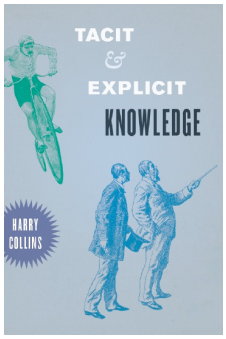
12-13 December 2011, Nancy, France

TACIT KNOWLEDGE IN SCIENCE: DISCUSSIONS WITH HARRY COLLINS

An international conference around Harry Collins' book *Tacit and Explicit Knowledge* (2010)



Organized by Léna Soler and the PratiScienS group

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PROGRAMME: OVERVIEW

Monday 12 December 2011

08h30 - 09h00 Registration

09h00 - 09h15 Welcome and Introduction. Léna Soler

09h15 - 10h15 **Harry Collins** (Cardiff University, UK)
Tacit Knowledge in the Scientific Collectivity

10h5 - 11h15 **Trevor Pinch** (Cornell University, USA)
Harry Collins and Tacit Knowledge

11h15 - 11h45 Coffee break

11h45 - 12h45 **Léna Soler** (Archives Poincaré, Nancy) **and Sjoerd Zwart** (Delft University, The Netherlands)
Tacit Aspects in Science: The Collective and the Individual Level

12h45 - 14h30 Lunch

14h30 - 15h30 **Oliver Kauffmann** (Aarhus University, Denmark)
What Sort of Knowledge is Implicit Sensorimotor Knowledge, Really?

15h30 - 16h30 **Bahram Djenab** (Institut National des Jeunes Aveugles, France)
Tacit Knowledge in Faraday's Research on Electrostatics

16h30 - 17h Coffee break

17h - 18h **Tim Thornton** (Central Lancashire University, UK)
Why Tacit? Why Knowledge? The Dilemma Facing an Account of Tacit Knowledge

20h. Dinner

Tuesday 13 December 2011

9h - 10h **Régis Catinaud** (Geneva University / Nancy University)
Tacit Knowledge in Theorization Processes

10h - 11h **Aviezer Tucker** (Texas University, Austin, USA)
Tacit and Explicit Knowledge in Historiography

11h00 - 11h30 Coffee break

11h30 - 12h30 **Baudouin Jurdant** (Paris 7 University)
Assessment, Tacit Knowledge and Reflexivity

12h30 Lunch

ABSTRACTS

Monday 12 December 2011

09h15 - 10h15 **Harry Collins** (Cardiff University, UK)

Tacit Knowledge in the Scientific Collectivity

In early work I showed that learning to build a new kind of laser – the TEA laser -- was more like learning a language than acquiring discrete pieces of technical information. This has consequences for the replication of contested scientific results and leads to the 'experimenter's regress'. Subsequently I have tried to classify tacit knowledge into three types. Two of these, relational tacit knowledge and somatic tacit knowledge, can sometimes be made explicit. There are examples of this in the story of the laser. When it comes to 'collective tacit knowledge', however, we have no idea how to make any of it explicit. Perhaps science can be understood better by applying this categorization of tacit knowledge. An example of its application will be given.

10h5 - 11h15 **Trevor Pinch** (Cornell University, USA)

Harry Collins and Tacit Knowledge

In this talk I review Collins' contribution to understanding the term tacit knowledge. I follow him through his early work on the TEA laser and his later thoughts on the term as conceptualized in his latest book, *Tacit and Explicit Knowledge*. I try and tease out tensions between his realist and relativist conceptions of knowledge which later became enshrined in different "waves" of the sociology of science.

11h45 - 12h45 **Léna Soler** (Archives Poincaré, Nancy) **and Sjoerd Zwart** (Delft University, The Netherlands)

Collins' Classification of Tacit Knowledge: Interpretation and Discussion

The aim of this talk is to deepen our understanding of the threefold way in which Collins categorizes the tacit dimension of knowledge. First, we focus on "relational tacit knowledge" (RTK) and reflect on its nature by contrasting it with collective tacit knowledge (CTK) and somatic tacit knowledge (STK). In doing so, we lay bare some ambiguities of Collins' classification and introduce some clarifying interpretations to eliminate them. Furthermore, our analysis suggests an alternative denomination of RTK, which avoids possible confusions with CTK, and fits even better Collins' own characterizations of RTK. Next, we turn to CTK and Collins' "collectivism". We discuss the sense in which CTK is "collective and examine the relation between the collective and the individual level of the tacit aspects in scientific knowledge production. In particular, we concentrate on the relation between CTK and the creative contributory expertise of individual scientists.

14h30 - 15h30 **Oliver Kauffmann** (Aarhus University, Denmark)

What Sort of Knowledge is Implicit Sensorimotor Knowledge, Really?

Harry Collins has defended a fine-grained distinction in terms of 'relational', 'somatic' and 'collective' kinds of tacit knowledge. In this paper I advance an argument against the so called strong, embodied 'dynamic sensorimotor approach' ('DSA') to perception and phenomenal consciousness defended by Kevin O'Regan, Alva Nöe and Susan Hurley among others. DSA claims that an organism's implicit knowledge of sensorimotor contingencies plays a constitutive role for the contents of its perceptual states, including their experiential properties. Thus DSA gives a specific kind of tacit knowledge a pivotal role. Secondly I relate my argument against DSA to Collins' claim about the in principle explicitness of tacit knowledge.

The problem with DSA I deal with is the theory's element of a higher-order, personal-level control of the tracking activity of the sensorimotor contingencies. According to DSA this epistemic access is accomplished by the organism's knowledge *of* the embodied knowledge of sensorimotor contingencies. My argument goes against the claim that this second-order knowledge *of* the embodied 'knowing how' itself can be understood as a type of 'knowing how'.
In the light of Collins' distinction, somatic as well as collective kinds of tacit knowledge are involved in the set of sensorimotor contingencies hypothesized by DSA. If my argument is valid and sound, however, the higher-order representation implied by DSA makes the acquisition of interactional expertise possible. Thus – contrary to what DSA claims – the 'know how' is in principle propositionally specifiable.

15h30 - 16h30 **Bahram Djenab** (Institut National des Jeunes Aveugles, France)
Tacit Knowledge in Faraday's Research on Electrostatics

This text is devoted to an analysis of the research that led Faraday to the discovery of what we now call a di-electric, a term he invented himself to describe the nature of the insulation in a capacitor. We will show that the progress of these investigations on electrostatic induction was only possible by a tacit knowledge that guided Faraday in solving the problem, a knowledge (understanding of problem) consisting of two main theoretical tensions. On the one hand, a language based on the semantics of the theory of action at a distance, and on the other hand a challenge to the notion of electric charge, inspired by his discovery in electrochemistry. In the analysis of understanding in the research, we will take into account the categorization established by Harry Collins on the transmission of tacit knowledge (the non coincidence of the important parameters).

17h - 18h **Tim Thornton** (Central Lancashire University, UK)
Why Tacit? Why Knowledge? The Dilemma Facing an Account of Tacit Knowledge

A number of philosophers have argued for the importance of something in the area, at least, of tacit knowledge (TK).These include Heidegger, Polanyi, Ryle, Wittgenstein and Dreyfus. But their arguments are of different kinds (empirical versus philosophical and narrowly focussed on an argument versus a more general metaphysical picture). What they suggest is the importance of something practical which resists linguistic articulation. But does it amount to tacit knowledge?
The central problem is this, accounting for tacit status must rule out an explicit articulation of the content of the knowledge. But without some explicit articulation of content grasped by a subject, why think that TK is knowledge? One model might be Dreyfus' sub-conceptual skilled coping. But, as Dreyfus himself suggests, that lacks the right kind of content to count as knowledge. In this paper, I will outline McDowell's response to Dreyfus and argue that the best hope for TK is a conceptually structured content (and so not fully tacit) but whose articulation is practical and context specific.

Tuesday 13 December 2011

9h - 10h **Régis Catinaud** (Geneva University / Nancy University)
Tacit Knowledge in Theorization Processes

In analyses that are dealing with scientific knowledge, the concept of tacit knowledge is usually restricted to emblematic cases of experimental sciences. However, in recent decades some sociologists and philosophers of what have been called the "practice turn" have provided evidences that indicate that the theoretical field, just like the experimental field, depend on a significant number of practices which impact on a theory and its formalization. Most importantly, they revealed that these practices involved a serious amount of tacit knowledge arising in many places throughout theorization processes.

However, if theorization does not only rest on a development and an articulation of a set of logical and structured statements but rather on a range theorization practices, then how are we suppose to seize these practices? Are they specific to theorization or common to every scientific investigation? Are these theorization practices more reliant on tacit aspects? And what are the nature and the impact of these tacit aspects? Although the implication of tacit knowledge in theoretical sciences is no longer contested, its proportion, force and influence are still rather unclear and sometime ambiguous. Indeed, no classification or typology of these tacit resources in the practice of theory has been proposed yet, neither a way to locate them or to assess and estimate their effects on theories.

Thus, the first aim of this presentation is to outline a general framework of the tacit dimension involvement in theorization processes. This will be done mostly by referring to and updating some analytic categories developed in earlier studies of theorization practices (*i.e.* the use of "analogy", "theoretical technics", "paper tools", "disciplinary matrices", "seeing-as", etc.). We will reaffirm through these studies the importance of tacit knowledge in the construction of theoretical models, and we will suggest possible reasons for their tacitness. In short, our intention is to suggest a structure or at least some general features of the theoretical practices and their correlated tacit knowledge and to compare their characteristics and their properties to those framed by H. Collins in his *Tacit and Explicit Knowledge* (2010).

10h - 11h **Aviezer Tucker** (Texas University, Austin, USA)
Tacit and Explicit Knowledge in Historiography

I argue that historians possess explicit knowledge of the past, but what Collins calls collective tacit knowledge of their epistemic assumptions and methodological practices. The paper attempts to make explicit this collective tacit knowledge.

Historians acquire this tacit knowledge through a long period of apprenticeship and corrections of their mistakes by more senior members of the guild, but without learning explicit rules of historical inference from evidence. Much like language, historiography has its own grammar that is learned implicitly by a collective that practices it, but is not made explicit. Rather, when historians stray from the collective epistemic norms, when they seem to have lost or not to possess the collective tacit knowledge, other historians correct them, much like we correct grammatical mistakes of people who speak our language without knowing the explicit rules we apply.

In my paper, I demonstrate the gap between the high level of tacit knowledge and low level of explicit knowledge of leading historians. I attempt to make explicit the tacit knowledge of historians using philosophical-conceptual tools. Finally, I demonstrate that the collective tacit knowledge of historians is shared by other collectives like that of jurists, detectives, and others who infer knowledge from multiple testimonies.

11h30 - 12h30 **Baudouin Jurdant** (Paris 7 University)
Assessment, Tacit Knowledge and Reflexivity

Most of the time, formal assessment procedures (as they are more and more generalized in our professional and political involvements in life) aiim at making explicit, according to some well defined

criteria, what might (and perhaps should) otherwise remain implicit.
To that extent, they support the political hold on us. The very process of socialization which is partly responsible for what Harry Collins calls the Collective Tacit Knowledge, involves judgments about our friends and enemies. The knowledge referred to in such judgments (but is it knowledge?) might draw on bad or good experiences with people around us, but these judgments cannot be fully explicable. These judgements give color and flavor to our horizontal relationships to our pairs.
Assessment procedures tend to translate such relational tacit knowledge into vertical relationships associated with hierarchical structures of the organizations. To that extent, they might destroy the very cement that links people together to form a community.
The argument according to which such procedures are facilitating some kind of reflexivity about people's performance in their professional life is fallacious because it is based on a confusion between control and reflexivity. I'll defend the idea that reflexivity is made possible when we internalize our confrontation with other people's performance. Such a confrontation should remain implicit if it is meant to lead to reflexivity. Explicitation of this confrontation leads to the destruction of the social links on which any community must rest in order to survive as a community.

The PratiScienS Research Project

Rethinking Sciences from the Standpoint of Scientific Practices

The aim of the PratiScienS project is to analyze the lessons learned from the so-called 'practice turn' in the philosophy of science, with respect to the nature of science and its specificity compared to other human activities. The project explores scientific practices in their relations with the construction and validation of scientific knowledge.

Three issues are central to the project:

- Robustness, i.e., the strategies and schemes through which the status of 'robust result' is acquired by a scientific item, and as a particular widespread case in the empirical sciences, the Wimsatt scheme 'invariance of a derived result R under multiple independent derivations'.
- The role of tacit aspects in the constitution of scientific results.
- The contingency vs. inevitability issue, i.e., the degree of contingency that can be attributed to what is taken as a robust scientific achievement.

The PratiScienS Team

The PratiScienS' core group, born in January 2007, is led by Léna Soler and includes about ten researchers based in Nancy, Strasbourg and Paris. These researchers look at various scientific disciplines (physics, the life sciences, mathematics and logic) that they approach with different methodologies (conceptual analysis, historical investigations and ethnographic laboratory studies of sciences in the making – conceived as complementary). Beyond this core group, PratiScienS' associated members include international figures such as Hasok Chang, Peter Galison, Thomas Nickles, Andrew Pickering, Claude Rosental, Jean-Paul van Bendegem and William C. Wimsatt. Further information is available from: http://poincare.univ-nancy2.fr/PratiScienS/Groupe/?contentId=6979

The PratiScienS group is supported by: the Agence Nationale de la Recherche (ANR), the Région Lorraine, the Maison des Sciences de l'Homme Lorraine (USR CNRS 3261), the LHSP – Archives Henri Poincaré (Université de Nancy 2, CNRS UMR 7117), and the Université de Nancy 2.