influences? What mechanism makes it possible and why do we think our romantic feelings are as private as our private parts?

An interesting development, already hinted at by Damasio (2003), is the recent scientific hype on so-called mirror neurons. Mirror neurons are neurons in the ventral premotor cortex of macaque monkeys (Rizzolatti & Craighero, 2004). The human equivalent of the ventral premotor cortex is the inferior frontal gyrus and the anterior inferior parietal lob.

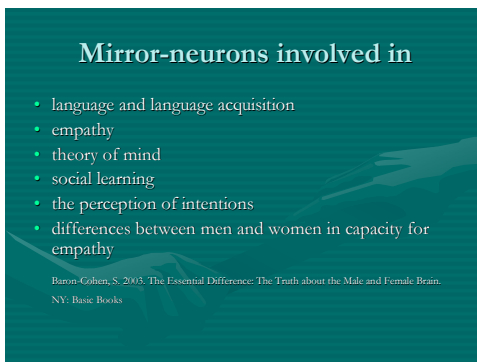


Not so much their location is interesting but their function: mirror neurons have been observed to be active in motor action as well as in watching another animal or person move.



There are also neurons found to be mirroring actions that are heard (e.g. [^]Kohler et al., Science, 2002).

This is perhaps one of the most interesting findings of the decade. As may be guessed many functions were thought of that involve mirror neurons and that were more or less a mystery for the neuropsychologist.

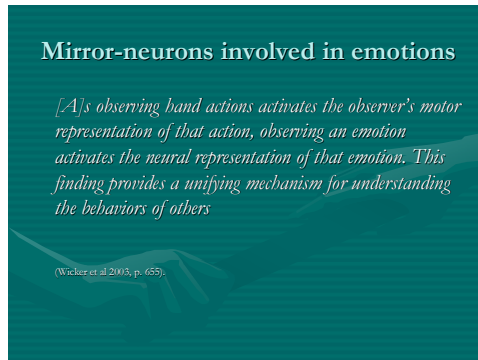


These functions include:

- language and language acquisition
- empathy
- theory of mind
- social learning
- the perception of intentions

- differences between men and women in capacity for empathy (△ Baron-Cohen, S. 2003. The Essential Difference: The Truth about the Male and Female Brain. NY: Basic Books)

An interesting suggestion already emerged concerning the role of mirror neurons in emotion perception and the learning of feelings (Wicker et al., 2003)



[A]s observing hand actions activates the observer's motor representation of that action, observing an emotion activates the neural representation of that emotion. This finding provides a unifying mechanism for understanding the behaviors of others (Wicker et al 2003, p. 655).

From these findings it can be concluded that results from neuropsychology and evolutionary psychology are becoming more relevant in understanding the phenomena under investigation in several different, if not completely different areas of psychology and other human sciences. The desperate hope one of the authors once expressed (in the ISTP Conference in Berlin) seems to be getting realized (Van Hezewijk, 1999). Mirror neurons may be crucial in understanding *romantic* love as well, as we will argue in a minute. That is they are necessary conditions for an explanation, but not sufficient. What is needed apart from the mechanisms involved – both neural and social and cultural -- is an analysis of what it is that is felt. Neuropsychology can help us to understand *that* and *how* (by what mechanisms) we feel this

crazy thing called love. Sociology and anthropology can help us how we came to feel it *that way*.

But psychology must show us why we feel it that way.

So at one level we argue that neuropsychology cannot account for a crucial asset of human love, without taking the essentially *social* nature of humans into account. This concerns the “content” and the way we learn to construct and reconstruct our private emotions in a socially adjusted way. This is a necessary condition as well, in order to explain the authenticity and felt genuineness of romantic love. Like all interactions in which meaning is involved, psychologists cannot search for the production of those feelings *in* the human organism. Instead, we argue, feelings (as opposed to emotions, cf. Damasio) become stylized *between* acting people, in concordance with what is ‘appropriate’ in the community.

So this is where evolutionary psychology might as well come in. Although some versions seem to be constrained to the individual members of the (human) species there is nowhere in evolutionary theory sufficient argumentation to confine evolutionary explanations to individual members. On the contrary, as Niko Tinbergen made clear in his famous article (Tinbergen, 1952, 1963) , an explanation of behaviour in (evolutionary) biology involves answers to the "why" in terms of the ontogenetic, the phylogenetic, the mechanical and the functional levels (or approaches or perspectives).



In other words: if one wants an answer to the question why X does what she does, you'll need to refer to

- her personal development in relation to the concrete contexts since birth (or even conception)
- the evolution of her species since the first member stayed alive and made inheritable the solutions for all the adaptive problems it was confronted with
- the "direct causation" of the behaviour: the proximal stimulus and the inherited and developed internal mechanisms or social competences needed to respond to that stimulus
- the function of the inherited and, in combination with that, acquired mechanisms *for the benefit of the species' survival*.

Moreover, from many recent publications in the life sciences it has become clear that the phenotype -- the appearance of a certain trait in an individual -- depends on both the genotype -- the genetic constitution of an individual organism -- and the relevant environment for that individual organism. And not only do genotype and environment "shape" the individual, the phenotype. The environment also is shaped by the behaviour of the individual, and by the individuals in its surroundings. And moreover once again (moreover to the third degree) this influences the survival perspectives and indeed the chances for survival, and thus the success rates of individuals with certain genetic makeups (Laland, Odling-Smee, & Feldman, 1996; Richerson & Boyd, 2005).

Culture has for long been mentioned as a candidate for one of these environmental influences on the phenotype. But as the other author of this paper already has made clear (in *Culture Alt Delete*) (Verheggen, 2005)



"culture" is best ignored as an explaining concept in psychological explanations. This is not to say that in social niches there are no stable behavioral patterns. These patterns have been shaped and are constantly reshaped in social interaction (consensual coordination, adjustment, tuning). These patterns help shape human behavior, or even feelings. By deleting culture (as it were) psychologists are no longer tempted to use culture as an (empty) explaining factor where they should be committed to explain it (culture). Culture needs explanation from psychology, not the other way around. Culture, it has been suggested, can best be explained as the result of behaviour that involves consensual coordination. The idea is that two or more individuals are constantly (re)creating their behavioural patterns around them in mutually "tuning" their behaviour. In a sense, one could argue that the other or others involved are helped and are able to -- more and more -- predict what can be expected in the next moves. And what is more important: knowing that the others know of these expectancies.

In a nutshell, the idea is that the mutual tuning of behavior allows the organisms involved to recognize their behavior *as* mutually tuned. They can subsequently relate to their ongoing mutual tuning, as if it was an object. Subsequently, they can relate to their relating to the mutual tuning, and so forth. It is in these second and higher order coordinations of behaviour that meanings are involved. The meaning of 'mutually

orienting' for instance, the meaning of 'play', of 'object', 'ball', 'romantic love'.

In a sense it is like the stem or halm of the honeysuckle. In itself no single stem of the honey suckle is able to raise itself above -- say -- 30 cm from ground level. Once they have found each other they can raise themselves up to at least 5 times that height.



Honeysuckle mutually adjusting (photos by one of the authors)



In several senses these pictures bring us both in the mood for and to the subject that you came here for: romantic love. Romantic love could be the test case for evolutionary and cultural psychology: how far do they get -- digging from each side of the tunnel -- in meeting each other in so difficult and human a subject as this? Romantic love has traditionally been seen as the ultimate example of personal feelings. And indeed, as Fisher already made clear, it is reported by almost every participant as the most individual expression towards, and the most individual feeling for, the most individual individual. How more individualistic can one get? And yet, by reading all these individualistic reports of individual feelings in works of art and in surveys among the Japanese one is struck by the resemblances of the expressions of the feelings. The feelings seem to feel as unique and most often concern an unique other individual, but the expressions are the same. How come?

We would like to suggest here that even romantic love between two hyperindividuals involves social interaction. Not only the social interaction between the two persons at the very moment of their emotional summits, but the social interactions between the members of the cultures they participate in as interactors -- as consensual though not conscious designers. Romantic love, that is the *feelings* involved, needs to be learned implicitly.

Moreover, the meaning-laden theme of romantic love is only possible in a domain of mutually 'tuned' behavior. The meanings often involve (at

least in the West) being true, being predestined for each other, having found that very One special person, being that special person for the beloved, believing in the other person, being authentic, loving unconditionally, and so on. As Cor Baerveldt has argued (Baerveldt, 1999), when feelings become the object of expression, their genuineness cannot be sufficiently captured in words only. Expressing one's feelings for a beloved partner is not so much about making an explicit statement about a state of affairs in 'reality'; rather, it is about expressing and claiming commitment and authenticity. If it is not spontaneous or if it is not really *felt*, the proposition "I love you" may lead to suspicion. Moreover, *because* feelings become calibrated in the group, they communicate meaning to others. The sorrowful face of a widow at a funeral communicates grief to the crowd, *given* that her expressions are perceived as authentic. Otherwise, her tears may lead to the suspicion that "she was only in it for the money". *How* to express -- properly or effectively or even genuinely -- sorrow and love is a consensual affair; it depends on what is prevailing in the local group.

Thus, the experience that feelings are true is a mutually tuned / social affair. "You are a kinky hard body" will not work for all woman while some may consider that stament to be the ultimate compliment. Likewise, ladies, telling a man that he has a gorgeous symmetric face will not suffice in the end. People also want to experience that they are inherently special. It takes a certain sensitivity, *feeling* indeed, to accomplish that. As is the case in any form of communication, partners need to relate to one another and also to their mutual relating. Recall from above that in this sense romantic love can be the object of coordination, just as a ball can be. Tomassello (Tomassello, 1999) has shown that such triadic relations of 'joint attention' imply that the interacting partners understand that they both have intentions. As soon as one recognizes that others too have

intentions towards objects and people, one can begin to imagine oneself standing in the shoes of the other (if you have the shoes still on).

Mutual tuning of behaviour, such that higher order coordinations of behaviour can emerge, is possible on the basis of understanding intentionality. Only then, partners may *enjoy* a joint activity for the sake of acting *together*. *Funktionslust* as Karl Bühler once called it, is part of this: the pure joy of understanding and being in tune. One doesn't find that sentiment in other mammals, Tomasello argues. Mirror neurons may be the crucial neurological substratum here that makes the tuning and understanding possible. The group (N=2 or larger) may be the crucial forum to check if you understand right and *are* tuned in with the incrowd. The social brain / mind is crucial for being there to act and feel tuned in.

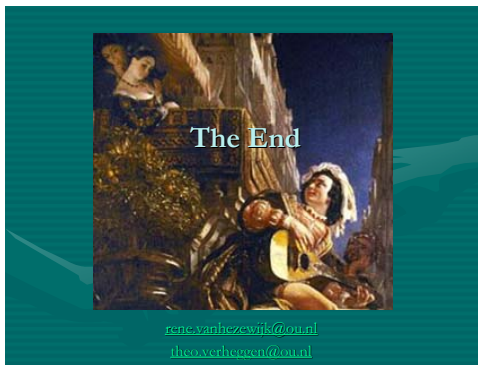
Just like human beings have two eyes physiological and neurologically speaking that we see with, but experience the seen things as if from one "mind's eye", just so we have a neurological and social apparatus that evolution provided, but one phenomenal experiencing thing (aka mind and body) to feel with and act from.

Feelings involved in romantic love involve, if not presuppose a neurological sophistication to do with the social nature of our species. More precise: it involves being able to get tuned to what others in the group will consider to be "love" as a feeling accompanying bodily attraction, expected return of parental investment, etc. "Accompanying" but it is more than that. If this is implicit social learning, it is the mirror neurons that make it possible – that make one competent to love romantically. Also, if romantic love involves tuning in to comparable feelings of one other person, and if this involves not only going through the motions yourself, or going virtually, imagined, through the emotions, or even imaging or imagening what the other will feel if they go through

the motions as well, then mirror neurons are part and parcel of romantic love. Be sure though that

- 4 we did get there through evolution;
 - 4 you now know what makes romantic love possible;
- however, it is not the feeling itself.

Psychology is essential for explaining what is the structure of the feelings involved.



References

- Baerveldt, C. (1999). *Culture and the consensual coordination of actions*. Unpublished Ph.D., Radboud University, Nijmegen.
- Buss, D. M. (1989). Sex differences in human mate preferences; Evolutionary hypotheses tested in 37 cultures. *Behavioral and Brain Sciences*, 12, 1-49.
- Buss, D. M. (1999). *Evolutionary Psychology; The new science of the mind*. Boston, MA: Allyn and Bacon.
- Buss, D. M. (2005). *The Handbook of Evolutionary Psychology*. Hoboken, NJ: Wiley.
- Damasio, A. R. (1999). *The feeling of what happens; Body and emotion in the making of consciousness*. New York: Harcourt Brace.
- Damasio, A. R. (2003). *Looking for Spinoza; Joy, sorrow, and the feeling of the brain*. Orlando: Harcourt.
- Fisher, H. (2004). *Why we love; The nature and chemistry of romantic love*. New York: Henry Holt.
- Laland, K. N., Odling-Smee, F. J., & Feldman, M. W. (1996). The evolutionary consequences of niche construction: A theoretical investigation using two-locus theory. *Journal of Evolutionary Biology*, 9, 293-316.
- Richerson, P. J., & Boyd, R. (2005). *Not by genes alone; How culture transformed human evolution*. Chicago: Chicago University Press.
- Rizzolatti, G., & Craighero, L. (2004). The Mirror-Neuron system. *Annual Review of Neuroscience*, 27, 169-192.
- Tinbergen, N. (1952). Derived activities: Their causation, biological significance, origin and emancipation during evolution. *Quarterly Review of Biology*, 27, 1-32.
- Tinbergen, N. (1963). On aims and methods of ethology. *Zeitschrift für Tierpsychologie*, 20, 410-433.
- Tomassello, M. (1999). *The Cultural Origins of Human Cognition*. Cambridge, MA: Harvard University Press.
- Van Hezewijk, R. (1999). Digging tunnels; will philosophy, psychology, and biology ever meet? In W. Maiers, B. Bayer, B. Duarte Esgalhado, R. Jorna & E. Schraube (Eds.), *Challenges to Theoretical Psychology* (pp. 156-164). Toronto: Captus Press.
- Verheggen, T. (2005). *Culture Alt Delete; On the misperception of culture in psychology (Diss.)*. Heerlen: Open University of the Netherlands.
- Wicker, B., Keysers, C., Plailly, J., Royet, J.-P., Gallese, V., & Rizzolatti, G. (2003). Both of Us Disgusted in My Insula: The Common Neural Basis of Seeing and Feeling Disgust. *Neuron*, 40(655-664).