Emotion Researcher

The Official Newsletter of the International Society for Research on Emotion

EMOTIONS AND SOCIAL ENGAGEMENT

In this issue of Emotion Researcher we investigate the social dimension of emotions. What effect does the social environment have on the emotional development of infants? How do the emotions of others affect us? What emotional expectations are associated with our roles in the workplace? Can emotion theory benefit from the sorts of situated approaches that are increasingly influential in cognitive science?

An Interview With Nico Frijda

Read an interview with Nico Frijda, one of the world's leading affective scientists. Nico reminisces about WWII, about falling in love for the first time, and presents his latest views on emotions as action tendencies, appraisal, regulation, emotional experience, and the future of affective science.

Editor's Column

There is much to enjoy in this issue! Click on the post title to get a quick overview of what's inside.

ISRE Matters

Check out Arvid Kappas' latest column. ISRE's President introduces us to a topic dear to his heart: affective computing.

Young Researcher Spotlight

Come inside to discover who is this issue's featured young researcher!

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Editor's Column

Andrea Scarantino, Department of Philosophy and Neuroscience Institute, Georgia State University

When asked to provide an example of what an emotion is, the knee-jerk reaction of a great many emotion theorists may well be to mention fear of a bear in the woods. After all, this was one of James' archetypal case studies, and it brings into stark relief one of the emotions' central functions, namely quickly and automatically coordinating resources so as to cope with a meaningful, and in this case aversive, stimulus situation.

The trouble with fear-of-a-bear-in-the-woods examples is that they separate the emoter from his or her social environment, hiding from view both the communicative power of emotions within social relationships, and how cultural differences can shape the elicitation and unfolding of emotions. To understand what we may broadly describe as the *social dimension* of emotions, we must focus on other exemplars of emotions, such as anger in a marital confrontation or embarrassment while clumsily delivering a song to an audience.

These new exemplars allow us to shift theoretical focus from the intrapsychic to the interpersonal, from the unbidden to the strategic, from the short-lived to the long-lived, from the context-independent to the context-dependent, from the static to the dynamic, unveiling complexities of our emotional lives that go well beyond what an episode of fear of a bear in the woods can reveal.

This issue of *Emotion Researcher* surveys some of the progress recently made in understanding the social dimension of emotions in a variety of disciplines. We begin with Vasu Reddy's developmental psychology perspective, and explore the impact of social interactions and cultural differences on the emotional development of infants. Her article emphasizes how early infants are drawn to engage with their social environment, and how quickly cultural differences in the interactive style of caregivers start shaping their emotional lives. Some of her most interesting case studies focus on the development of coy smiles and humor in infants.

Brian Parkinson investigates the psychological processes underlying how another person's emotions can affect your own, distinguishing between an inferential, appraisal-mediated road (e.g. inferring that I am to blame from your anger and possibly reacting to this appraisal with guilt) and a more straightforward road in which the very physical characteristics of another person's emotions have a direct causal impact (e.g. flinching and pulling away as a direct effect of the volume and pitch of someone's angry shouts). Parkinson emphasizes that the non-inferential road allows emotions to exert interpersonal influence very early in development, and that understanding both inferential and more direct paths of influence demands understanding the complex workings of a process of reciprocal and dynamic causation.

Kathryn Lively offers us some sociological insights on the social dimension of emotions, focusing her attention on the role of emotions in the workplace. One of her key points is that our professional roles in the workplace come with societal expectations about which emotions we should or should not express. These expectations depend in part on the gender and race of the role occupant, and they include expectations about the degree to which different workers are supposed to regulate their emotions (e.g. higher ranking members of organizations are expected to manage their emotions less than lower ranking ones). Lively also emphasizes the profound social impact that *emotional deviance*, instantiated when individuals stop manifesting the characteristic emotions associated with their social roles, can have both in interpersonal relationships and in society at large, using the emancipation of women and the Arab Spring among her examples.

Achim Stephan and Sven Walter provide us with a roadmap for navigating the rugged terrain of situated approaches in the philosophy of emotions. Just as the situated cognition movement emphasized that we should not bracket off the environment beyond the individual in trying to make sense of cognitive states, Stephan and Walter emphasize that emotion theory will greatly benefit from understanding emotions in the context of reciprocal real-time interactions between emoters and their environments. This idea has been developed in a variety of ways, leading to accounts of emotions as *embodied, embedded, extended* and *distributed*. Their article provides an analysis of each of these contentious terms, exploring how the various notions of *situatedness* can lead to progress in emotion theory.

This issue's interview is with Nico Frijda, one of the major figures of contemporary emotion theory. Nico's wide-ranging interview begins with his haunting memories of being persecuted as a Jew during World War II, shifts to the rosier memories of falling in love for the first time at age 18, and it traces the intellectual origin and recent developments of his influential theory of emotions as states of action readiness. You will greatly enjoy Nico's interview (and check out his mango soup recipe!).

The Young Researcher Spotlight is on Gerben A. Van Kleef, a psychologist from the University of Amsterdam. Gerben's experimental work focuses on how emotions regulate social interactions. In the span of a few years, Gerben has collected an impressive amount of behavioral, physiological, eye-tracking, and self-report and peer-report data on the social consequences of anger, sadness, disappointment, guilt, regret, disgust, happiness, and pride in a variety of interactive settings, including deal-making, team performance, personal relationships, and sports.

ISRE's President, Arvid Kappas, devotes his ISRE Matters column to introducing the research community to a topic dear to his heart, namely affective computing and robotics. Read Arvid's column to learn about the challenges we currently face in building emotion-savvy robots, and to discover how emotion theorists and implementers of robotic affective systems can help one another.

Finally, the dates and venue of ISRE2015 are now official: it will take place July 8-10, 2015 in Geneva. David Scherer will be program chair and local organizer together with members of the Swiss Center for Affective Sciences and a selected international and interdisciplinary program committee. This promises to be a terrific meeting, and I look very much forward to it. if you click on the picture to the right, you will be sent to the official conference webpage, which will be updated over time.

Keep your eyes open for the call for papers, which will come out this September, with a December 1 deadline for abstract submissions. As usual, be in touch with comments, ideas for future issues, information about forthcoming conferences, reports about especially promising young researchers, and whatever else strikes your fancy. To wet your appetite, let me also say that three exciting issues of Emotion Researcher are in the works: one on musical emotions, one on emotional intelligence, and one on facial expressions. Stay tuned!

Previous Editor's Columns

Editor's Column – Understanding Disgust Issue

Editor's Column – Emotional Brain Issue

ISRE Matters – Emotions and Social Engagement Issue

Arvid Kappas, Psychology, University of Bremen, ISRE's President

Why happy vacuum cleaners are good for us

These are exciting times for emotion researchers. Of course, to a certain degree *all times* are exciting for emotion researchers – after all, we have the privilege of working on something that permeates the essence of the human experience like few other fields of study. An additional bonus is that in recent times one has to deal less and less with skeptics about the value of emotion research, contrary to what has happened for many years in the past, be it in the context of radical behaviorism, or during the cognitive revolution. Even fields like economics, traditionally grounded in rational choice theory, have lately started to be seriously interested in affective processes. Affective neuroscience is blooming as a field of study, so times are good for us!

The number of journals dealing explicitly with affective phenomena is considerable, and even the number of societies is growing – see the founding of the Society for Affective Sciences (SAS) that recently held their first successful conference. ISRE is thriving with growing membership, exciting conferences, a stellar journal and all kinds of activities – the online newsletter you are presently reading being one of them. Emotion research has *arrived*.

And yet, what excites me personally the most is that my vacuum cleaner is happy. Let me explain. In 2005, at the ISRE meeting in Bari, I had organized a symposium on artificial emotions. In my own presentation, I started reading a self-penned short fictional diary about my experiences with a robotic vacuum cleaner that involved motivated and affective behavior. After a short while, the diary reported, things started to go in unexpected directions, and I decided to switch off the emotion program, disappointed by all the side effects of the little machine having "emotions". However, after a short while I missed "my happy vacuum cleaner" as a companion, as I had bonded quickly with it, and so I decided that the companionship aspect mattered more than the cleaning aspect. The short diary can be found here.

The point I wanted to make back in 2005 was that interactions between artificial systems and humans potentially offer a great window into how interactions work between humans. Here I want to make a slightly different point. Over the last few years, I have been involved in several projects, formally and informally, that are often referred to as belonging to the field of affective computing. This term, originally coined by Rosalind Picard at MIT, refers to an interdisciplinary endeavor that involves making machines emotion-savvy. This may involve simulating emotional behavior, or being responsive to emotional displays and other emotional behaviors of external entities, including humans. The interactions with colleagues from fields as different as physics, mathematics, computer science, engineering, neuroscience, and education have sensitized me to several issues, such as:

- People outside emotion research are still perplexed at the confusion regarding emotion definitions. "How difficult can it be?", they ask. There are reasons, of course, why definitional disagreements persist, and we must learn to better communicate that this is not due to people not being able to make up their minds, but to genuine challenges we face in shedding light on highly complex phenomena. Clarifying what underlies our definitional disagreements is likely to promote useful research in the future.
- Many of the debates within emotion science are hard to translate in "real world" terms, and communicate to the public at large or to scientists and scholars working in other areas. To the outside world, some of our central debates appear to resemble discussions about how many angels can dance on the head of a pin.

- Implementation challenges have a way to raise simple questions such as “How long does an emotion last?” that turn out to be surprisingly challenging. An interesting lesson here is that perhaps it is useful for theoreticians to actually talk with implementers to see what questions they need us to answer. This might turn out to be a remarkably fruitful strategy for circumnavigating some impasses in purely theoretical discourse.
- Our theories and assumptions about emotions differ with regard to how easily they can be translated into a physical implementation.

The idea of modeling emotional systems has always intrigued me. I distinctly remember getting hooked, 30 years ago, to the computer magazine BYTE and its musings regarding artificial intelligence (AI). At the time, I was a student assistant in the laboratory of Klaus Scherer in Giessen, Germany. Around 1983, Klaus started to discuss and publish his Component Process Model of emotions. As I approached my Master’s Degree (Diplom) and started planning for my PhD, I wanted to build an AI model that combined Scherer’s theory with a model of physiology and behavior.

I realized that, given that different physiological systems have different time courses, it would be very difficult to model how the dynamically unfolding emotion would affect various physiological processes, all with overlapping phenomena, transfer processes, and so forth. Still, I found emotional modeling to be an irresistibly exciting idea and I wanted to pursue it. Thanks to my friend Kim Silverman, who was at the time working on his PhD with Ann Cutler at the Applied Psychology Unit (APU) of the Medical Research Council (MRC) in Cambridge, I got to talk to some of the smart folks at the APU who eventually let me know, gently, politely, but firmly, that I might just start to work on a pedal-driven space vehicle as something more realistic.

Arvid is trying to interact with his friend who is not impressed

The core problem was that too little was known about emotions, about physiology, and about the general architecture of affective modeling. Undeterred, I ended up going to grad school at Dartmouth College with the goal of learning more about emotions, physiology and AI. Of course, I got distracted along the way and shifted my interest to intra- and interpersonal emotion regulation, which turned out to be the topic of my PhD thesis in 1989.

After this little bit of personal history, you can understand why even the limited emotional capabilities of my vacuum cleaner can excite me. But it must be clarified that the goal of much of affective computing research today is quite different from what I had in mind when I first got interested in the subject. My main goal was to build an artificial agent that could help me sort out the predictions of a complex theory, and eventually subject the theory to conclusive empirical tests. I was not alone in this attempt to test and improve theories through modeling. Many colleagues, including some of our early ISRE members, have worked on similar projects over the past 30 years. I will not try to enumerate them all for fear of forgetting someone – you know who you are – but I want to mention at least Andrew Ortony, Jerry Clore, and Allan Collins.

These days, the modeling of artificial emotional agents is driven by practical rather than theoretical concerns coming from the world of business, medicine, engineering, social work, the military, and so on. For instance, would a rescue robot endowed with a suitably calibrated fear system be a more effective tool than a non-emotional counterpart? Would a machine sensitive to human emotional expressions be a better negotiator? Would a pet that simulates the emotional expressions of an actual dog provide genuine companionship to an ailing patient? These are all hard

questions, and they are driving research in a variety of fields.

So let us assume now, for the sake of argument, that you are approached by an engineer intent on building an artificial fear system in a robot: “Dear emotion specialist, what do I need to do to build such a system?” This is where it gets interesting. Debates that tend to grip much of our attention (as often testified by our listserv discussions) appear all of a sudden less central, such as the debate on the role of nature vs. nurture or the debate on the role of language in emotional phenomena.

What really matters is what the fear system does for the organism – what triggers it, what the consequences of its activation are, and what differences in implementation are required for transitioning from a biological to an artificial system. A heart rate increase may suddenly look like an increase in electrical power consumption, a behavioral predisposition may look like a change in the probabilities of activating behavioral options, impulsivity may look like a change in perceived probabilities of risk, etc etc.

In other words, when faced with a practical problem of implementation, one has to start thinking in procedural terms about emotions, in terms of functions and systems embedded in other systems. This has the potential of transforming how one thinks about emotions. In particular, the need to make artificial emotional systems “work” can reveal limitations in our own theorizing. As it turns out, a surprising number of engineers who have given a cursory read to some introductory texts in the emotion literature are still convinced that there are 6 or 7 basic emotions and that it is known what they look like on the human face.

All an artificial system needs to do, on this view, is to have the FACS patterns for each of these emotions at its robotic fingertips, so to speak, and use it to infer whether the interactant is angry or happy. This simple modeling assumption came to a crushing end when robots started getting confused by smiles. The point is that humans tend to smile a lot, whether they are angry or happy. Clearly, if one wants to design systems that can decipher human emotional displays, one needs to start taking the social context seriously. What a smile means, surprise surprise, depends on the context.

This is just one example of how the pressure to build actually working systems can lead to tremendous progress. This is why I find the recent developments in affective computing and robotics so exciting. Trying to realize what Sci-Fi a long time ago suggested was possible affords us a unique opportunity to engage in a practice-driven form of progress in emotion science. **We are the experts, we are the ones who should be consulted – and we will benefit from interactions with implementers.** One of the advantages is that we might be forced to make an informed guess in cases where we do not know. My hunch is that this guess might sometimes be the nudge that gets us out of a loop and pushes us to develop our theories further and more concretely.

By no means do I want to downplay the epistemological and moral issues raised by building artificial emoting machines. However, I do think that the specific challenges related to physically implementing some of our abstract ideas on what emotions are and how they work can provide a salutary kick in the butt of our science in ways that endless debates in the abstract may never provide.

If you are a not familiar with Affective Computing and “artificial emotions”, a first step is to learn more about such research, for example in this article that is addressed to the public at large. There are specialized outlets, such as the highly interdisciplinary IEEE Transactions on Affective Computing . And last but not least, ISRE meetings offer a great venue for interdisciplinary encounters between theoreticians and implementers. These interdisciplinary collaborations require much patience on both sides, and demand specific efforts to get familiar with unusual terminology and thinking styles. Expect more discussion on such issues also in the upcoming ISRE2015 in Geneva. And so I hope that quite a few of us will benefit from thinking about happy vacuum cleaners .

Nico Frijda: War, Love, and Emotions as States of Action Readiness

An Interview with Andrea Scarantino

Nico Frijda

Nico Frijda is Emeritus professor in experimental and theoretical psychology at the University of Amsterdam. He is one of the co-founders of ISRE, and the former director of the Institute for Emotion and Motivation at the University of Amsterdam. He is currently a member of the Royal Netherlands Academy of Sciences and the American Academy of Arts and Sciences. His work has almost single-handedly revived action-based theories of emotions, which identify emotions with states of action readiness. He is the author of several books, most prominently The Emotions (1986) and The Laws of Emotion (2007), and dozens of highly influential articles on emotional appraisal, emotional regulation, emotional experience, facial expressions and cultural differences in the emotion domain.

You grew up in the Netherlands. How would you describe your childhood and adolescence? Did your family try to instill in you a passion for knowledge? Did you have intellectual role models growing up?

My childhood was rosy. I was the youngest of three children, and therefore my mother's spoiled favorite. My family was reasonably well-to-do, and an intellectual one. My father was a university professor in economics, but he was withdrawn behind the four-inch thick door of his study. My mother was his wife who cooked and sang with us (elder brother, elder sister, with my mother behind the piano). That is how things were back in the nineteen-thirties in the Netherlands.

I wanted to become an airplane pilot, until my adolescence. At that time I had little or no intellectual role models, nor a manifest passion for knowledge. I played with toy planes and toy cars. But the playing with toy cars and toy planes was embedded within protracted imaginations about fighting with evil strangers,– the preludes of political disasters to come, and the war.

You were persecuted as a Jew during WWII. Do you ever think about that tragic time these days? Is your Jewish identity important to you today?

Do I ever think about that time? About once every week or so, up till now. WWII provided unasked-for training in warding off emotions and in efforts to neutralize the significance of events. When I turned 13 the war started, and the Netherlands were overrun. Jewish children had to leave their schools and enroll in separate institutions, they were not allowed on the streets after 8 pm, and they were not allowed to go to the cinema.

LATE SPECIAL

Evening Standard

NAZIS INVADE HOLLAND, BELGIUM, LUXEMBURG: MANY AIRPORTS BOMBED

Allies Answer Call for Aid: R.A.F. Planes are in Action

HITLER HAS INVADED HOLLAND, BELGIUM AND LUXEMBURG. HIS PARACHUTE TROOPS ARE LANDING AT SCORES OF POINTS AND MANY AIRPORTS ARE BEING BOMBED.

THE DUTCH HAVE OPENED THEIR FLOOD-GATES AND CLAIM TO HAVE BROUGHT DOWN A DOZEN BOMBERS.

It was confirmed in official quarters in London shortly after 8a.m. to-day that appeals for assistance have been received from both the Belgian and Dutch Governments, and that these Governments have been told that H.M. Government will, of course, render all the help they can.

Every airport in Belgium has been attacked by Nazi airplanes, it is announced in Brussels.

BRUSSELS IS BEING "BOMBARDED TERRIFICALLY," SAYS A NEW YORK MESSAGE.

A Zurich report states that casualties in the first raid over Brussels amounted to 600 dead and wounded.

Lyons Airport Bombed

You Must Carry Your Gas Mask

A.R.P. Should Be On Alert

Soon after the war's beginning, deportations started. Jewish people were dragged from their homes, and put in trains to camps in unknown places. A few, like my parents and sister, managed to go into hiding with guest families found by underground resistance groups, mostly consisting of students. All members of our family were hid at separate locations. None of us knew where the others were. My brother joined an armed resistance group. We hardly ever came outside the houses that hid us.

Is my Jewish identity important for me today? I never think about my being Jewish that way. I am a Jew, and I know it, and persecution made it consequential. But religion played no role for us, in my family. Our family was a secular family. As early as my adolescence, I found the notion of an all-wise and all-protecting God to be a fantasy. The trouble is that when such fantasy gets out of control, as it often does up to the present day, people end up killing one another. God is a vengeful god, says the holy book. Fantasy can be a gift as well as a poison. For many of the Jews who survived WWII, God died in Auschwitz.

But the period of living in hiding with various families made me encounter people from very different social environments, worldviews, and personalities. It laid the basis for my being intrigued by the phenomena of emotions. Ir addition, this also was the period of my adolescence in which I was away from my family, so it was mostly a lonely time. It made me ponder life, and reflect on the nature of emotions and on the meaning of life. Immediately after the war, I entered the study of psychology at Amsterdam University.

Prior to getting your PhD in psychology, you worked as clinical psychologist at the Dutch Army Neurosis Center and at the youth delinquency center at the Ministry of Justice. Did this clinical engagement with mental disorders affect your future theoretical research on emotions, and if so how?

My work in clinical psychology came out of the then obligatory military service of men having reached 18 years of age I was placed with the medical troops, and detached to that neurosis center. But my interest in emotions did not emerge from that clinical engagement. As I mentioned, it emerged through meetings with

people with very varied provenances and life views, such as people with the amazing conviction that venereal disease was caused by masturbation and premarital sexual intercourse. But the major push towards becoming interested in emotions was provided by falling in love, at the age of 18, immediately after having entered the university.

Nico with a friend on a houseboat (Amsterdam canal, circa 1978)

She was a very emotional girl. What amazed me was the combination of the constant and variable display of her feelings, and of my ability to somehow grasp what these displays meant. It presented a gift and a miracle. How on earth was that possible? How could what was on the inside show at the outside? The major surprise was, perhaps, that having fallen in love was not primarily a feeling.

Most of all, it proved to be a set of desires and action inclinations. It started from the desire to always be with her. And

it culminated in the desire to embrace her, with its prolongation in actually embracing her, plus what tended to come after. This was 1945. We started to live together, with much enjoyment. It did not last for very long. Yet the friendship persisted. I visited her just two weeks ago. We still professed considerable mutual warmth.

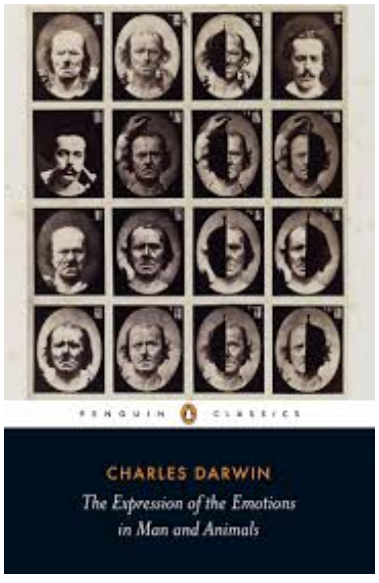
What would you have done if you had not been a scientist?

When working at my PhD, I considered becoming a psychotherapist. I followed part of training in psycho-analytic theory, until I abandoned that because the evidence for many of the mechanisms presumably involved appeared too weak to me. I preferred to improve my insight in the processes that might be involved in producing the phenomena that are called “emotions”: cognitive processes, experiences, behaviors or actions, physiology, and neural and neurohumoral processes. But, of course, who can tell what I would have done, had I not become a scientist? There are other kinds of trades satisfying a general desire to understand than those of a scientist. Trying to understand people who suffer, and doing something about one or two of them, would have been a meaningful calling.

You got your PhD in 1956 at the University of Amsterdam with a thesis entitled “Understanding Facial Expression of Emotions”. Why did you choose this specific topic and what is your current view on what expressive behavior is?

The reason for choosing the topic is obvious from its origin: I had been fascinated by the facial reactions of a person I had watched closely and by my ability to interpret them correctly. “Understanding” facial expressions became the topic of my Masters thesis. How is such understanding possible? This question inspired my first empirical study.

I invited a fellow student to my place, and I designed a number of emotional “stimuli,” such as presenting her with a pair of nylon stockings (all this took place in 1948 or so), giving her fresh strawberries, making a compliment or two, launching a firecracker, or just filming when she gazed outside. I filmed her face during each incident, and in addition I subsequently made a slide of what appeared as the high point of each filmed sequence. I then showed the films, as well as the slides, to a number of subjects, asking each of them to describe what they thought my fellow students had experienced (films and slides were made of two different students), and comparing that to what I knew had happened.



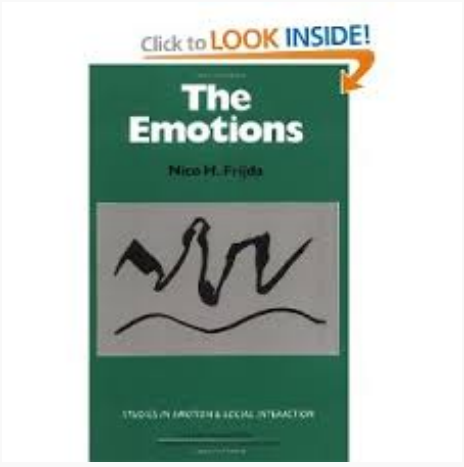
The methodology obviously was both informal and primitive. The subjects were not asked to select an emotion label from among a list of such labels, as was generally done in the early days of investigating the recognition of emotion. The subjects gave free descriptions (in Dutch, as it happened). And, surprise surprise, they hardly mentioned any emotion label at all. Rather, they described “what had happened to her and what she had felt,” or “what she had done”, such as “pulling back” or “being interested in what she saw”. What the subjects saw and described was a melody of actions whereby the subject established a relationship to, or withdrew from, the object of her attention.

I concluded that what facial expressions show are not in the first place states that can be described by emotion names like “anger” and “fear”. They indicate how the perceived person relates (or does not relate) to an event or object in the environment. She or he appeared to “open up”, or “close down”, “shut off” or “strain to…” or “attend to,” “seek to approach” or “seek to get closer” or “be reserved”, “pull back”, or “lack interest”, or “relate to with restraint”, or “expose her- or himself to be looked at”. Such descriptions formed the source of my notion of “action readiness”, a notion I later found had already been proposed by Dewey (1985). States of action readiness are part of the complex of response components sloppily referred to by emotion names. The attitudinal or relational content is open to perceptual assessment, necessitating little or no linguistic input.

“Expressive behavior” thus can be characterized as “relational behavior”. It establishes or modifies the agent’s self-

object relationship. Its function is not to let other individuals know about one's state of mind. The movements are not signals to let others know what one feels. They are moments or brief sequences of interpersonal interactions of various sorts: grasping a moment of approach, of information intake, of moderating the fullness or detail of that information and spatial proximity.

In 1986, you published your masterwork, *The Emotions*, which established you as one of the most original and influential voices in contemporary emotion theory. One of the central themes of your book is the idea that emotions are action tendencies with control precedence. Can you explain what that means, and why we should privilege actions rather than cognitions or feelings in our attempt to understand emotions?



The Emotions (1986)

I do not exactly hold the view that "emotions are action tendencies", since the word "emotion" has no agreed-upon definition. The word broadly refers to patterns of major components (they can be indicated as "multicomponential responses", as suggested by Klaus Scherer). But "action tendencies" form a major component among them, and are the most directly consequential of all. Action tendencies are states of readiness to execute an action that is deemed capable of modifying a current situation in a particular way. "States of readiness" consist of subthreshold activations of neural and motor dispositions enabling the action concerned (such subthreshold activations can be recorded when people imagine performing actions).

Actual actions appear when the subthreshold activations turn supra-threshold. Actions may establish or modify self-object relationships in manifold ways. The self can get closer to an object, or start interacting with it, or seek to interfere with an object's actions, or seek to maintain the current relationship in spite of current internal or environmental influences. Action tendencies thus have an *aim*. If the current situation lends itself to it, the state of readiness will actually activate an action or action sequence from the individual's repertoire that appears capable of achieving the aim of relationship modification or relationship maintenance.

Action tendencies and other states of action readiness are not properties of agents. They are not states of the individual. They are forms of individual-world interactions. They can modify the world. They allow an individual's engagement with the world. They entail that the individual "reaches out to the world", in the words of the philosopher Robert Solomon, in parallel to how the world impacts the individual. States of action readiness compose a highly varied collection of inclinations. They vary in kind of aim, as well as in the power, control precedence, and subtlety of the action readiness and eventual actions. "Control precedence" refers to the observation that emotional actions vary appreciably in the precedence they are given when several actions compete for preparation or execution. Some actions suffer no delay. One may interrupt one's actions, or interrupt the actions of someone else. Control precedence suggests importance of the issue, or power of the stimulus at stake.

Engagement involves being ready to act to establish or modify or disrupt some relationship and, in the event, to actually act to implement that relationship. One can take cognizance of the world, or some of its aspects. One can also approach it, or increase or diminish interacting, or seek to affect it, or move in conjunction with it, as in dancing or in loving, or in hating, for that matter. One can be inclined to embrace. But one also can be inclined just to look deeply into someone else's eyes, thereby establishing a sense of linkage, and a readiness of attending and moving together.

Even when, for instance, looking into the eyes of a photograph of the actress Penelope Cruz, one may notice the sinking feeling in one's stomach that, I think, triggers abandoning to the mutual looking, and to being grasped by some action tendency of interpersonally fusing. States of action readiness can be powerful, requiring physical energy. They also can be largely virtual, as they do in "refined emotions" that are products of imagination. One can

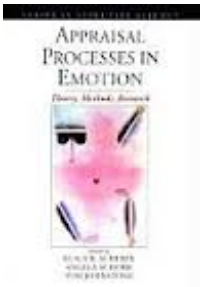
imagine floating in space as free as a bird or hovering as a butterfly around a flower, presumably paralleling subthreshold activation of corresponding neural networks.

Penelope Cruz

States of action readiness can be of infinite duration. They can take as much time as needed to achieve the action tendency's aim. That can take the shape of a brief infatuation, of a life-long passion, or of an addiction that is maintained by consumption, at high social and interpersonal costs. Likewise, decreases of action readiness also can continue over a long time, by discouragement, or lack of belief in oneself, or in states of depression. All this implies that actions and action readiness are not privileged in the analysis of emotions. But they sure belong to the major sets of processes and phenomena in the multicomponential patterns that the word "emotion" denotes. They are on the path along which perceived objects or events elicit action. They are what renders emotional response patterns events with consequences, since they can affect aspects of the world. Moreover, action readiness and action in a sense are more basic than feelings, since feelings largely are the conscious reflections of states of action readiness. And on that same path lie cognitions, as these underlie appraisals, which lead to changes in action readiness.

Let us talk about appraisals then. What is your current understanding of what an emotional appraisal is? And are any two emotions, say shame and guilt, always differentiated by their appraisals?

Appraisal is the antecedent to any action readiness or action. Appraisal is where action readiness comes from. No appraisal, no urge for action, and no emotion. Appraisal and action readiness form a sequence that represents the core of any emotional reaction. The notion of "appraisal" includes any kind of information that forms part of a perceived event's meaning, as seen from the vantage point of a given person or animal. It includes the event's experienced affective value: its attractiveness or averseness. All this represents "cognitions", but with immediate hedonic repercussions and with positive and negative consequences for the individual's concerns.



The information on which appraisals are based can be of two kinds. It can pertain to what the event may do or offer to the individual (e.g., hurt him or her, carry satisfactions or signal likely coming satisfactions, deprive him or her from satisfactions). And it can pertain to "affordances": possibilities for actions suggested by the current environment, as for instance perceiving an object as an object behind which to hide when under threat, or a cup as an object to pick up and drink from. Perceiving affordances activates the relevant action dispositions, and may actually prime these action dispositions, as when perceiving someone else having an attractive skin may make the fingers of the perceiver tingle.

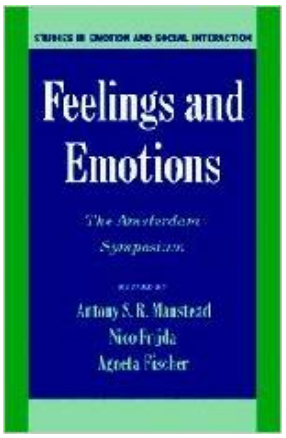
Beyond this, appraisal of an object or event strongly depends upon the appraising individual: upon his or her current concerns, his or her goals, sensitivities, interests, and values. One boy may view a girl passing by as an opportunity for obtaining erotic satisfaction, while another may see in her just the threat of rejection. In a sense, appraisal does not result from "appraisal processes". The information mostly just happens to come in or emerge from one's interactions with the environment. One usually does not set out to appraise events. Elements of information, including personal meanings, just are associatively connected to elements of perceptual input. The affective appraisals just promote themselves by drawing attention. Nor do appraisals need be articulate or conceptualized. They just dissolve into feelings that motivate increase or decrease in interacting with the stimulus situation.

Also, two emotions are mainly different by virtue of different appraisals having precipitated different changes in action readiness or action. Self-inflicted transgression of some social norm may instigate hiding from other people, which more or less defines that emotion as “shame”. Having caused harm to someone else is a major antecedent of feeling “guilt”, which may motivate seeking to atone for the inflicted harm. By virtue of the different meanings of those precipitating events (e.g., self-inflicted norm transgression versus self-produced harm to someone else) different appraisals and different action urges or actions are brought about.

Note, incidentally, that the process of emergence of emotions does not require identifying the response by some emotion name. Everything can proceed without verbal categorizations as “shame” or “guilt”, or “fear” or whatever: appraisal generates action readiness and action, which modify the self-object relationship, and so interaction may go on, if it does. Emotions differ when they differ in what their action urges aim for; and they do that because these urges respond to events that are being differently appraised.

How are emotions and feelings related? Does emotional experience have a specific function distinct from the function of emotions? Do you believe in the existence of unconscious emotions, and if so can you give examples of them?

Emotions and feelings sure are related. As I mentioned earlier, emotions are response component patterns that include states of action readiness for achieving some aim, and that involve action preparations or full-grown actions. Many feelings are the conscious outcomes of action preparation such as feeling tense. Other feelings result from assessing advantageous or disadvantageous action outcomes, or successful versus unsuccessful action completion.When the term “emotion” is applied to an animal or human producing emotional actions like attacking and embracing, we may assume that the attacking and embracing are felt, as urges to attack and urges to embrace, respectively. The first is a felt motor engagement in which the individual is set to terminate its action after having fought with the other human or animal. The second is a felt motor engagement to achieve close bodily proximity and intimately relating, which can be elaborated as a feeling sequence. And both of these feelings or feeling sequences can be expanded at will by the agent.



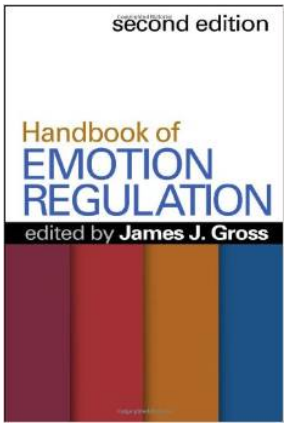
Emotional experiences have functions besides and beyond reflecting action readiness and action. I would not care for making all sorts of movements or actions while not “feeling” that things are going right or not so right. One may venture the guess that feelings (as well as conscious perceptual experiences such as seeing red poppies and a blue sky) implement the sense of being in and with the environment, and are perpetually intertwined in permitting spontaneous directed action and acquiring information about the world one lives in.

On the other hand, I do think there exist unconscious emotions. If one shows the picture of a nice girl followed by backward masking, and then presents the subject with the picture of a square, the latter may be well experienced as pleasant (view the work of Anthony Marcel). States of attentional and action readiness exist that instigate approach and rejection inclinations without becoming conscious.There also is a different sort of “unconscious emotions”: states that everyone recognizes and identifies as “emotions”, except the agent. Think of someone shouting “I am not angry” while slamming the door. Or think of someone devaluating some remark made by someone else, and denying that jealousy played a role in that devaluation.

You are interested in understanding the nature and scope of what you and others call “emotional regulation”. What is emotional regulation, and what role does it play in shaping emotional actions?

It should be clear by now that I think of “emotion” (or its equivalent in languages other than English) as the name for a collection of phenomena: phenomena of behavior, action, peripheral physiology, feeling, and perception. All these phenomena can vary in magnitude or intensity. Some actions have power; others are scarcely noticed, by either the

emoter or by the observers. And when strong, they may annoy other individuals, or interfere with one's own activity the way trembling hinders accomplishing a motor precision task, or other interactions with people or objects.



Such interferences present good reasons for exercising "emotion regulation", and tone down one's actions, feelings etcetera. One can try to shout less loudly, or to reduce one's action to a nod or a wink, or to abstain from doing or saying things with undesirable repercussions. But toning down one's reactions is not the only manner of regulation. Other ways involve seeking situations that provide distraction from current preoccupations, reappraising the likely impact of the event that elicited one's emotion, or displacing one's focus of attention to other objects, such as past pleasures or attractive future possibilities.

These manners of regulation are described in the literature as "regulation strategies." These "strategies," I emphasize, are often implemented automatically, since they merely actualize familiar acquired cause-effect expectations. For instance, anticipation of undesirable response consequences generally automatically decreases selection of such responses. Not all emotional responses are modulated by expected consequences. Unexpected pleasant or unpleasant events can elicit impulsive actions that are rash and take no time for deliberation and exploration of the response-eliciting event. Presumably, such actions often are not regulated, but just follow the strength of the stimulus impact. The same sort of action can be performed deliberately and slowly to reckon with the sensitivities of the interaction partner.

Regulation of action has its own mechanisms. Anticipation of adverse response consequences activates inhibitory processes that decrease motor activation in graded fashion, making a cyclist slow down, while distinct neural networks in the prefrontal cortex (right inferior frontal gyrus and presupplementary motor area) send inhibitory signals that are capable of abruptly stopping cycling forward when the traffic light unexpectedly jumps on red (S. Jahfari, 2014, *Networks of action control.* PhD Thesis, University of Amsterdam).

These various and variable control mechanisms are fascinating. A cormorant can swallow a whole live 2 pound eel, while a mother cormorant can gently make the head of her baby cormorant enter her mouth to feed it by regurgitating partly digested food, and without hurting that baby (from the late Dutch ethologist Adriaan Kortlandt).

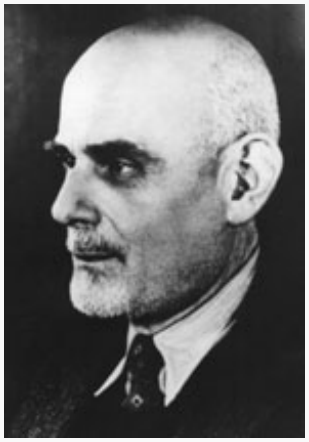
In a recent paper co-authored with Jerry Parrott, you argued that the intuition that there is something universal about emotional phenomena does not require postulating basic emotions, but can be captured by the notion of ur-emotion. How do ur-emotions differ from basic emotions?

"Basic emotions" refers to the hypothesis that a limited set of emotions occur in all human groups, owing to presumed biological dispositions to respond to a corresponding set of environmental contingencies. All other emotions are assumed to be combinations or variants of basic emotions. However, the names of basic emotions are English words, and there exists no consensus about which basic emotions to distinguish, either in English or in any other language. Hypotheses have been developed that putative basic emotions correspond to dedicated neural circuits underlying distinct multicomponential response patterns, but these hypotheses have found little support.

In addition, cultural differences have been demonstrated to exist in the response patterns denoted by basic emotion names. These differences are reflected in the manifestations of different modes of action readiness. Hostility as found in Japan and among Inuit Eskimos gives rise to much less overt and verbal aggressive behavior, for instance, as compared to other cultural groups. Also, emotional states labeled by particular emotion names are not invariably accompanied by particular facial expressions, contrary to what basic emotion theory predicts, and the duration of emotions appears to go beyond the short duration posited by basic emotion theorists.

Jerry Parrott and I have proposed to account for the intuition of universality in emotional phenomena without postulating basic emotion patterns. The new core concept we introduce is that of "Ur-emotions", which are not variants of emotions at all. They are instead variants of motive states, or modes of action readiness that aim to

establish, modify, maintain, or terminate a given self-object relationship. The term “ur-emotions” was introduced by the psychologist Gustav Kafka in 1930, under the designation “Uraffekte”. Kafka viewed ur-affects as action tendencies of the subject, aiming to establish or modify his or her relationship to some target object or person. Presumably, there is a finite number of different forms that self-object relationships can take, at a given level of abstraction; each of those can induce actions that implement the corresponding aim.



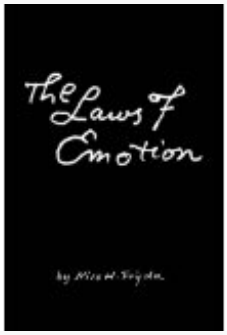
Gustav Kafka (1883-1953)

One can approach an object – an object in the strict sense, or a person or animal, or an event. One can ingest an object, or expel it. One can interfere with what someone else is doing, with the aim of changing it. One can seek close and caring interaction. Our emotion taxonomies (“anger”, “fear”, “affection” etcetera) are largely centered around this limited number of modes of relating to other people, objects, or circumstances. States of action readiness are often mirrored in the feelings that action inclinations are accompanied by.

The “ur-emotions” may well derive their basic mechanisms from subcortical circuits and neurohumoral levels like those of dopamine, oxytocin, and epinephrine, as extensively discussed by Panksepp (1998). We consider ur-emotions as the core element in multicomponential response patterns, because motive states provide the impetus for also having the other components. Ur-emotions are thus abstract in the sense of being the skeleton that is given flesh in their instantiation in multicomponential emotional responses. And we think that what may well be universal are dispositions for various forms of action readiness rather than basic emotions.

Your most recent book, published in 2007, is entitled *The Laws of Emotion*. Why did you pick this title? What do you consider to be the laws of emotion for which we have the strongest empirical evidence?

The title is a proud one, and it is connected to my conviction that, although emotions are probably the most individual and often idiosyncratic of human phenomena, our insights into them have reached the point that we can begin specifying the laws that govern the elicitation and development of emotions. These laws may not be hard and fast, but they are reasonably predictive.



The Laws of Emotion (2007)

The major law of emotion is *the law of situational meaning.* It states that emotions arise in response to patterns of information that represent the meaning of eliciting situations. For example, personal loss tends to elicit grief. Being the object of tender approach, a person with relevant sensitivities is bound to fall in love. Suffering frustration tends to elicit anger, or at least hostile action tendency. Event outcome threat elicits fear and self-protection.

A second law concerns the personal importance of the eliciting event: it is the *law of concern*. It states that emotions arise in response to events that are important to the individual’s concerns. Furthermore, emotion response patterns tend to be stronger the more the eliciting event is important to the perceiver. One is more aggrieved by having lost a good friend than by having lost a mere acquaintance.

The laws one can consider third are a host of laws that grasp the impacts of temporal course, repetition, unusualness, and the like: the *laws of change,* of *habituation*, and of *comparative feeling*. The law of change states that emotions are elicited by expected or actual changes in favorable and unfavorable conditions. The law of habituation states that both continued pleasures and continued hardships diminish their intensity over time. The law o comparative feeling states that the nature and intensity of emotion depends on the frame of reference with which events are compared.

For example, a salary increase has more emotional impact when the increase for one’s colleagues is less. An event’s affective value depends upon the other pleasures and pains that occurred in close temporal vicinity, and their

expectedness and unexpectedness. Laws like these also govern the scope of one's own emotional actions: there is a law of *care of consequence*. According to it, every emotional impulse elicits a secondary impulse that tends to modify it in view of its possible consequences. This is the law at the heart of emotional regulation, which kicks in as soon as an emotion is elicited. The exception is constituted by those rare cases in which emotions are truly uncontrolled as in blind frenzy.

I think here is no doubt that the number of laws of emotion is fairly large, since several different kinds of constellations have a distinctive impact over emotional responses, notably over time. These include, I think, the constellations that have an impact over time, even if the emotion-inducing event occurred only once. They might involve a *law of traumatization*. When a one-time event or life period damaged one's self-image, it may never be overcome. Examples include having been a slave, or having been submitted to profound humiliation, as in having been raped, or having lost a child.

Were you ever tempted to leave the University of Amsterdam, where you spent your whole career? Is the Dutch system good for academics?

I spent one year at Harvard, with Bruner. That was an enjoyable and fruitful year. Beyond that, I never was tempted to leave Amsterdam. I developed a group that explored emotions theoretically, and developed questionnaires to measure relationships between appraisals, differences between different emotions, and some cultural differences. The system in the Netherlands changed over the years in the amount of guidance and coherence in the strategic selection of research topics by staff and by students.

What do you consider to be your most significant contributions to affective science?

For me, one of the most significant "discoveries" about "emotions" has been that emotions are not primarily "states" of individuals that deserve some state name ("anger", "fear"), nor events that happen within individuals, and occur or are felt by them. They do not just happen "within a mind". They are relational engagements that take place between an individual and some object or event.

The two related entities – self and object – can fulfill different roles. One element affects the other one, and viceversa. Environments not only provide stimuli: they contribute to interactions. To some extent, this holds even for interactions with non-social events. Hitting one's head against a kitchen shelf modifies one's behavioral progress.

A second discovery was that self-object relationships and their changes are implemented by actions and proto-actions: urges, action preparations, strivings, and the revealing "thin slices of behavior," examined notably by the late Ambady that signal relational intents (Ambady & Rosenthal, 1992, *Psychological Bulletin, 111,* 256-274).

This perspective made me move my focus of attention away from "emotions" –differently labeled emotion categories and their properties–, and towards the urges and strivings that motivate aims, actions, and feelings that form the dynamics of self-object relationships.

What I consider a useful contribution is also my analysis of the functions of facial and other bodily expressions. I think they, too, are to be viewed as actions rather than as communicative signals. They are parts of relational actions that modify the relationships between oneself and some object, partaking in approach and withdrawal, opening up and closing down with respect to elements of the world, or the world as the agent as dreamt or imagined. Which is what renders "expressive behavior" expressive or impressive, and intelligible. I did not discover this but, I think, I endeavoured to give it back the place it actually had in theory for a long time (in work by Gustav Kafka and Karl Bühler). Facial expressions do not "express" emotions. They simply implement the individual's action tendencies.

You have lived in Amsterdam your entire life. What do you like to do for fun in the city? Is Amsterdam

changing in a way you like? What are your three favorite restaurants in Amsterdam? Do you enjoy cooking, and if so do you have a favorite recipe to share?

One of Amsterdam's canals

Amsterdam is a very nice town, with many lovely corners. There is much to do in terms of occasions for enjoyment, like concerts, opera, stage plays, a very nice film museum called "Eye" which shows a range of shows every day, including movies from former times, and overviews of great directors. Then the top museums have recently finished restoration: the Rijks Museum, with its Vermeers and Rembrandts, and the Rembrandthuis with its etchings; so has the more modern-oriented Stedelijk Museum (Municipal Museum). Then there are several 17th century churches, and the picturesque streets in neighborhoods of that time.

In Amsterdam, so far there is not much public violence. The police is decent, unobtrusive, and unaggressive. There are several nice open-air markets. People as a whole are tolerant, for instance with regard to sexual preferences and their open manifestations, including a yearly gay festival day with gay canal ride. On occasion, tourism takes a lot of place and makes a lot of noise.

High-class restaurants are The Grand, in a former city hall in the center of town, and the Oyster Bar, a pretty good fish-restaurant. There are a large number of good Indonesian and Chinese restaurants. There is a good, agreeable, and rather intimate restaurant called "Elkaar" on Alexanderplein, near the Museum of the Tropics. I like cooking. One of my favorite recipes is Indian mango soup, which I reproduce here.

Gujarati Mango Soup by Madhur Jaffrey from From Curries to Kebabs (Clarkson Potter, 2003)

Serves 6

Nico's Mango Soup

Among Gujarati families in India and South Africa, this wondrous, sweet, sour and hot, soupy dish is served in small bowls (katoris) as part of the meal, with fried puffy breads (pooris) as an accompaniment. What I do at my dinners is something different. I strain it, removing most of the seeds and leaves, and then serve it all by itself as a soup in very small quantities.

Both India and South Africa produce excellent mangoes, so this is really a seasonal dish made when good mangoes are abundant. In the West, mangoes of that caliber are hard to find and I make use of the canned puree of India's very best Alphonso mangoes, sold by all Indian grocers. It takes me about 10 minutes to make the soup, from start to finish.

If you can find fresh, sweet, juicy, fully ripe mangoes, wash them, then, one at a time, squeeze them with both hands, almost as if you were giving them a good massage. The flesh should turn to pulp. Then peel them. "Milk" the stone or seed, collecting all the juice in a bowl. Pour a little hot water on the stone and "milk" it some more. Do the same to the skin, pouring a tablespoon or so of hot water on it to get at all the juice. Collect all the mango juice in a bowl. You should have about 5 1/2 to 6 cups. Use this thin juice whenever water is called for, letting it cool first. You may need tc add a bit more sugar.

Quantities Ingredients

2 tablespoons chickpea flour

1/8 teaspoon ground turmeric

3/4 teaspoon ground cumin

3/4 teaspoon ground coriander

1/2 cup plain yogurt

3 cups thick Alphonso mango pulp (sweetened) from a can

1 1/4 to 1 ½ tsps salt

1/2 teaspoon sugar, or to taste

2 hot chilies (with small slits cut in them)

2 tablespoons corn or peanut oil

1 pinch ground asafetida

1/2 teaspoon whole brown mustard seeds

1/2 teaspoon whole cumin seeds

2 whole hot dried red chilies

1/8 teaspoon whole fenugreek seeds

10 to 15 fresh curry leaves, if available

1. Put the chickpea flour, turmeric, cumin, and ground coriander in a medium bowl. Very slowly add 1/2 cup of water, mixing with a wooden spoon as you go. There should be no lumps left. Add the yogurt, mixing it in with a whisk. Pour in the mango pulp and an additional 2 cups of water. Add the salt, sugar, and fresh chilies. Mix well.

2. Pour the oil into a thick, medium, lidded pan and set over medium-high heat. When the oil is very hot, put in first the asafetida and then, in quick succession, the mustard seeds, the cumin seeds, the chilies, the fenugreek seeds, and, lastly, the curry leaves. Take the pan off the heat.

3. Stir the mango mixture from the bottom and quickly pour it into the pan. Stir. Put the pan over medium heat and bring to a simmer. Simmer over very low heat for 5 minutes, stirring with a whisk or spoon as you do so. Take the pan off the heat, cover, and leave for at least 30 minutes to allow the spices to release all their flavors.

4. Before serving, stir the soup and reheat it gently. Strain it through a coarse strainer. Spoon out some of the smaller seeds — the mustard and cumin — from the strainer and stir them back into the soup to add some colorful flecks.

What are you working on these days?

Together with two colleagues, we recently have been writing about impulsive actions: actions that rapidly follow a stimulus event, that take no time for deliberation, and that still are purposive: how is that possible? I also am trying to produce a survey of the basic processes that presumably underlie the major phenomena that we (English-writing psychologists) call “emotions”.

Over evolutionary time, the basic processes increased in number and in scope. From bacteria onwards, organisms developed the capacity to respond differentially to inputs depending on their positive or negative “value” with respect

to the organism's functioning – a predecessor of affective discrimination. The basic processes engaged with increasingly complex environmental agents. They progressively became capable of predicting future inputs from current inputs, setting aims for actions to modify self-object relationships, controlling ongoing processes so as to produce "emotion regulation", finally leading to full-grown affective processes with associated feelings of pleasure and displeasure.

Roses in Nico's garden

But I am growing old. I like to spend time with my wife and my children. And to sit in my small garden, looking at the red, white, orange, and pink roses I grow.

Please list five articles or books that have had a deep influence on your thinking

Nico's wife Roos

Sartre, J.P. (1939). Esquisse d'une theorie phenomenologique des émotions

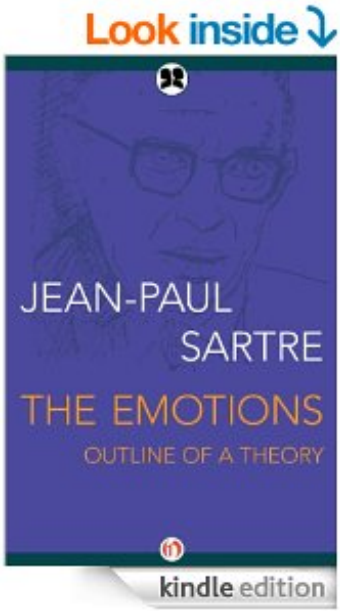
Solomon, R.C. (1976). The passions

Proust, M. (1913). Un amour de Swann

Freud, S. (1927). The future of an illusion

Elster, J.(1999). Alchemies of the mind.

What do you think is the main question that future affective science should be focusing on?



I am not sure that there is just one main question that affective science should be focusing on. I see at least three. One is to develop a systematic account of the various kinds of self-object relationships human and other animals are capable of, and the neural and other underpinnings that enable them.

Second is development of a systematic account of motivation. Joseph Ledoux, in *The synaptic self* worried about *the lost world,*–the disappearance of such a systematic account when the listing of *needs* or *drives,* as proposed by Murray (1983) fell in disfavor because motivational dispositions with biological backgrounds were hard to separate from motivational dispositions with historical and socio-cultural backgrounds

Indeed, systematic treatments of motivation have been sparse over the years. The ones that come to my mind are limited to those by Gallistel (Gallistel, C.R. (1980). *The organization of action: A new synthesis.* Hillsdale: Erlbaum) and by Vallerand and Thill (Vallerand, R.J. & Thill, E.E. (1993). *Introduction à la psychologie de la motivation* . Quebec, Canada, Editions Etudes VIvantes).

Third is solving the problem of identifying the processes enabling conscious experience, and the functions of such experience. As to the latter issue: the world would be dull without conscious experience, for reasons that are not very clear to me.

Open to Culture: Emotions in Development

Vasudevi Reddy, Centre for Situated Action and Communication, University of Portsmouth

Emotions are born in engagement. Whether with a hostile or captivating environment, an attentive or harsh caregiver, a momentary flicker of interest or disgust or a long-term affliction of desire or loss, it is our connection or involvement with the world that gives rise to, and sustains, emotions. This dependence upon engagement opens emotional doors to cultural variation, because what there *is* to engage with varies cross-culturally, as does how emotions are enhanced, supported, constrained or blocked by people or situations.

Catherine Lutz, in saying that emotional experience is not pre-cultural but *pre-eminently* cultural (Lutz, 1988, p. 5), situated emotional meaning squarely in everyday interactions and routines. And culture, one could argue further, is pre-eminently *developmental*. But how does the social and culturally dependent nature of emotions manifest itself in development?

Infants are drawn into engaging with others' facial emotional expressions very early in life. By 3 months of age infants discriminate others' happy, sad and angry expressions, matching them on their own faces (Haviland & Lelwica, 1987). By (at least) 11 months of age cross-cultural differences have been found between Chinese, Japanese and American babies in expressiveness and in the latency and durations of expressions: in response to restraint Chinese babies cry later, show fewer Duchenne smiles and are less expressive (Camras et al, 1998).

These differences originate in cultural styles of expressiveness and interaction, with differences, for instance between American Chinese and Mainland Chinese infants (Camras et al, 2006). That the differences are pre-verbal and not just due to cultural imposition of display rules can be seen from studies which show similarities in subtle expressiveness within dyads – including particular expression types and preferences for brow or mouth regions in expression – with dyadic correlations increasing from 3 months to 6 months of age (Malataesta & Haviland, 1982).

But it is not just others' facial expressions of emotion that very young infants recognise and adapt to: it is also *emotional rhythms*. Daniel Stern suggests that all actions and expressions contain temporal rhythms which convey a little studied dimension of emotionality – 'vitality affects' or 'vitality contours' understood as dynamic changes in intensity and pattern *within* the temporal course of an action or expression (Stern, 1985, 2000). Anyone who has worked with musical tempo or with coordinated rhythms recognises how hard it is to follow one's own rhythm and ignore others'. Such temporal dynamics are pervasive features of all actions, not just of the expression of the categorical affects such as happiness, sadness, anger, etc., and they can be powerful enough to affect interpersonal synchrony and even cardiac rhythms.

Intriguingly, even in early infancy, the characteristics of an interaction partner seem to be able to draw out of infants very different and long lasting patterns of interaction – with frequent but short bursts of engagement and positiveness with some partners (e.g., with fathers) and with fewer, longer bursts with others (e.g., with mothers) (Feldman, 2007). Infants are also sensitive to interactive contingencies, with greater maternal contingent smiling leading to more infant social bids (McQuaid, Bibok & Carpendale, 2009), and greater maternal affective attunement leading to more infant responsiveness (Markova & Legerstee, 2006); conversely, disruptions of interpersonal engagement lead to negative reactions in 2 and 3 month old infants (Cohn & Tronick, 1984; Murray & Trevarthen, 1985; Nadel et al, 1999).

The importance of rhythms of touch in infancy is well known: Brazelton (1986) showed that neonates are already sensitive to patting rhythms that put them to sleep as opposed to those that alert them. Caregivers vary in their touching habits (some preferring affectionate and others stimulating touch), giving rise within a few months of birth to dyadic 'cultures', which differentially affect mother-infant regulation when touch is disrupted (Moreno, Posada & Goldyn, 2006).

Cultures differ widely in their preferred modalities of engaging with their infants. For example, German mothers, in contrast to Cameroonian Nso mothers, show an increasing preference for visual and a decreasing preference for proximal responses over the first twelve weeks of infant life. This difference leads to a gradual decrease in proportions of mutual gaze in the Cameroonian Nso dyads, even relative to the lower incidence of face-to-face interactions (Kaertner, Keller & Yovsi, 2010).

Prosody in vocal expression is also a powerful source of emotional information; especially in infant-directed speech, it reveals emotionality and interpersonal intentions. Even foetuses are sensitive to the specific intonational contours of their mothers' speech to the extent that by the time they are born, neonatal crying already reflects language-specific contours, with a rising intonation for French and a dropping intonation for German (Mampe et al, 2011). Compared to adult-directed speech, infant-directed speech has higher pitch, exaggerated contours and greater rhythmicity (Fernald, 1989) and has been argued to emerge from the uninhibited expression of emotion (Trainor, Austin & Desjardins, 2000).

Within the first half of their first year of life infants discriminate and respond differently to vocal expressions of approval, prohibition, attention and comfort in infant-directed speech (Fernald, 1993; Bryant & Barrett, 2007). The ability to differentiate prohibition from approval so early in life opens further doors to cultural influence – giving infants access to others' directive intentions and cultural norms before words can do so (Reddy, Liebal, Hicks, Jonnalagadda & Chintalapuri, 2013). The possibility of such permeability in the boundaries of both categorical affects and vitality contours suggests that infants may share with us more about our emotionality than we realise (see for instance Feldman, 2007 on 'background emotions', and Anderson, 2009 on 'affective atmospheres').

Two domains of emotional engagement in infancy might serve as examples of deeply social emergence. One is the domain of self-consciousness and the other is the domain of humour. In both areas, it is being directly addressed by others, or being drawn into involvement by their attention, approval, interest, amusement ('second-person' engagements), that is crucial for typically developing emotional responsiveness and social cognition (Reddy, 2003, 2008; Schilbach et al, 2013).

The onset of mutual gaze leads to self-conscious affectivity – with coy smiles occurring early in the first year of life before infants develop a conceptual self (coy smiles are gaze or head aversions during the peak of smiles that are structurally similar to embarrassed smiles in adults; Reddy, 2000; Colonnesi, et al, 2012). Mutual gaze has clear neurological substrates not only in adults (Schilbach et al, 2006), but also in 4 month-olds (Grossman, Parise & Friederici, 2010). Similarly, infant responses to the intentional actions of adults seems to be easier when the actions are directed towards them, allowing them, for instance, to make anticipatory adjustments to being picked up by their mothers as their arms approach (Reddy, Markova & Wallot, 2013).

Shyness and showing-off in response to other people's attention are important regulators of intimacy and attraction in interpersonal interactions (Reddy, 2005) and must themselves be regulated. Cultures vary enormously in their assessment of these self-directed reactions. Positive shyness can be experienced as appealing and charming or annoying and inadequate (Shweder, 2003); showing-off can be seen as positive and to be encouraged or as offensive and to be discouraged (Levine, Caron & New, 1980); and shame can be seen as a positive social offering or as itself something to be hidden (Miake & Yamazaki,1995).

Humour is another phenomenon which is fundamentally relational. From around 8 months or so infants engage in clowning, repeating actions which have previously (often accidentally) elicited laughter from others, in order to re-elicit laughter. They also tease others in a number of ways – deliberately and watchfully approaching a forbidden

object (with a focus on the emotional reactions of the other rather than the object itself), playfully offering and withdrawing objects, disrupting others' routine actions – such as clearing the newspapers to hoover the floor- watchfully or playfully (Reddy, 1991, 2005).

These attempts are often significantly impaired in children on the autistic spectrum. In all these cases, the meaning and survival of the infant's clowning or teasing lie within the frame of the responses received from the adults, just as the adults' expectations and openness to the infants' attempts must lie in the history of previous interactions and infant responses to their own attempts to arouse laughter (Reddy, Williams & Vaughan, 2002; Mireault, Poutre, Sargent-Hier, Dias, Perdue & Myrick, 2012). The developmental literature knows little, as yet, about context and audience effects in the emergence of these different emotional phenomena – shyness, shame, showing-off, clowning and teasing.

To sum up, emotions are open phenomena: open in their existence, open in their development and open in their engagement with the world from the earliest points in infancy. We are only now beginning to understand emotions as more than categorical states, and to unpack the extent to which infant sensitivity to the affective rhythms and synchronies of their interactions with the world constitutes and sustains their emerging psychological identity.

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How Emotions Affect Other People

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- Someone gets angry with you
- Someone tells you that they are angry with you
- Someone tells you that someone else is angry with you

In each of these situations, another person's emotion may affect our actions, thoughts, and feelings. For example, we might reciprocate anger, be afraid of what the angry person might do, or feel guilty about what (they think that) we have done (Parkinson & Illingworth, 2009). That emotions can affect other people is incontestable. But what processes underlie these interpersonal effects? Do they apply equally across all three situations?

Here's one way in which another person's emotions might affect yours. You register the fact that they are angry with you. You know that being angry implies an appraisal of other-blame (e.g, Smith & Lazarus, 1993). You conclude that they see you as blameworthy (*reverse engineering*, Hareli & Hess, 2010). Your reaction depends on whether you think that they have good reason for blaming you.

No doubt this information-based model approximates some of what happens in many situations (e.g., van Kleef, 2009). When we receive information about someone else's emotion, we may well draw inferences based on our emotion knowledge, and these inferences in turn may influence our own explicit appraisals. But is this the only way in which emotions affect other people? Do they merely provide information that shapes someone else's information-processing?

Here's another way in which someone else's emotions might affect yours. The volume and pitch of their shouting and their vigorous pointing gestures make you flinch and pull away. Their stare is so intent that you divert your eyes. You raise your open hands with palms forward, wanting them to back off. You feel weak, mistreated.

Although this second scenario may also involve inferences about the other person's intentions and appraisals, these inferences do not tell the whole story. Aspects of their developing emotional orientation separately affect aspects of your response without you needing to register any integrated meaning. Some of the responses contributing to your emerging emotional reaction are direct adjustments to unfolding physical characteristics of the other person's movements, not appraisal-mediated reactions to the perceived meaning of these movements.

Interpersonal influence may also begin before the other person's emotion is fully consolidated. You may well react when they are still only on the way to getting angry. And your reaction affects their emotion as it develops just as theirs affects yours. What interactants end up expressing and feeling is not solely a function of private appraisals but is co-constructed between them in their ongoing transaction (Fogel, 1993; Parkinson, 2001b). Neither person's emotion is simply a cause or effect of the other's. Both are part of a dynamic relational process.

No single unidirectional causal process underlies all social effects of emotions. For example, Van Kleef (2009) distinguishes two routes leading from emotion to interpersonal consequences, one mediated by inferences, the other based on more directly affective processes such as emotion contagion (e.g., Hatfield, Cacioppo, & Rapson, 1994). However, even this omits reciprocal causation. Correspondingly, the methodologies most commonly used to investigate interpersonal influence are not well equipped to capture the complexity of unfolding co-constructed emotions.

Experimenters usually manipulate information about one person's emotion as an independent variable (e.g., someone tells you that someone else is angry with you), and measure another person's thoughts, actions, as dependent variables. Often the "other person" is a simulation or fiction rather than a genuine human agent. Even when information about the other's emotion is delivered as part of an ongoing interaction, it is often pre-programmed rather than responsive to what the participant does. Interactivity and direct mutual adjustment are systematically excluded (Swaab, Galinsky, Medvec, & Diermeier, 2011; see Parkinson, Phiri, & Simons, 2012 for an exception).

Results of experiments that manipulate emotional information confirm the operation of inferential processes. Being tolc that someone is angry about what you are doing tends to make you do it less, especially if you want them to like you o are worried about what they might do if you keep on doing what you were doing (e.g., Van Kleef, De Dreu, Pietroni, & Manstead, 2006; Van Dijk, Van Kleef, Steinel, & Van Beest, 2008). Plausibly, similar processes might also operate if you inferred someone was angry with you in a direct face-to-face interaction (e.g., someone tells you that they are angry with you, or someone just gets angry with you). But do interpersonal effects really begin only after these inferences are made?

When emotions are operationalized as social information, it is not surprising that their effects depend on the social information that they provide (e.g., as inferential data). More generally, if the causes of emotion are presented in precoded form (e.g., in words or conventionalised facial expressions), it becomes more likely that information-processing mediates their effects on emotional response (Parkinson & Manstead, 1993). If such representational processes genuinely capture all interpersonal causes and effects of emotion, the methodological simplification presents no problems. If they do not (as we have reason to believe), then information-based models (including the inferential model described above) give a distorted and partial picture.

Research findings concerning interpersonal effects of emotions should also help to elucidate the social functions of emotions (Van Kleef, Van Doorn, Heerdink, & Koning, 2011). For many theorists, some or all emotions are designed precisely to align social relations (e.g., Keltner & Haidt, 1999; Oatley, 1992; Parkinson, 1996). Anger serves as a warning, threat, or as a blame-diverting strategy (e.g., Parkinson, 2001a). Embarrassment deflects uncomfortable social attention (e.g., Parkinson, Fischer, & Manstead, 2005) or serves to avert someone else's negative evaluation following counternormative behaviour (e.g., Leary, Landel, & Patton, 1996). Worry solicits comfort or alerts others to potential concerns (Parkinson & Simons, 2012).

But if these social functions really depend on inferentially mediated interpersonal effects, then their operation requires prior inferential capacities. This implies that emotions only acquire social functions at a relatively late stage of evolution or individual development. For example, children need to learn the meaning of an emotion before it can provide inferential information that changes their own appraisals (e.g., Sorce, Emde, Campos, & Klinnert, 1985). It seems unlikely that emotions have no social functions until this developmental stage is passed. If I needed to have worked out that someone else's anger implies externally directed blame before it could affect me, directing blame externally could not be anger's original purpose. Anger's social functions would then be consequences of its more basic individual functions rather than part of its primary raison d'être.

In my view, emotions' social functions run deeper than this (and inferential effects depend on these more primary social functions). Indeed, why would I respond to information conveyed by someone else's anger with any urgency unless that anger had had a prior effect on me that I wanted to avoid repeating? Many of the motives for responding to information about someone else's anger are not themselves inferentially based. They depend on the pre-inferential discomfort of having anger directed at you.

None of this rules out inferential effects or functions of others' emotions. Indeed, we may well strategically present emotions precisely to convey information that we know will affect other people. However, exclusive use of information-based methodologies risks missing the more directly emotional phenomena on which inferential processes are premised. Some emotions are interpersonal influence processes before their meaning is represented by those at whom they are directed, and before they are used deliberately to influence others.

If we want to understand emotions as truly interpersonal processes, our research needs to move beyond contexts where detached participants receive information about other people's emotions. Being told that someone else is angry with you is not the same as them telling you they are angry with you. Them telling you that they are angry with you is not the same as them being angry with you right now, face to face, as you are interacting with them. Capturing ongoing dynamic co-constructive processes of mutual emotional engagement or conflict can be a tricky business (e.g., Butler, 2011), but the challenges are worth facing.

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The Sociology of Emotion: Emotion as Both Social Object and Social Force

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When it comes to studying emotion, one of the most enduring sociological insights is the degree to which it is inherently social. Over the last four decades, sociological research has made it increasingly clear that every aspect of emotion – from its constitution to its consequences – is influenced by and, in turn, influences the social contexts in which emotions are embedded.

Although this assertion is supported in and across all types of social settings, from day care centers (Leavitt & Power, 1989; Pollack & Thoits, 1989) to funeral homes (Cahill, 1988), I will focus my attention on the workplace. The workplace, similar to other hierarchically ordered institutions, offers clear insight into how social processes, and social forces alike, affect and are affected by the experience and the expression of emotion.

Emotions occur within the course of social interactions and within social settings. Whether more closely identified with the interactionist perspective – which holds that emotions are socially constructed (Shott, 1979) – or the structuralist perspective – which assumes that emotion is less malleable in nature (Kemper 1978, 1987) – most sociologists agree that emotional experience generally results from the meaning that individuals make of social interactions. Indeed, several formal sociological theories of emotion assume that emotions arise to the degree that our expectations are – or are not – met.

These expectations may deal with how we anticipate to be identified or treated by others (Burke, 1981; Cast & Burke, 1992; Heise, 1979, 2007), how much power or deference we expect to enact or receive during a face to face interaction (Kemper, 1978), how much of a given resource we expect to get or to give in a particular exchange (Lawler & Thye, 1999), how decisions regarding the allocation of scarce resources are determined (Hegtvedt & Killian, 1999) and how we expect to be dealt with in the context of a long term relationship (Lively, Steelman & Powell, 2010).

Because work settings are hierarchically ordered, it is unsurprising that individuals at the top (be they surgeons, attorneys, or customers) tend to have their expectations met more often than those at the bottom (that is, nurses, secretaries, or face-to-face service workers; see Hochschild, 1983). It is also, then, not surprising that individuals occupying higher status positions are more likely to experience positive emotions than their lower status counterparts (also see Simon and Nath, 2004).

In her classic work, The Managed Heart (1983), Arlie Hochschild referred to the set of norms and expectations that protect higher status individuals from the displaced negative emotions of others as *status shields*. In addition to protecting higher status actors from the displaced negative emotions of others, they also shelter them from the expectations and demands of engaging in emotional labor. Attorneys, for instance, have stronger status shields than paralegals and secretaries; thus, they have more freedom to express negative emotions (Pierce, 1995). Attorneys also have the ability to demand emotional labor – often in the form of mothering, care taking, and cheerleading – from their paralegals and secretaries with little or no expectation to reciprocate (Lively, 2000). Although attorneys are expected to conduct themselves as professionals in their dealings with clients and other attorneys, they are seldom called upon to do the more onerous type of emotional labor – such as stifling anger or irritation – that is routinely demanded from secretaries and paralegals (Erickson & Ritter, 1999).

Along similar lines, Lively and Heise (forthcoming) reveal that all social role identities (including occupational roles) are associated with particular "characteristic emotions." Drawing on insights from affect control theory (Heise 1979), characteristic emotions may be viewed as normatively regulated affective states that individuals try to attain during interactions involving specific identities (Lively and Heise, forthcoming; Heise 2002). These normative states – e.g. that nurses should feel compassion, that librarians should feel nostalgic or humble, that 1970s flight attendants should feel delighted or elated – are determined by culturally shared affective sentiments that reflect societally held understandings of how good, active and powerful these identities are (also see Lively, 2013). Notably, norms about which emotions one should experience depending on one's position in the workplace are very similar to the well-known norms that regulate more transient social roles like being a mourner at a funeral or being a wedding participant (see Hochschild, 1983).

It is important to emphasize that emotion norms in the workplace are determined not only by occupational identities (e.g., physician or nurse), but also by the social identities of the specific individuals occupying each role (e.g., female attorney or Black attorney). For instance, the characteristic emotions of a female physician (i.e., affectionate, broad-minded, cooperative and compassionate) and a Black physician (i.e., perceptive, mature, optimistic, and wise) are different from those of physician unmarked by sex or race (i.e., independent, competent, confident and satisfied; see Heise, 2013). In most professional settings, unmarked roles tend to be held by men and or Whites, whereas unmarked roles within service and caring contexts tend to be held by women.

Ethnographic studies capture these differences as well. The jobs of female workers – ranging from flight attendants (Hochschild, 1983), to paralegals (Pierce, 1995), to police officers (Martin, 1999) – are often structured in ways that require them to engage in activities that require more emotional labor and, at the same time, to appear nicer, friendlier, and more available than their male counterparts. Similarly, African Americans – especially those working in historically white professions – are often subject to acts of subtle racism in their day-to-day interactions with white customers and colleagues that result in feelings of anger and frustration. At the same time, they feel pressure to do what they can to avoid cultural stereotypes about "angry black men" (Wingfield, 2010).

As evidenced above, our social arrangements and our cultural understandings give rise to particular emotions and to expectations about which emotions are appropriate. They also shape the degrees to which social actors are required to manage their emotions for the benefits of others, or are allowed to express their emotions freely. Although most sociological analyses focus on how social roles, social structures, organizations, and institutions affect emotional experience and its expression, it is important to remember that emotions also serve to reify these same social arrangements (Lively, 2000; Stacey, 2011) and have the potential to provide pathways for social change (Gould, 2009; Jasper, 2011).

One of the ways in which emotions can drive social change is when social actors begin to engage in *emotional deviance* (Thoits, 1985). Emotional deviance occurs when individuals are either unable or unwilling to feel the characteristic emotions associated with their social roles and/or social characteristics. While emotional deviance is likely to begin in interpersonal interactions (e.g. within the family), acts of affective deviance *en masse* can result in changes to social role identities and social characteristics (Lois 2012). Indeed, there have been numerous historical studies of how norms about how women ought to feel – particularly norms about love and anger – have changed over time leading to the major changes in the social role of women in the Western world (Cancian, 1990; Cancian and Gordon, 1988).

Emotion norms may change naturally, or their evolution may be shaped by social activism on a grand scale (Britt & Heise, 2000; Taylor, 1996) or by therapy on a smaller scale (Francis, 1997; Irving, 1999; Thoits, 1995). Both activists and therapists use interpersonal emotion management to change individuals' perceptions not only about what is right to feel, but also about who they are and what they are capable of. Once these perceptions change, emotions can become a powerful driver for social change.

The bottom line is that, despite its seemingly individual basis, emotion is profoundly social. While this review barely scratches the surface of over forty years of sociological scholarship on emotion, it is clear that emotion is both social

object and social force. From its constitution to its consequences, emotion is profoundly shaped by the cultures and social structures in which it occurs. It also has the potential to alter social roles, change organizations, democratize institutions, and, as the recent Arab Spring reveals, upend entire governments and systems of rule.

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The Situated Perspective on Emotions: A Philosophical Roadmap

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In cognitive science, *cognitivism* is the claim that the human mind is an input-output-device that transforms representations by means of neuronally implemented operations. Cognition is thus the "intracranial filling" mediating between input from, and output to, the rest of the body and the environment. Situated approaches to cognition, in contrast, stress that cognition is based on reciprocal real-time interactions of embodied agents with their environments.

The emerging consensus is that, as Daniel Dennett once quipped, just as we cannot do much carpentry with our bare hands, there is not much thinking we can do with our brains alone. What about *emotions*? If the brain alone cannot do much *thinking*, can it alone do some *emoting*? If not, what else is needed? Do (some) emotions (sometimes) cross an individual's boundary? If so, which supra-individual systems can have affective states, and why? And does that make emotions "situated" in the sense cognition is said to be situated? Although body and environment have long been a central topic in emotion research, we believe that applying insights from the situated cognition debate can open up new avenues of research in the philosophy and science of emotions.

Already in 1984 during the heydays of cognitivism, Robert Zajonc, one of the most eminent emotion psychologists, co-authored a paper with Hazel Marcus on "Affect and Cognition" strongly critical of the then prevailing "disembodied" theories of cognition, which had even led some emotion researchers (e.g. Solomon 1976) to forget the indispensable role of the body in emotional processes. In particular, Zajonc and Marcus argued that a proper understanding of cognition "is virtually incompatible with the type of computer model of information processing prevalent in contemporary psychology" (1984, pp. 81-82). Their criticism turned out to be farsighted. Nowadays, the role of the body, as well as that of the physical and social environment, is acknowledged in its influence on cognitive processes, and it is increasingly recognized as having a key impact on various affective phenomena.

Cognitive and affective processes that essentially involve body and environment are often characterized as *embodied, embedded, extended,* or *distributed*, respectively. Thus far, the conceptual geography of these new terms has not been established; they are used with various meanings and are not part of a generally accepted framework. We use the expression "situated" as the most general term to refer to all of them and offer some suggestions in what follows about how to best understand and use the aforementioned new terminology. This will reduce the amount of talking at cross-purposes, and lead to a better appreciation of how emotion theory can benefit from situated approaches.

In the current literature, to characterize affective processes as being *embodied* can mean two quite different things: first, that they essentially involve extra-cranial bodily processes, i.e. depend on or stretch out into processes of the body minus the brain (Niedenthal et al. 2009) or, second, that they involve at least (intracranial) bodily format representations, which are often treated as simulations of bodily processes (Bastiaansen et al. 2009). Although some

years ago such views may have been news for cognitive science, they do not contain genuine news for affective science. Bodily processes (or at least representations of the body) have always played an essential role in all sorts of feeling theories, and they are also essential components in appraisal theories such as, e.g., Scherer's component process model of emotions (Scherer 2005). Only radical cognitivists had downplayed the role of the body in emotions for a while in their historical amnesia.

With respect to environmental and social factors, however, things are somewhat different. Although emotions are typically conceived of as *responses* to changes in the environment, there is no pre-established consensus on howthe environment can have a substantial impact on our affective life beyond merely triggering, or providing background conditions for, emotions. This is what a robust notion of *embeddedness* should establish.

The task here is to find affective analogues of the familiar notion of "scaffolding" in situated cognition, which refers to the active structuring of an environment with the goal of reducing cognitive load (e.g. when setting up an automatic reminder system for important deadlines). Examples where we actively structure the environment as an "affective scaffold" in order to influence our emotional well-being are not hard to find: We furnish our apartment in a way that feels comfortable, we remove everything that reminds us of our ex-partner to alleviate the pain of separation, we deliberately undergo psychotherapy in order to get over our anxieties etc. The idea of active structuring is crucial for strategies of *emotion regulation*, e.g. in situation selection, situation modification and attentional deployment (Gross 2002, Stephan 2012).

Interesting as the idea of embedded emotions may be, it does not address the question of whether some emotions are *extended* in the sense that they literally cross an individual's boundary (Colombetti and Roberts 2014). For even if the environment is a (potentially indispensable) scaffold for an individual's affective life, scaffolded emotions as such do not extend beyond the organism's body.

Originally, the idea of extended cognition was introduced and motivated by considering the behavior of an Alzheimer patient (called Otto) whose entries in a notebook were claimed to be part of what realizes his memories since the entries function in a similar way vis-à-vis his cognitive and behavioral competences as do brain-based memories in healthy adults (Clark and Chalmers 1998). In Otto's case, we may say that his memory processes are *extended* in the sense that they are partially constituted by extrabodily processes, which function in a way similar to comparable internal processes.

Consider now an autistic person (Otto's cousin Arnold) incapable of directly perceiving and recognizing the emotional states of others in social interactions. If Arnold is equipped with a headset camera connected to a computer running a program for decoding human emotional states, his appraisal system may be supplied with online-information in real time about the emotional states of his interaction partners. On this basis, Arnold can immediately appraise the situation and adequately interact with other people. In analogy with Otto's case, we can say that some of Arnold's emotional processes extend beyond his brain and body, because the device plays a similar role for his appraisal processes (which are constitutive of his emotional processes) as does the notebook for Otto's memory processes (Stephan et al. 2014).

While extended emotions have an individual agent as their "center", *distributed* emotions "spread out" over a collective, no individual member of which can be singled out as the "center" of these processes. Consider, for instance, social interactions like a quarrel among friends in which emotions are dynamically unfolding between social agents, where the outcome is initially open, with many factors influencing the development of this process, such as the social setting, cultural conventions and practices (Parkinson 1996). In such cases, there is not just an individual's emotional reaction to someone else's action, but a continuous exchange between socially interacting agents: affective signals are sent back and forth, are received by either party and shape the emotional responses on-line (Griffiths and Scarantino 2009, Van Kleef 2009).

Dynamic affective phenomena of this kind are not only philosophically interesting, but illuminating also for other disciplines. Cole (2009), for example, provides an enlightening psychiatric perspective on the role of social

interaction, and Goodwin and Goodwin (2000) view emotions from an anthropological perspective as socialphenomena organized and made visible through situated practices used by individuals to construct their lifeworld.

In conclusion, the situated perspective, in all of its varieties, has the potential of revolutionizing affective science as much as it has revolutionized cognitive science, offering new research hypotheses, new experimental paradigms and a new perspective on the interpersonal, dynamic and context-dependent functions of emotions in social interactions.

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Gerben A. Van Kleef: Exploring the Social Nature of Emotion

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My colleagues and I are interested in the social consequences of emotions. In our research, we adopt a social-functional approach to emotion, assuming that emotions play a vital role in regulating social interaction (Fischer & Manstead, 2008; Frijda & Mesquita, 1994; Keltner & Haidt, 1999; Parkinson, 1996). Moving beyond the traditional questions of how our emotions arise and how they influence our *own* thinking and behavior, we explore how one person's emotional expressions influence the feelings, thoughts, and actions of *others*.

Such interpersonal effects of emotions, whether deliberate or inadvertent, are omnipresent in close relationships, in the workplace, in politics, in advertisement, and in most other forms of human interaction. A homeless person may express sadness in the hopes of extracting change from shoppers. A colleague may smile when asking for a favor. A manager may express anger to force workers to be punctual. A father may express pride to reinforce the desired behavior of his daughter. By examining the social consequences of such emotional expressions in a diverse array of settings, we strive to uncover the basic principles that govern the social effects of emotions. Ultimately, we hope to shed new light on the fundamental question of why we have emotions in the first place.

Emotions As Social Information (EASI) Theory

My colleagues and I have developed what we call the Emotions As Social Information (EASI) theory (Van Kleef, 2009, 2010; Van Kleef, De Dreu, & Manstead, 2010; Van Kleef, Homan, & Cheshin, 2012; Van Kleef, Van Doorn, Heerdink, & Koning, 2011) to explain and predict the social effects of emotions and to guide research in this area (these and other relevant papers mentioned in this article can be retrieved from the publications page of my website at http://home.staff.uva.nl/g.a.vankleef). A fundamental assumption of the theory is that social life is ambiguous, and that people therefore turn to others' emotions to inform their understanding of the situation and the people involved in it, and to determine their course of action (also see Manstead & Fischer, 2001).

EASI proposes that emotional expressions shape behavior and regulate social life by eliciting *affective reactions* in observers (i.e., reciprocal and complementary emotions and sentiments about the expresser) and by triggering *inferential processes* in observers (i.e., inferences about the source, meaning, and implications of the expresser's emotion). These affective reactions and/or inferential processes in turn inform observers' behavior. Imagine you are meeting a colleague in a bar, and you show up 30 minutes late. Your colleague expresses anger regarding your tardiness. On the one hand, your colleague's anger may lead you to several inferences: you realize that you are late, that your lateness is inappropriate, and that s/he is upset with you about your being late. This sequence of inferences may motivate you to be punctual next time (behavior). On the other hand, the anger directed at you may upset you and make you dislike your colleague (affective reactions), and possibly cause you to decide not to meet anymore at al (behavior).

In some cases the two processes fuel similar behavioral responses, as when the distress of a loved one simultaneously leads us to feel mutual distress and compassion (affective reactions) and to realize that something is wrong (inference), both of which motivate supportive behavior. In other cases, affective reactions and inferential processes drive opposite behaviors (as in the example of the colleague). In such instances behavioral responses to others' emotional expressions depend on the relative strength of the two processes (Van Kleef, 2009).

The relative strength of inferential and affective processes depends on two main classes of variables. First, a basic commitment of EASI is that, since emotional expressions are a source of information, their social effects are modulated by the observer's information processing motivation and ability. Information processing ability depends on individual characteristics such as intelligence and on situational influences such as distraction or cognitive load. Processing motivation depends on dispositional factors such as the need for cognitive closure (i.e., the desire to reach quick decisions without considering all available information) and on situational factors such as time pressure (De Dreu & Carnevale, 2003). The more thorough the information processing, the stronger the predictive power of inferences; the shallower the information processing, the stronger the predictive power of affective reactions (Van Kleef, 2009).

Second, the relative strength of affective versus inferential processes depends on social-contextual factors that shape the perceived appropriateness of the emotional display (Shields, 2005). Perceived appropriateness depends on characteristics of the emotional expression (e.g., intensity, authenticity), the situation (e.g., emotional display rules), the expresser (e.g., gender, group membership), and the perceiver (e.g., desire for social harmony). Generally speaking, affective reactions become more predictive of behavior than inferential processes to the degree that emotional displays are deemed inappropriate (Van Kleef, 2009).

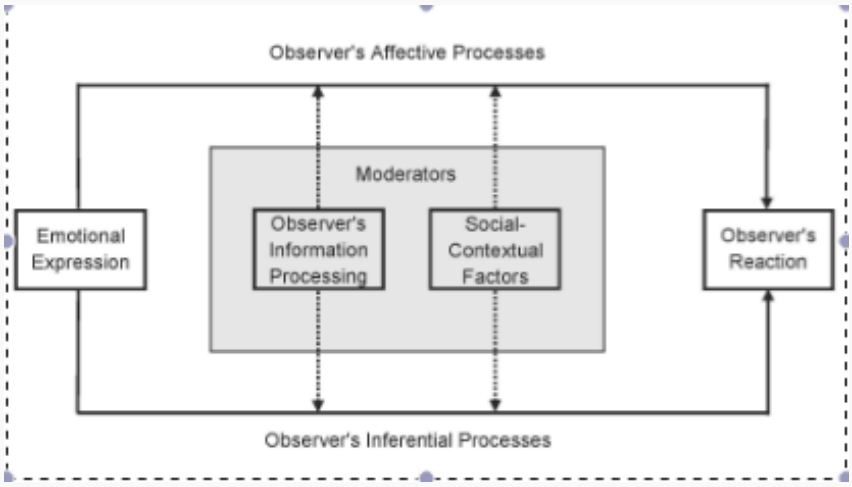

Figure 1
Schematic representation of Emotion as Social Information (EASI) theory. EASI posits that the social effects of emotions (i.e., the effects of one person's emotional expressions on another person's behavior) are mediated by affective and inferential processes. Inferential processes become relatively more predictive of an observer's behavioral reaction to the degree that the observer engages in more thorough information processing and perceives the emotional expression as appropriate, while affective processes become more predictive when information processing is low and the emotional expression is deemed inappropriate.

Returning to the earlier example, when confronted with your colleague's anger you would be more likely to better your behavior to the degree that you are motivated and able to engage in thorough information processing and you feel tha your colleague's anger is appropriate. Figure 1 provides a (simplified) schematic summary of EASI theory.

Some Data on Emotions as Agents of Social Influence

To enhance understanding of the social nature of emotion, my colleagues and I have studied the interpersonal effects of discrete emotions such as anger, sadness, disappointment, guilt, regret, disgust, happiness, and pride in a variety of social and organizational settings. In particular, we have focused on social interactions involving persuasion, compliance, conformity, conflict, negotiation, leadership, team performance, personal relationships, and sports. Most of our research is experimental, employing a wide array of methods (e.g., behavioral observation, physiological data, eye-tracking, self-report and peer-report data, and objective performance outcomes). We complement this experimental work with field studies, using questionnaires, critical incidents methods, and longitudinal designs to gain rich data about the role of emotion in everyday social and organizational life. Below I provide some illustrative examples of research from our lab.

According to EASI, people may express emotions to change others' behavior. But which emotions are successful at instigating desired behavioral changes, and

under which conditions? We demonstrated that expressing anger can help negotiators get a better deal, provided that the counterpart is sufficiently motivated to process the implications of the anger (Van Kleef, De Dreu, & Manstead, 2004) and perceives the anger as relatively appropriate (Van Kleef & Côté, 2007).

We also found that expressing disappointment can help to extract concessions, whereas expressing guilt invites exploitation (Van Kleef, De Dreu, & Manstead, 2006). In another line of research, we showed that leaders' expressions of anger increase followers' motivation and performance compared to expressions of happiness, but only when followers engage in thorough information processing (Van Kleef et al., 2009) and when they have a low concern for social harmony (e.g., because they score low on agreeableness; Van Kleef, Homan, Beersma, & Van Knippenberg, 2010; see Figure 2).

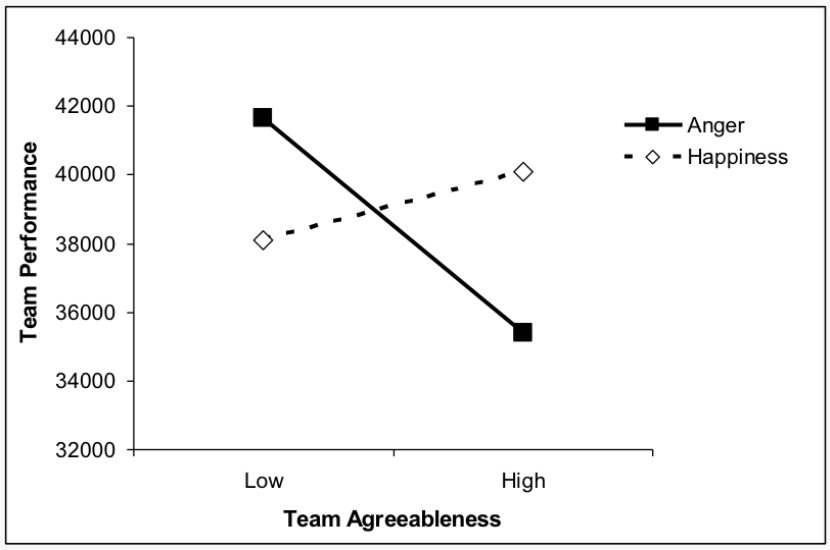

Figure 2
Team performance as a function of leader's emotional display and followers' level of agreeableness (source: Van Kleef et al., 2010, Psychological Science). Teams consisting of relatively low-agreeable followers performed better after their leader expressed anger rather than happiness regarding their performance. In contrast, teams consisting of relatively high-agreeable followers performed better after their leader expressed happiness rather than anger.

In another study, an instructor's anger improved students' learning performance compared to happiness, as reflected in better recognition and recall of word pairs (Van Doorn, Van Kleef, & Van der Pligt, in press). Finally, a series of studies on group decision-making revealed that expressions of anger of a majority can enforce conformity in a deviant minority, provided that the deviant is motivated to be accepted by the group and sees conformity as a means to achieve acceptance (Heerdink, Van Kleef, Homan, & Fischer, 2013).

In our research on the social effects of emotions we often consider the role of power, which is commonly defined in terms of asymmetrical control over valued resources (Keltner, Gruenfeld, & Anderson, 2003). Power tends to lower the motivation to attend carefully to the needs and desires of other people (Fiske & Dépret, 1996; Keltner, Van Kleef, Chen, & Kraus, 2008). As such, power may undermine the social functionality of emotional expressions by making observers less attentive to those expressions.

Accordingly, in one of our studies conversation partners who experienced a greater sense of power exhibited dampened feelings of distress and compassion (see Figure 3), both physiologically and experientially, when listening to a talker's stories of suffering, which in turn led the talker to feel poorly understood (Van Kleef et al., 2008).

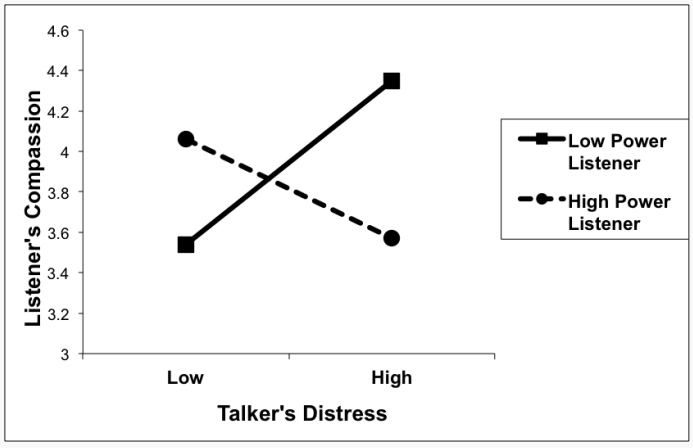

Figure 3
Listener's compassion as a function of talker's distress and listener's power (source: Van Kleef et al., 2008, Psychological Science). Listeners with a low sense of power were highly responsive to the emotions of their conversation partner; the more distressed the partner was while talking, the more compassion they felt while listening. In contrast, listeners with a high sense of power were impervious to their conversation partner's suffering.

We have also found that high power reduces behavioral responsiveness to anger expressions in negotiations (Van Kleef et al., 2004; Van Kleef, De Dreu, Pietroni, & Manstead, 2006). These studies show that power modulates the social effects of emotions.

The accumulating evidence from these and other studies supports the basic tenets of EASI theory. At the same time, new empirical insights prompt continuous updating of the theory. This process is far from over—in fact, we have only just begun. I am very much looking forward to further exploring the many intricacies of the

social effects of emotions together with my fabulous team of collaborators and to unravel emotion's social *raîson d'être*.

For more information, see: (a) http://home.staff.uva.nl/g.a.vankleef; (b) www.EASI-lab.nl

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