



Philosophia Scientiæ

Travaux d'histoire et de philosophie des sciences

19-1 | 2015

Logic and Philosophy of Science in Nancy (II)

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Electronic version

URL: <http://journals.openedition.org/philosophiascientiae/1036>

DOI: 10.4000/philosophiascientiae.1036

ISSN: 1775-4283

Publisher

Éditions Kimé

Printed version

Date of publication: 1 March 2015

Number of pages: 35-43

ISBN: 978-2-84174-707-8

ISSN: 1281-2463

Electronic reference

Jeff Kochan, « Reason, Emotion, and the Context Distinction », *Philosophia Scientiæ* [Online], 19-1 | 2015, Online since 21 April 2015, connection on 02 November 2020. URL : <http://journals.openedition.org/philosophiascientiae/1036> ; DOI : <https://doi.org/10.4000/philosophiascientiae.1036>

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Reason, Emotion, and the Context Distinction

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Résumé : La recherche empirique et philosophique récente remet en question l'idée selon laquelle raison et émotion sont nécessairement en conflit l'une avec l'autre. Pourtant, les philosophes des sciences ont été lents à réagir à cette recherche. Je soutiens qu'ils continuent à exclure l'émotion de leurs modèles du raisonnement scientifique, parce qu'ils considèrent qu'elle appartient typiquement au contexte de découverte plutôt qu'au contexte de justification. Je suggère toutefois, en prenant pour exemple le fiabilisme, que des travaux récents en épistémologie remettent en cause l'autorité généralement accordée à la distinction entre ces contextes. On peut considérer que l'émotion joue un rôle fiable dans la formation des croyances scientifiques, ce qui pour le fiabiliste signifie également leur justification.

Abstract: Recent empirical and philosophical research challenges the view that reason and emotion necessarily conflict with one another. Philosophers of science have, however, been slow in responding to this research. I argue that they continue to exclude emotion from their models of scientific reasoning because they typically see emotion as belonging to the context of discovery rather than of justification. I suggest, however, that recent work in epistemology challenges the authority usually granted the context distinction, taking reliabilism as my example. Emotion may be seen as playing a reliable role in the formation, which for the reliabilist also means the justification of scientific beliefs.

1 Introduction

The number of contemporary philosophers who have addressed the question of whether emotion plays a constructive role in scientific reasoning can be

counted on one hand, or perhaps two if one tries hard. The most prominent among them are James McAllister, Lisa Osbeck and Nancy Nersessian [Osbeck & Nersessian 2011, 2013], and Paul Thagard. This lack of interest in the epistemic importance of emotions is somewhat puzzling. In recent years, a growing body of influential work by philosophers and cognitive scientists has challenged the prevailing assumption that reason and emotion necessarily conflict with one another. Indeed, emotion has now emerged as a central theme in contemporary philosophy of mind and as a vibrant topic of empirical research in the cognitive sciences. And yet, philosophers of science have given hardly any attention to these developments. I cannot be alone in my surprise that this should be so. In 2002, McAllister could reasonably write:

I forecast that the role of emotions in scientific practice will become a leading theme in philosophy of science over the coming decade. [McAllister 2002, 9]

Over one decade later, we can see that McAllister's forecast was too optimistic. Philosophers of science have proven themselves impressively resistant to the exciting developments in emotions research taking place just outside the carefully controlled boundaries of their own philosophical sub-discipline.

The question motivating the present paper is: *why?* This question is sharpened by the fact that there are important precedents in the philosophy of science for interest in the epistemic role of emotion in scientific reasoning, precedents which seem to have now been largely forgotten. There is, for example, the chemist-philosopher Michael Polanyi's account of "scientific passions", which ran as a central thread through his better-known discussion of tacit knowledge in scientific practice [Polanyi 1958]. As is well known, Thomas Kuhn was strongly influenced by Polanyi's views on tacit knowledge, but when Kuhn appropriated Polanyi's work he silently placed the topic of scientific emotions to one side, see [Kuhn 1962, 44, n. 1]. In the 1980s, the relation between emotion and scientific reasoning broke once again onto the scene, in the works of feminist epistemologists and philosophers of science. The best-known example is Evelyn Fox Keller's description of the plant geneticist Barbara McClintock's "feeling for the organism" [Keller 1983]. (I give detailed attention to Polanyi's and Keller's contributions in [Kochan 2013].) In addition, Helen Longino has argued that "our cognitive efforts have an ineluctably affective dimension" [Longino 1993, 108]. The feminist epistemologist, Alison Jagger [Jagger 1989, 137], furthermore argued that "emotional attitudes are involved on a deep level [...] in the intersubjectively verified and so supposedly dispassionate observations of science" [Jagger 1989, 138]. Yet, even in feminist philosophy of science these insights were not developed in an explicit and deliberate way. Once again, the question emerges: *why not?*

In this paper, I will take a few tentative first steps towards answering the question of why the philosophy of science has been so unresponsive to recent developments in the philosophy of mind and the cognitive sciences. My conjecture is that one important obstacle to philosophers of science recognising

the relevance of contemporary emotions research for their own field is their continuing commitment to the original distinction between the contexts of discovery and justification. With the introduction of this distinction in the 1920s, emotion was placed squarely in the context of discovery, whilst the context of justification was declared the principal domain of professional interest for philosophers of science. Although deliberate attention to the context distinction has waned in more recent years, the assumption that emotion makes no contribution to the epistemic justification of scientific beliefs has persisted. I will argue that the force of this assumption relies upon a conception of knowledge that is less compelling than it once was. Recent developments in naturalised epistemology, especially reliabilism, provide a promising way by which to accommodate a constructive role for emotion in scientific reasoning.

2 Reason, emotion, and the context distinction

The origins of the context distinction are typically attributed to the early European phase of logical empiricism. According to Alan Richardson, the motivation behind the introduction of the context distinction was a desire to balance the freedom necessary for scientific research with the epistemic responsibility of the scientific community [Richardson 2006, 50]. The early logical empiricists laid out their basic position in their 1929 manifesto, *Wissenschaftliche Weltauffassung: Der Wiener Kreis (The Scientific Conception of the World: The Vienna Circle)*. There, they declared their overriding goal as “unified science” [Vienna Circle 1929, 89]. In this spirit, they emphasized the need for collective effort and intersubjective agreement, which they set out to achieve through the development of a “neutral system of formulae” and a “total system of concepts” in which “dark distances and unfathomable depths” were to be rejected. They sought, in particular, to purge scientific discourse of metaphysical statements. These statements, they claimed, were devoid of meaning; they “say nothing but merely express a certain mood and spirit [*Lebensgefühl*]”. When re-interpreted as empirical statements, “they lose the content of feeling [*Gefühlsgehalt*] which is usually essential to the metaphysician” [Vienna Circle 1929, 90]. Such statements belong, not to science, but to lyric poetry or music. The idea seems to be that the feelings or emotions expressed in metaphysical statements are hopelessly subjective and resistant to falsification, and so unfit for inclusion in the intersubjectively verifiable system of formulae and concepts which were to constitute the epistemic core of an international and unified scientific culture.

Under this remarkably prescriptive vision of the scientific enterprise, scientific statements would be justified only if they were open to formal analysis and intersubjective verification. Writing one year before the appearance

of the Vienna Circle's manifesto, Rudolf Carnap, a co-author of that same manifesto, argued:

It must be possible to give a rational foundation for each scientific thesis, but this does not mean that such a thesis must always be discovered rationally, that is, through an exercise of the understanding alone. After all, the basic orientation and the direction of interests are not the result of deliberation, but are determined by emotions, drives, dispositions, and general living conditions. This does not only hold for philosophy, but also the most rational of sciences, namely, physics and mathematics. The decisive factor is, however, [...] the *justification* of a thesis. [Carnap 1928, xvii]

Here Carnap draws a clear line between the contexts of discovery and justification, placing emotions decisively on the side of discovery. On the side of justification, scientific knowledge was to be understood strictly as a formal system of concepts and formulae, rigorously bound to empirical data by ineluctable chains of logic.

When, in 1962, Thomas Kuhn set out to criticise the logical empiricists' view of scientific knowledge as a formal system of concepts, he did little to question the by-then orthodox opinion that emotion plays no epistemic role in scientific reasoning. Against the analytical formalism of the logical empiricists, Kuhn argued that scientific reason was structured, in significant part, by non-formalisable tacit elements. For Kuhn, the intersubjective agreement which ensured the rationality of the scientific enterprise was conditioned not only by the public transparency of formally explicable rules and concepts, but also by the shared skills and values which resulted from common training within similar intellectual and disciplinary contexts. Although Kuhn rejected the logical empiricists' formalism, he thoroughly endorsed their emphasis on the intersubjective nature of scientific reasoning.

Two specific points deserve special emphasis in concluding this brief historical sketch. First, emotions were tied to metaphysics. They could thus not be fit into an empirically grounded conception of scientific knowledge. Second, emotions were considered to be an individualistic, or subjective, phenomenon. As a consequence, no place could be found for them in the intersubjective, or objective, context of scientific justification. I now wish to argue that a naturalistic account of scientific reasoning may provide a means by which to meet these two objections.

3 The reliability of scientific emotions

Among empirical studies of the relation between emotion and reason, the work of neurologist Antonio Damasio is most well known. Based on a series of clinical studies of brain-damaged individuals, Damasio concluded that the capacity to reason is tied to a collection of systems in the brain which are also

responsible for the processing of emotions [Damasio 1994, 78]. Damage to the brain's emotion system is accompanied by a dramatically diminished capacity for rational planning and decision-making. More specifically, a loss in emotional responsiveness affects our ability to judge salience between different options, thereby rendering our decision-making landscape "hopelessly flat" [Damasio 1994, 51].

Work by the philosopher of emotion, Ronald de Sousa, provides a conceptual framework within which we might better understand the surprising correlation uncovered by Damasio's clinical studies. Like Damasio, de Sousa argues that emotions "guid[e] the process of reasoning", that they "underlie rational processes" [de Sousa 1987, 197, 201]. His considerations focus on what he calls the "philosophers' frame problem" [de Sousa 1987, 193]. The frame problem arises from the recognition that we bring a tremendous store of knowledge to any situation which we face. We constantly draw from this store even in order to interpret the simplest of instructions or to disambiguate the simplest of sentences. To pick a pithy example from de Sousa:

think [...] of the general knowledge required to know that snowshoes, alligator-shoes, and horse-shoes are not respectively made of snow, worn by alligators, or used to walk on horses. [de Sousa 1987, 192]

Faced with this superabundance of knowledge, we need to be able to distinguish between what is and what is not relevant to the task at hand. In other words, we need to be able to frame the information available to us in a way which picks out the bits we actually need to pay attention to in order to move forward under those particular circumstances. It is on this basis that de Sousa argues that emotions underlie rational processes, that they are indispensable for our capacity to reason. The function of emotions, he writes,

is to deal with the philosophers' frame problem: to take up the slack in the rational determination of judgement and desire, by adjusting salience among objects of attention, lines of inquiry, and preferred inferential patterns. [de Sousa 1987, 203]

By controlling salience, emotions protect us from the sort of deliberative paralysis suffered by Damasio's brain-damaged clinical subjects, a paralysis which severely impaired their ability to function rationally within the world.

For de Sousa, the link between emotion and reason is to be explained ultimately in biological terms. Hence, both he and Damasio recommend a thoroughly naturalistic explanation for the epistemic role played by emotion in the reasoning process. An important feature of such a methodology is that it conceptualises knowledge as a cognitive activity explicable in terms of neural, or more broadly biological, processes. This is a significant departure from the more traditional conceptualisation, favoured, for example, by the logical empiricists, which treats knowledge as an abstract body of concepts tied to evidence by rules of logic. One important consequence of this naturalisation

of epistemology is that it makes the distinction between contexts of discovery and justification, what Paul Hoyningen-Huene calls a distinction between the descriptive and the normative, more difficult to maintain [Hoyningen-Huene 1987]. The benefits of this consequence can be seen in Paul Thagard's neurocomputational model of emotional consciousness. On Thagard's account, the descriptive and the normative are "closely intertwined": "[e]ven the acceptance of hypotheses, not just their discovery, has an emotional component" [Thagard 2000, 214]. In this way, the descriptive and the normative considerations, which were clearly and decisively separated in the context distinction, are brought much closer together. Naturalistic epistemology bases its normative considerations, in part, on the way thinking actually works. Scientific descriptions of how we reason influence the naturalistic epistemologist's prescriptions for how we ought to reason.

James McAllister appears to also throw his hat in with the naturalists when he argues that scientists' emotional responses may serve as "reliable detectors of desirable cognitive properties of empirical findings and theories" [McAllister 2005, 571]. Indeed, he cites as one promising example of such a reliable detector Thagard's model of emotional coherence. I want to now suggest that the epistemic reliability of the natural mechanisms discussed by Damasio, de Sousa, and Thagard might be best treated in terms of a kind of naturalised epistemology called "process reliabilism". Process reliabilists argue that a belief is justified if it has been formed through a reliable process. According to Alvin Goldman, reliable processes may include such things as standard perceptual processes, remembering, good reasoning, and introspection [Goldman 2009]. The reliabilist thus understands knowledge largely in terms of the processes by which it is formed. She focuses, in other words, on knowledge as a cognitive process rather than as a formal system of beliefs.

A reliabilist account of scientific reasoning would thus seem able to accommodate an epistemic role for emotion. The important point here is that, on this account, emotion is conceptualised in wholly naturalistic terms. As a consequence, the logical empiricists' worry, that emotion is a metaphysical phenomenon incompatible with an empirical conception of scientific knowledge, loses its original force.

4 Scientific emotions as social phenomena

A second related worry is that an account of scientific reasoning which incorporates emotions will underwrite an individualistic theory of justification. If this were the case, then it would cut against the commitment of both the logical empiricists and Kuhnians to a theory of justification grounded in intersubjective agreement. It appears that process reliabilism cannot answer this worry. Indeed, as Sandy Goldberg has recently argued, Goldman's process reliabilism seems heavily biased towards the individual subject, and he suggests

instead that the reliability of a belief may also depend on the “prevailing social environment” in which it is formed [Goldberg 2010, 2]. Robert Brandom has made an even stronger claim, arguing that reliability is *always* intersubjective:

[r]eliabilism points to the fundamental *social* and *interpersonal* articulation of the practices of reason giving and reason assessing within which questions of who has knowledge arise. [Brandom 1998, 390]

If these criticisms of Goldman’s original account are valid, then it would appear that process reliabilism, as a properly naturalistic epistemology, should base its considerations not only on the categories of empirical psychology, but also on those of empirical sociology. As much would seem suggested in Thagard’s admission that he knows of no psychological way of distinguishing between the reliable emotion-based evaluations of a scientist, on the one hand, and her subjective “self-promotion”, on the other [Thagard 2006, 256]. By following Goldberg in modifying orthodox reliabilism, in order to accommodate the insights of social epistemology, we might then argue that epistemic emotions are intersubjective phenomena. As Thagard argues, it is only by working together that scientists will “converge on evaluations [...] that produce a shared reaction of emotional coherence” [Thagard 2001, 367]. If this synthesis of process reliabilism and social epistemology were to succeed, then we would have the basis for an intersubjective account of epistemic emotion. This would then provide us with an answer to the second worry shared by the logical empiricists and Kuhnians, that a recognition of an epistemic role for emotion vis-à-vis scientific reasoning would underwrite an individualistic, or subjectivist, theory of justification. Moreover, the proposed intersubjective account of emotions would also allow us to reconnect with, and perhaps even to vindicate, earlier work on epistemic emotions by feminist epistemologists and philosophers of science like Evelyn Fox Keller, Helen Longino and Alison Jagger. Recall Jagger’s statement, in 1989, that

certain emotional attitudes are involved on a deep level in all observation, in the intersubjectively verified and supposedly dispassionate observations of science as well as in the common perceptions of daily life. [Jagger 1989, 189]

5 Conclusion

Allow me to now sum up these admittedly tentative remarks. I have sought to answer the question of why philosophers of science have generally turned a blind eye to the epistemic importance of emotion, even though this importance is being increasingly recognised in other fields. One reason for this neglect, I have suggested, is the continuing influence of the historic distinction between the contexts of discovery and justification. Philosophers of science occupy

themselves with matters of justification, and they have traditionally dismissed emotion as relevant only to matters of discovery. Yet this dismissal of emotion has been motivated in significant part by a conception of knowledge which is no longer as compelling as it once had been. Process reliabilists, for example, have effectively challenged a view of science as constituted by a formal system of empirically grounded beliefs and rules, and developed powerful tools for exploring it instead as a cognitive, and even historical, process. I have suggested that the reliabilist's tools, particularly once further sharpened on the stone of social epistemology, offer one attractive point-of-entry into the exciting and still largely unexplored problem-space opened up by the striking possibility that successful scientific reasoning necessarily depends on the presence in the research process of intersubjectively stabilised epistemic emotions.

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