

## Chapter 2

# Interactional Expertise

### 2.1 The Tacit Dimension

Is the linguistic knowledge acquired by individual A through immersion in purely linguistic contexts of a domain D different from the linguistic knowledge acquired by A's twin brother A\* through linguistic and bodily immersion in the same knowledge domain<sup>1</sup>? To make the introductory question intelligible in an everyday setting, if two experts on a topic, B and B\* both possess the ability to talk about the topic, while only B\* possesses practical experiences, would their talk, including their explicit knowledge, differ to a significant extent? Would B\* possess more propositionally accessible knowledge than B about the domain in question? For clarity, the question is not about whether A\* performs better than A within the practice of D. Surely a lack of practical knowledge would leave A behind. The puzzle touches upon the problem of how skill learning and theoretical knowledge interact. Analytically these phenomena are often split in contrasting pairs such as implicit-explicit, discursive and non-discursive, theory and practice and so on which result in the unintended side effect that we tend to forget that these knowledge phenomena cooperate in humans (and apparently also in animals, e.g., Wynne 1998).

The question is, instead, whether physical interaction with the environment adds to the kind of knowledge we can share with others (e.g., symbol-like knowledge of which language is a core example as well as any kind of knowledge that corroborates the linguistic practice to which A has access). Will direct experiences of phenomena or events specific to D add invaluable elements to the growing knowledge and eventually render A\*'s linguistic knowledge significantly different from A's? (Later in this chapter we will zoom in on what kind of practical knowledge D supposedly could add. And in Chap. 7 we return to the issue of understanding).

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<sup>1</sup>The narrative of A and B and some parts of the chapter were originally published in Schilhab (2011).

Turning to sociology and the terms ‘contributory’ and ‘interactional’ expertise that specify the role of language in human knowledge exchanges may facilitate answers to these questions (see Collins 2004; Collins et al. 2006; Collins and Evans 2002, 2007). To grasp the implication of these answers we need to detail what is intuited about knowledge when applying the terms.

As briefly introduced in the last chapter, while contributory expertise is knowledge held by practitioners (the worlds’  $A^*$ s), and applies to both practices and symbol-like knowledge, interactional expertise is defined as purely linguistic knowledge (held by the worlds’  $A$ s). And, according to Collins and Evans (2007), the latter permeates almost any kind of human interaction, from division of knowledge in confined communities, such as companies and professional societies, to informal life (see also Collins 2011). Such symbol-like knowledge has traditionally been thought of as explicit, accessible to awareness and preferentially recoverable as propositional, rational statements and conceptualisations (e.g., Berry and Dienes 1993). However, it is disputable what kind of knowledge pertains to linguistic knowledge. According to the theory by Collins and Evans, language does not exhaust knowledge (as also demonstrated in, for instance, studies on the relation of linguistic reportability and consciousness, see Chap. 4). Thus, to Collins and Evans emphasis on the kinds of knowledge that can be disseminated and shared among participants in a *linguistic* community does not reiterate the traditional view on knowledge. Rather, according to Collins ‘interactional expertise’ is a third kind of knowledge because it depends on ‘linguistic socialisation’ which involves wide acquisition of tacit and informal knowledge pertaining to the domain (2004, pp. 126–127).

Accordingly, possession of linguistic knowledge in the sense of interactional expertise entails far more than possession of mere propositional knowledge. To possess interactional expertise knowledge is also to possess tacit skills of how to use language.

That aspect is particularly important since the concepts of interactional and contributory expertise are framed in a response to contemporary conceptions of the relation between language and knowledge that apparently has ignored the tacit aspects of competent language skills. As posed by Collins (2011, p. 272):

In some recent approaches language has been entirely ignored and practice alone has been taken to be what makes it possible to understand practice. Philosophers such as Merleau-Ponty and Heidegger emphasised the role of the body in understanding while others, such as Dreyfus, used these insights to criticise attempts to build machines which tried to use symbols to reproduce the full range of human capacities. As a consequence, language, seen as belonging to the domain of symbols, has been pushed to the margins.

Interactional expertise may therefore be viewed also as an attempt to introduce the tacit dimension of linguistic knowledge. Thus, interactional knowledge is similar to contributory knowledge except for the differences in physical interaction. It is acquired through immersion in linguistic communities and based on extensive verbal exchanges among contributory and interactional experts. In conversations, participants discuss misunderstandings, professional problems, and share experiences (Collins 2004). In communities, tacit and explicit, as well as formal and informal

rules control linguistic exchanges. This is the material accessible to the interactional and contributory expert alike, of which interactional expertise emerges, though only the latter expert is physically immersed in the sense of engaging direct experiences as well.

Collins provides a description of the ‘education’ of the interactional expert using the sociologist who investigates a new subject field as an example (2004, pp. 128–129):

The sociologist of scientific knowledge entering a new domain initially understands neither the banter nor the technical terms pertaining to some new piece of science being investigated. After a painful period the inferences in others’ conversations start to become clear and eventually it becomes possible to begin join in. One day a respondent might say in response to a technical query from the sociologist, ‘I had not thought about that’, and pause before giving an answer. When this stage is reached respondents will start to be happy to talk about the science and even respond generously and with consideration to critical comments.

The education is overtly processual and involves different levels of expertise. Collins continues (*ibid.*):

Eventually the scientists will become interested in what you know, not as a scientist in your own right, but as a person who is able to convey the scientific thoughts and activities of others. If you have just come from visiting scientist X you may be able to tell scientist Y something of the science that X is doing, and tell it in a way that is convincing enough to enable Y to be sure they have learned something. What were once ‘interviews’ then become ‘conversations.’ In such a conversation the sociologist might occasionally anticipate a point, speeding the conversation along without needing detours where mutual understanding already exists. The sociologist might fill in technical niceties that might otherwise be forgotten.

Here, Collins describes how interactional expertise evolves because of prolonged immersion. Thus, the acquisition of linguistic knowledge is in the sense of how it is put into appropriate use more skill-like and less based on sudden insight. However, singular episodes in which the novice (for instance the sociologist) asks specific questions to obtain particular answers also occur.

To acquire the level of genuine interactional expertise requires years. At that time (2004, p. 129):

The sociologist comes to recognise jokes, irony, and leg pulls (there is no expertise that makes it possible to recognise well-wrought lies). When the sociologist becomes really good at the work it becomes possible to take a devil’s advocate position in respect of some scientific controversy and maintain it well enough to make the conversational partner think hard about the science. This asking of new questions that the scientists might not have thought about, conveying of information, embellished in a way that makes it clear to the recipient that it is reliable, and making the real-time creative moves that are needed to maintain a devil’s advocate position in the face of determined opposition, are discursive skills, not a matter of selection from an assembly of discrete propositions.

Returning to our twins and following the understanding depicted by interactional and contributory expertise, if both A and A\* are equally exposed to conversations and linguistic exchanges of the community, then their linguistic competences will not diverge. Despite his or her embodied learning, practitioner A\* does not fare

better than non-practitioner A with respect to the amount of linguistic fluency including explicit knowledge he or she picks up. But how is this possible? Why would direct experiences of a domain D that gives rise to practical knowledge not transfuse the linguistic realm?

Since Collins and Evans aim to explain and corroborate the validity of knowledge cooperation and exchanges in human trading zones from sociological perspectives, elucidation of the cognitive mechanisms involved has not been a priority. This is however, our concern here. From the perspective of exposure, what are the cognitive processes connected to linguistic practices? By what processes is interactional expertise linked to contributory knowledge if physical immersion in the practices of the field appears irrelevant to the character of knowledge? What are the cognitive mechanisms associated with the development from novice to interactional expert? And above all, what characterises linguistic knowledge grounded in practice compared with linguistic knowledge grounded in language? Answers to these questions will be pursued throughout this account. But first we must address more fully why interactional expertise is a powerful challenge to general intuitions about linguistic content.

## 2.2 Red Herrings?

Based on everyday intuition, one could justly ask why we have to bother with twin brothers A and A\* and their knowledge acquisition at all. Why set up red herrings in a perfectly transparent case?

Since A only has access to the linguistic part of a knowledge domain D, while A\* has access to both linguistic and bodily experiences within the domain, it is obvious that A\* is simply better informed and therefore A and A\* cannot retain matching explicit knowledge. Conflicting perspectives on the matter is only of scholarly interest. The intuition fits well with the everyday experiences of those we consider true experts. When we seek advice, we appear to look up contributory experts hoping for a high degree of knowledgeability. We underscore the presence of practical knowledge because we infer that practical knowledge adds to the knowledge the expert can actually share even if the sharing is entirely linguistic in nature.<sup>2</sup> Exceptions exist however. We don't expect our dentist to have personal

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<sup>2</sup>To Collins and Evans, contributory expertise is not considered a superior kind of knowledge due to contributory experts being bodily engaged in their practice, even if this is how people conceive of the superiority of contributory knowledge. Within society, recognition of expertises seems to some extent at least, to arise from the current sociological status the expertise provides the individual with. It includes the ability to apply for particular job positions and the time spent on their particular specialty (e.g. Collins, 2004). It is hardly surprising that the degree of expertise is correlated with the amount of time spent on activities reserved for experts, i.e. conversations, cognitive rationalisations and the like, with that particular expertise. However, there is no reason to assume that the quality of knowledge is defined by time spent on practising that knowledge.

experiences with the exact same syndrome for which we seek his or her advice. Neither do we believe policemen are better detectives if they have direct experiences with criminal acts.<sup>3</sup> Thus, common sense opinions on what makes a genuine expert may differ in relation to degree of bodily involvement in various disciplines. In some kinds of expertise we trust the expert based exclusively on his education and experience with costumers (an expert hairdresser and personal assistant of female celebrities may be male). In other trades, the trust depends on personal involvement and direct experiences with similar occurrences.

Despite exceptions, the common sense intuition that direct experience brings deeper understanding is widely shared. Are we actually validated in the assumption that, in general, physical interaction, in the sense of somatosensory activity, adds significantly to explicit knowledge? Are we validated in the assumption that linguistic immersion, which entails years spent with knowledgeable people, even bordering on interviewing to the extent of interrogation during conversations, could not in principle provide us with an equal amount of linguistic knowledge and deep understanding?

It is a fact that in most instances of life we don't engage in first hand experiences of the concepts we master to perfection. Who has ever had personal experiences with unicorns, the ice ages, or the Big Bang? Climate science writers, describing the ice drilling projects on the Greenland ice cap, will not need to have set foot on Greenland, still less do they need to see snow falling on the glaciers or have seen someone holding a 130,000 year old rod of ice extracted from three kilometres below the fresh snow. Not even the scientists who consider such phenomena as part of their professional inventory. But we don't have to come up with exotic scientific concepts to drive home the argument that represents the position of Collins and Evans. Which child is not requested every day to accept bacteria and viruses as the reason for keeping a high hygienic standard to the extent that they themselves linguistically teach other children about proper hand washing without ever having met such critters? We are surrounded by phenomena (or so it seems) which are denoted by particular metaphors or expressions of which we have no personal experiences what so ever. If we close in on the qualities of these putative 'non-realistic' phenomena, which 'come to life' because we name them, the close-up reveals considerable differences in relation to the way they evade personal acquaintance. Some concepts are elusive because they are derived theoretical idealisations without any known instantiation such as 'atoms' (e.g., Collin 1992). Some concepts are intangible because their instantiations are always only partly encountered such as 'democracy' and some concepts that refer to for instance colours and tastes are difficult to grasp because their use seems to depend on the interpretation of the individual to a larger extent. (We will elaborate on different characteristics of kinds of concepts in Chaps. 4 and 8). So, as proposed by Collins (2011) in many aspects of ordinary linguistic use we do indeed all seem to be interactional experts (see also Collins 2016a).

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<sup>3</sup>Thanks to Professor Frederik Stjernfelt for providing this example.

To fluently speak a language that consists of abstract concepts, and refer to events and phenomena one has had no direct experience with, that is to be considered a competent language user, seems to depend on knowledge of which linguistic and social situations these abstract notions can be brought to use appropriately (Ribeiro 2007a, b). To be a competent language user does not assume the need to have personal experiences of all aspects covered by language. So, it seems that language itself carries the potential to convey information that is not self-experienced without loss or distortion of information.

But as briefly introduced in the first chapter, this assertion sits uncomfortably with the biological interpretation of the nature of knowledge. Are there any data to solicit the sociological perspective? In the following we will address the empirical approach offered by Collins et al. (2006) to draw up the ‘battlelines’ of the discussion even more effectively.

## 2.3 Empirical Results

Recently, Collins et al. (2006) demonstrated interactional expertise developed through linguistic interaction without full-scale practical immersion in a culture by the use of a test, the so-called imitation game. The imitation game tests the ability to “talk the walk” of a field, to evaluate whether direct experiences, i.e., first-person experiences of relevance to the domain, seem inconsequential to how one talks about a domain. In the original imitation game (Collins et al. 2006), a judge (a contributory expert within a particular field, D) posed written questions to two (to him unknown) respondents, one contributory and one interactional. The experiment consisted of two phases. In phase one, real-time experiments at the university involved real-time computer-based conversations between three participants. In phase two, complete real-time conversations were transcribed and sent to new judges by mail or email. Their judgments were statistically treated in the same way as the judgments obtained in phase one.

An imitation game as a simulation of real life conversations is of course questionable. For instance, the linguistic complexity of a dialogue in the imitation game, which attempts to reproduce everyday dialogues, may conceal irregularities in the use of language and blur the identity of the contributory expert. This could explain why colour-blind people (as we will see shortly), despite differing significantly from people with normal vision in their colour experiences, passed as interactional experts in the imitation game (Collins et al. 2006). Obviously, in real life interactional language perception and use also consists of a multiplicity of non-verbal communicative acts. However, in this context imitation games are *not* to be conceived of as meticulously simulating conversation. Collins suggests viewing imitation games as a kind of test (2004, p. 126):

Informalists (I include myself) have tended to use as examples of the intractability of the informal some practical skill such as bicycle-riding, or car-driving or the use of stick by a blind man. We tend to argue that the way the rules of such activities follow as a matter of course can only be grasped by being skilled practitioners of the respective activities. We tend to believe that only those who, as we might be inclined to put it, ‘share the form of life’ of the relevant activity would be able to understand it fully. We then argue that if we were not accomplished practitioners, our lack of understanding could be revealed if it was subject to the right kind of test. If, say, we were placed in a Turing-Test-like situation, where our ability to hold a discussion in some domain in which we were a novice were tested against the ability of genuine practitioner in that domain, we would be correctly identified as a novice (if the judge, who must also be an accomplished practitioner in the domain, were to ask the right questions).

He continues:

Informalists tend to think that those who believe otherwise have mistaken propositional knowledge—that which can be said about a domain—with real understanding. ‘Those formalists’ we say, “mistakenly think that you can strip knowledge out of experts’ heads and encodify it in propositions.” I now want to argue that this polar opposition is misleading. I think the Turing-like test could be passed by non-practitioners. It could be passed by those who were immersed, not in the entire form of life of some domain but only in the language-world of those who were immersed in the form of life proper.

Collins et al. (2006) categorise a conversation between a judge and two respondents as “chance” or “identify”. In the “identify” condition, one of the respondents is ignorant about the jargon of the target field, whereas the other respondent is a contributory expert. Here, due to the one participant being linguistically ignorant about the jargon, the judge is able to spot the deceiver. However, in the chance condition, the respondents belong to the pool of either contributory or interactional experts who are both knowledgeable of the target jargon. Thus, for instance in the ‘field’ of colour vision, Collins et al. (2006) showed that colour-blind people are capable of deceiving judges with normal-colour vision (Collins and Evans 2007, p. 93):

The idea of interactional expertise implies that, having been brought up in a color-perceiving society, the color blind will be fluent in color-perception language even though they cannot see the full range of colors—they will have acquired interactional expertise in color-perception language though they have no contributory expertise in color discrimination.

Despite their (minor) handicap, colour-blind people are linguistically immersed in ‘colour vision language’, spoken by the majority of people, and they are, therefore, thoroughly acquainted with the language. To Collins and Evans, the crux of imitation games is the demonstration of separate domains in which individuals acquire linguistic knowledge not shared by the surrounding society and then show how linguistic immersion overrides bodily preconditions or experiences with physical interactions. The passing of imitation games is therefore considered as proof of the concept.

Studies have also been pursued on the facility of perfect pitch (Collins and Evans 2007, p. 92).

“Just as you see an apple and know it’s red without thinking about it, I hear a note and know it’s an E flat”. That is a description of perfect pitch. In contrast to color-blindness the “disability” is the statistical norm. Therefore “pitch-blind” persons (nearly all of us) have not been socialized into the language of pitch-perception. The strong interactional hypothesis holds, then, that it should be easier to spot the pitch-blind pretending to be pitch perceivers in the imitation game than the color-blind pretending to be color-perceivers.<sup>4</sup>

Results obtained in the perfect-pitch experiment showed that those with perfect pitch are very good at passing as those without perfect pitch and thus confirmed the interpretation that (Collins and Evans 2007, p. 100):

a lifetime’s immersion in the discourse of a group with a certain contributory expertise enables a person without the contributory expertise to acquire the corresponding interactional expertise, at least as tested by the imitation game, to a very high level—the strong interactional hypothesis is demonstrated.

To summarise, the chance and identify studies suggest that participation in a linguistic community that linguistically target phenomena, events or situations which the individuals have no personal experience with, annihilates differences resulting from differences in direct experiences.

Originally inspired by his long-term scientific work as a sociologist within the field of tacit knowledge in gravitational wave physics, Collins has also allowed *himself* to take part in a slightly moderated version of the imitation test to demonstrate the effect of linguistic immersion (e.g., Collins 2004). The idea was that he might pass as an interactional expert when interviewed by a contributory expert in gravitation wave physics. The test consisted of sets of seven questions sent to contributory experts as well as Collins. Participants were asked to answer the questions off the top of their head and without consulting other sources. The answers provided by Collins and gravitational wave physicists respectively were then presented side-by-side to contributory judges. From these written discourses, the judges were asked to guess and then explain how they made their choices.

In bare figures, seven out of nine judges chose Collins as the gravitational wave physicist, one chose correctly, and one was indecisive. Accordingly, Collins managed to convince contributory gravitational wave physicists about his scientific knowledge. However, according to Collins and Evans (2007, p. 107):

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<sup>4</sup>Example of a conversation that leads a judge with perfect pitch to correctly guess the identities behind A and B (Collins and Evans 2007, p. 101).

“Question 3: How do you pick up a single voice in a crowded room?”

Participant A: By hearing the individual pitch of the given person’s voice, although it does depend on the volume of the individual voices as well.

Participant B: By trying to concentrate on that voice.

Question 4: Would you rather use a score to arrange a piece of music or dictate by ear?

Participant A: Dictate by ear.

Participant B: Use a score, probably”.

Here A was the contributory expert.



Some of the judges, and all of the judges in respect of some of the answers did not feel that technical content allowed them to make a judgment. In these cases they fell back on style and, in the main, Collins's style was preferred because his answers were shorter and thus bore the hallmarks of someone who was answering impatiently—this suggested a scientist to other scientists.

## 2.4 The Midwife Case<sup>5</sup>

In an attempt to validate the results obtained by the imitation game procedure, it becomes of importance to ensure that the proof of concept is not the result of the subject fields of blind-sight, perfect-pitch, and gravitational wave physics. An obvious objection is whether in these cases for various reasons the bodily impact on language is marginal in the sense that direct experiences may be more or less irrelevant to the linguistic practice. That could explain the fact that differences between interactional and contributory experts are insignificant.

To counter such objections, my colleagues and I conducted a series of imitation games with midwives, since the midwife profession targets expecting mothers during the pregnancy, delivery, and the post-pregnancy phases (Schilhab et al. 2010). Besides general health care issues, midwife practices concern bodily experiences connected to pregnancy and motherhood. Thus, the community is likely to employ a professional “jargon” concerned with bodily sensations related to pregnancy shared by all midwives, regardless of their direct experiences with pregnancy, delivery, and breastfeeding.

In view of the procedures of imitation games, conversations where mother midwives interview mother midwives and non-mother midwives about pregnancy, delivery, and breastfeeding belong to the chance condition, since both categories of midwives are genuine practitioners. All are linguistically immersed. Thus, if direct experiences of the problem field do not add significantly to how one refers to the field as conjectured by the theory of interactional expertise, we would expect mother midwives and non-mother midwives to express themselves similarly in these matters. Consequently, we would expect the distribution of judgments by mother midwives (who have knowledge of motherhood and midwifery) to be equal to those of lay mothers (who have knowledge of motherhood). Both in phase one, in which the judge herself was responsible for the questions asked, and in phase two in which the judge was exposed to ready-made material in the format of ready-made conversations, the distribution of judgments by the midwife group and the lay mother group differed significantly. When considering the proportion ‘correct’ for each of the midwife mothers as compared with each of the lay mothers, midwife mothers showed a greater proportion of correct answers as well as greater than chance. If bodily experiences are of no significance to how one talks about a domain, mother midwives should be unable to distinguish between mother midwives and non-mother

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<sup>5</sup>This paragraph is elaborated from selected parts of the paper by Schilhab et al. (2010).

midwives. The findings suggested that mother midwives can see through the professional language and identify the mother midwife, whereas lay mothers apparently were deceived by the linguistic aptitude of non-mother midwives.

A number of possible objections could be raised, though. Most important, can we be sure that the professional language of midwives resembles the proposed jargon of motherhood? The study seems to balance on the supposition that midwifery provides participants with the language of breastfeeding, delivery, and the post-pregnancy phase. If the professional language shared by midwives does not apply to the talk of pregnancy, delivery, and breastfeeding, non-mother midwives could not possibly be acquainted with the jargon and would subsequently be exposed in a test. However, even if the overlap between motherhood jargon and the professional jargon of midwifery is not complete, the control condition seems to suggest that non-mother midwives are competent motherhood language users, at least enough to deceive lay mothers. And since lay mothers, more than anyone, are assumed to possess motherhood language, the fact that non-mother midwives can pass as mother midwives is intriguing. How do non-mother midwives conceal their identity before lay mothers but not before midwife mothers?

While it seems likely that lay mothers are misled by the professional jargon mastered by both the mother and non-mother midwife, mother midwives also possess features embedded in the answers. The question is what characterises these clues? How did direct experiences with breastfeeding, delivery, and the post-pregnancy phase become linguistically ready for midwife mothers to pick up? Apparently, embodied tacit experiences may have influenced the linguistic descriptions after all.

One possibility to take into consideration is that while delivery and the associated breastfeeding experience are bodily experiences they are also significant 'once in a life-time' experiences and in that respect differ distinctly from the bodily experience of perfect pitch and colour vision. We will return repeatedly to the impact of emotion on linguistic knowledge in later chapters.

## 2.5 The Role of the Body

Though Collins and Evans fully acknowledge the involvement of tacit knowledge, they do not assume tacitness to be bodily corroborated. Actually, the body seems *almost* insignificant to the establishing and maintenance of interactional expertise (2007, p. 78):

humans can function well as natural language speakers under a variety of adverse circumstances in respect of their bodies. They can do this so long as their brains are still making sufficient connection with the embedding society to allow them to become and remain social beings. This, of course, does imply a minimal sensory apparatus, but the essential parts of the organisms turn out to be very few. The essential parts are those bits of the brain to do with language-processing and those bits of the body to do with language-learning and speaking: the ears, larynx, and the rest of the vocal apparatus.

The downsizing of the body as central to language is, however, a bit more nuanced than may appear from the above quote. For instance, Collins acknowledges (e.g., 2004) that the world as it renders itself available to our bodily practices is irreplaceably reflected in language. Actually, Collins introduces the ‘social embodiment thesis’ (e.g., 2004) to emphasise that language as a whole is affected by bodily form that dictates what can be done in the world. Collins and Evans state (2007, p. 79):

We understand the family resemblance between various things which we call “chairs” because we can sit on them because our knees bend in a certain way. Thus the word “chair” appears in our language and can be more or less mutually understood. A community of speaking lions, on the other hand, would not have the equivalent of “chair” in their language because they do not sit down in the same way. Instead for lions, what we call a chair might be classed alongside whips and pointed sticks such as are used by “lion tamers” (assuming that the community of speaking lions still lived in circuses run by humans). Thus here, a difference in the physical joints of the lions corresponds nicely to a difference in the conceptual joints.

Clearly, language makes sense only in the context of bodies physically immersed. In large part, language reflects the way a community lives, and a community of speaking lions would contract of a language that fundamentally differed from that found with human societies due to the species-specific constitution of bodies. Languages reflect the real world including real phenomena as well as meaningful relations between language users and the world. Despite the fact that natural languages depend on bodies that talk for them to count as real languages, to Collins the individual might nevertheless dispense of the body and still count as a competent language user.

Insofar as interactional expertise depends on linguistic communities and language exchanges, one will also have to address the influence of another’s bodily activity on the perceiver’s bodily activity (e.g., Chartrand and Bargh 1999; Press et al. 2008; van Baaren et al. 2003) and ultimately linguistic knowledge (for the relation between movements and subsequent linguistic understanding, see Wilson and Gibbs 2007).

At the individual level, however, the necessity of bodily activity is reduced to a minimal body. Hence, direct bodily experiences cannot be a causal determinant of linguistic knowledge.<sup>6</sup>

In defence of that position, in the ‘individual embodiment thesis’ Collins (2004) discusses the case of Madeleine portrayed in Oliver Sacks book *The Man who Mistook His Wife for a Hat* (1985) (2004; Collins and Evans 2007). Sacks in his

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<sup>6</sup>To some extent the reduced value of activating the individual body in the acquisition of language is possible only at the expense of increased importance of everyone else’s body. For interactional expertise to appropriately function, everyone is part of a community of learning bodies, on which any individual member depends, and therefore every individual body is crucial to the learning of society as a whole (Schilhab et al. 2008). In the words of Collins (2004, p. 138): “One of the characteristics of interactional expertise, as opposed to contributory expertise, is that it cannot be passed on through the generations without continual linguistic refreshment from those with contributory expertise”.

capacity as neuropsychologist studied Madeleine and describes her as congenitally blind and disabled to an extent that even kept her from acquiring reading braille. Collins notices (2004, p. 132):

Nevertheless, Madeleine learned of the world from books read to her by others. Madeleine had a 'minimal' body with almost no ability to take part in the normal activities of the members of the surrounding society. Sack's triumph with Madeleine was to teach her how to use her hands for the first time; the fact that the real triumph is established by his stressing the extent to which Madeleine had been utterly inactive throughout her earlier life. The uselessness of Madeleine's hands, according to Sacks had come about precisely because she never did any moving in the world on her own.

To Collins, obviously, the absence of the faculty of sight or lack of manipulation experiences had no accountable effects on the linguistic knowledge produced by Madeleine (2004, p. 132):

She has learned the language through immersion in the world or language alone rather than immersion in the full-blown activity which constitutes the form of life. The social embodiment thesis says, correctly, that the language has arisen from the full-blown form of life—that is, from the full range of activities of the full-blown members of the society—but an individual can get much of the corresponding understanding without much of a body.

Collins acknowledges that typically we tend to convey the kind of information we obtain by physical interactions. Why shouldn't we? The thing is that we rely on perceptual processes to guide the linguistic choices we make. As demonstrated by the case of Nunez the climber, who during one of his trips stumbles upon a valley inhabited by only blind people for fourteen generations, we may choose to withhold personal bodily processes from influencing our wording (Collins 2004). Nunez is sighted and quite contrary to his expectations of earning the respect of the natives on that account, is presented with a request which applies to all language users. He is asked to prevent his visual processing from affecting his linguistic expressions, for example to stop referring to stars, distances, and the sensation of observation, in order to reduce the estranging effect such language imposes on his hosts. The point Collins makes is that though commonly we seek assistance from our senses to inform language, Nunez has a choice (2007, p.81):

Nunez could, if he wished, adapt, with a struggle, to the ways of thinking and doing of the natives; to adapt or to remain unique becomes a matter of principle for the explorer, not a matter of ability [...] the fact that he had a choice, and that he might have succeeded in acquiring the new conceptual structure were he not so obstinately determined to preserve his old way of thinking and acting, can be read as an illustration of the power of linguistic socialization.

Using the story of Nunez, Collins suggests that language users hold in their power the ability to dismantle perceptual information and urges to report direct experiences. If we neglect particular bodily impressions and by extensive training 'pretend' to be blind even when actually being sighted, it follows that bodily experiences are causally determinants of language only in a very restricted sense (p. 85):

insofar as a body is required to participate in a linguistic community, then it must include some physical structure that allows it to open itself to the social world of that community. In most cases this will mean the ability to hear and make sounds, but we know from experiences of the Deaf that even loss of the part of the body that normally has the responsibility for language acquisition can be circumvented and alternative linguistic communities, such as those involving sign, can grow.

Ultimately, we can do away with extremely reduced bodily resources and still retain linguistic competences.

## 2.6 The Body-Language Relation

As described in the previous paragraph, for Collins it is beyond discussion that the body in the physiological and banal sense as provider of oxygen and carbohydrate to the brain is mandatory to language. Obviously the toning down of the body is about toning down direct experiences as fundamental to understanding (see Collins 2016b). Direct experiences are not *constitutive* of linguistic states.

Collins specifies (2011, p. 284):

If it is necessary to have made the cut in order to understand the cut, then the world of the heart surgeon becomes impenetrably different from the world of the orthopaedic surgeon, which would be impenetrably different from the world of the liver surgeon, the stomach surgeon, and so on. It may be true that each of these specialists would be reluctant to take on each others' jobs 'at the drop of a hat' but if their worlds were impenetrably closed to each other in terms of understanding how would the domain of surgery work? There would be no such thing as 'surgery'; there would be, at best, only 'heart surgery', 'orthopaedic surgery', 'liver surgery', and so on, each of which would be as incomprehensible to practitioners of the others as the Azande poison-oracle is to Westerners. At worst, there would be only 'this person who does things with a knife' and 'that person who does things with a knife'.

The quote is a reply to the on-going debate between the philosopher Hubert Dreyfus and Harry Collins that began with the publication of *What computers can't do* by Dreyfus, which addressed AI-issues, including the ability for computers to simulate language use. Throughout the years, Dreyfus has maintained that language use always presupposes bodily experiences (Dreyfus, in Selinger et al. 2007, p. 737):

You may have mastered the way surgeons talk to each other but you don't understand surgery unless you can tell thousands of different cuts from each other and judge which is appropriate. In the domain of surgery no matter how well we can pass the word along we are just dumb. So is the sportscaster who can't tell a strike from a ball until the umpire has announced it.

While defenders of the embodiment position hold that the body contains the tacit knowledge necessary for attributing meaning to language, as we have seen, Collins and colleagues claim that language itself is an expertise that contains tacit knowledge. Accordingly, linguistic knowledge does not equal symbol knowledge expressed in rules, formulas, and facts to be encapsulated in computer programs and

the like. To the contrary, linguistic knowledge is ripe with tacit knowledge, so-called collective tacit knowledge (e.g., Collins 2010). It is a kind of knowledge which is located in human collectivities and therefore can never be the property of any one individual.

Crudely put, while embodiment theorists such as Dreyfus point to receptiveness towards the physical world as constitutive of language, Collins points to receptiveness towards the social world. In 2007 (p. 261) Collins puts it as this:

In the case of somatic-limit tacit knowledge, humans struggle to acquire knowledge that belongs, as it were, to the physical domain [...]. In the case of collective tacit knowledge, humans are, as it were, unique parasites specially fitted to take sustenance from a strange and alien species—social collectivities—in whose domain the knowledge resides.

Collective tacit knowledge is here opposed to so-called somatic tacit knowledge in virtue of dependence on the understanding of social conventions. These conventions are not fed by materiality in the normal sense. It seems almost impossible to point to a bottom-up causal chain of action though an overt sensibility is present which is beyond the capabilities of, in this case, machines.

Collins and Evans (2007, p. 111) demonstrate the subtlety of the sensibility and thus tacit knowledge found in humans towards the social collectivities by the concept of ‘subediting’:

The most difficult thing for a computer to do in such a test would be to make sense of a badly typed or misspelled input. In other words, the really hard thing is subediting. Consider the following passage which is in need of subediting.

Mary: The next thing I want you to do is spell a word that means a religious ceremony.

John: You mean rite. Do you want me to spell it out loud?

Mary, No, I want you to write it.

John: I’m tired. All you ever want me to do is write, write, write.

Mary: That’s unfair, I just want you to write, write, write.

John: OK; I’ll write, write.

Mary: Write.

And they continue (ibid. p. 111):

We can do this in spite of the fact that what counts as an appropriate response—and there may be several possibilities—varies from place to place and time to time [...] the ability to subedit reasonably successfully, then is a matter of not learning a set of rules but of being a member of a society.

Given that language use acquires or is closely connected to the linguistic community, linguistic usage is not controlled or determined by bodily experiences. To Collins, all it takes to acquire language is exposure to communities that speak, not to direct experiences.

To make the disconnection between direct experiences and linguistic knowledge complete, Collins presents the following scenario (2004, p. 138):

One day the problems discussed here might find another application in space. Imagine a party of space explorers leaving the Earth for a 10-year space journey, perhaps to pass by one of the distant planets and return home. Imagine that one of the astronauts becomes pregnant early in the trip and gives birth, returning home with an eight-year-old infant—Wanda. That infant will never have experienced the pull of gravity and all there is associated with it. The claim made here is that the infant's language will not be detectably defective in virtue of that lack of experience; Weightless Wanda will be able to say everything about weight that is sayable.

Thus, experiences come second to linguistic knowledge. The body experience of the pull of gravity has no significant impact on the ability to talk about gravity.

This primacy of language applies even when we engage in bodily enabled experiences such as professional practices. Contrary to the common conception, to Collins people rely on linguistic competences and not on direct experiences (2011, p. 279):

When investigating any practice-learning environment one should, then, act as though language is always the learning mechanism. Imagine a group that appears to learn entirely through deep immersion in physical practices; even in such a case the role of language should be treated, in the first instance, as central. In the first instance, physical immersion in practice should be thought of only as the condition for immersion in the practice language. In other words, all cases of human acquisition of expertise should be treated, as far as possible, as cases of the quintessential collective way of human learn-ing, rather than the 'human-as-animal', individual-encounter-with-the-physical, way.

Collins (2011) also downplays the experiential specificity of practical knowledge and claims that contributory experts have acquired practical knowledge of only a small fraction of their specialty language. Contributory experts in a field are then basically understood as unique units engaged in different practices which 'sustain' only a very small portion of what is covered by the whole language. Thus, every contributory expert has exceptional (individual) practical experiences, though the majority of his or her knowledge overlaps with that of others in his or her field, because all contributory experts are in principle interactional experts.

## 2.7 The Primacy of Language

In a sense, Collins turns the relation between interactional and contributory expertise upside down when describing how all experts (contributory and interactional alike) are informed by the language of interactional experts (Collins 2011, p. 277):

But there are also arrows, not coming out of the specialists but going into them. These arrows go from the language to the 'hammerers' (i.e., contributory experts, my addition). These downward arrows represent the way language gives meaning to and shapes practice as individuals are inducted into the field. To repeat, each specialist, such as the bolded hammerer [...] learns the language of GW physics while practising only a small part of the physical activities that comprise the entire practice's physical engagement with the world (italicised in the original work).

In this updated understanding, contributory experts belong to an exotic species crystallised from the common interactional expertise ground (2011, p. 279):

a practice can never be learned from someone else in the absence of shared language; this must become the new default position. If there are said to be cases where no language is necessary, these need to be looked at again; existing descriptions of apprenticeship regimes that appear not to depend on language [...] need careful reconsideration.

In 2011, Collins is thus in dire need of introducing new distinctions as a result of these new interpretations (p. 274):

Another innovation is the changed relationship between contributory experts and interactional experts. Since, as will be argued, language dominates practice for the individual, we are all interactional experts, even those classed in earlier treatments as contributory experts. Contributory experts are, then, interactional experts, too—the two classes do not contrast; rather, the class of contributory experts is entirely included in the only very slightly larger class of interactional experts. [...] This means that it is necessary to invent a new term for the special group of interactional experts who are not contributory experts; the obvious term is ‘special interactional expert’.

To sum up, in the evolved position on contributory and interactional expertise, contributory experts are conceived of also in the sense of the interactional expert. Contributory expertise is ‘reduced’ to a specialist position and fed by the interactional expertise language. In this updated interpretation the causal impact of physical interaction with a field on linguistic knowledge is ultimately deemed superfluous.

## 2.8 Pretence and Lying

So far, we have learned that interactional expertise (and special interactional expertise)<sup>7</sup> is linguistic knowledge obtained by many years of linguistic socialisation. The knowledge, however, is established without direct experiences of the domain and as such does not imply any practical skills beyond language, as also acknowledged in the example of Weightless Wanda (Collins and Evans 2007, p. 86): “Learning the language of a domain is not a substitute for learning a whole form of life”.

Thus, interactional experts are knowledgeable of how to carry out discourse to an extent that makes them inseparable from the rest of the community if tested linguistically.

Are there nevertheless significant differences between linguistically knowledgeable interactional and contributory experts, if tested linguistically beyond conversational skills in everyday life or institutionalised imitation games?

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<sup>7</sup>Throughout this account, unless otherwise stated, I will stick to Collins and Evans original concept of interactional expertise and its connotations to avoid confusion.



To clarify, the question is not about differences of the practical skills of ‘laser building’ or ‘hammer and anvil practices’. The question is concerned with to what extent direct experiences feed into linguistic processes to a degree that systematically changes these processes at a level not revealed at the conversation level. Obviously, the question pertains to the idea of *understanding* in so far as appropriate language use seems closely related to ‘know how’ as also vividly described by Collins. It takes more than ‘parrot talk’ (e.g., Crane 1993) for a girl in a wheelchair to *understand* what characterises tennis in order to talk meaningfully about the activity, even if she has never held a racket in her hand or watched a game.<sup>8</sup> We will return to the topic of understanding in later chapters (e.g., Chap. 3 and especially Chap. 7), here it suffices to notice that significant differences that could bear on the nature of understanding may be disclosed if we zoom in on conversational components of insignificant importance to the functioning of normal discourse.

As direct experiences with a topic are dispensable in acquiring interactional expertise, conversations may still seem coherent despite participants invoking meaning that lacks references to self-experienced real life situations.

If we scrutinise a level not targeted by the imitation games which the interactional experts normally do not abide by, will interactional experts continue to be insignificantly different from contributory experts? We may find tentative answers to the question in studies that aim to disclose the structural differences in natural language use in deception. These suggest that when being honest instead of deceptive, people seem to change the way they talk. This might indicate that the degree of self-experience is actually linguistically reflected. Especially three classes of word categories have been implicated in deception: pronoun use, emotion words, and markers of cognitive complexity (Pennebaker et al. 2003). Liars tend to use a lower rate of first-person singular pronouns such as ‘I’, ‘me’, and ‘my’ and refer less often to themselves in stories than truth-tellers either to dissociate themselves from their words or because they lack the sense of ownership.

In studies where subjects are made to be self-aware and truth seeking about personal matters, self-references increase, whereas individuals who employ self-deceptive strategies tend to linguistically distance themselves from their stories. Deceptive acts are morally problematic and might be associated with heightened discomfort which accompanies consistent elevations in the use of negative emotion words during deception compared with truth-tellers (Newman et al. 2003). Most

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<sup>8</sup>In a quote from Pinker (1996), 14-year-old Denyse, who suffers from ‘Williams Syndrome’, demonstrates the intricate relation between eloquence and meaningful language use. Subjects suffering from the disease are gregarious, smiling people who enjoy talking but with IQs of about 50. Denyse refers eloquently to ‘bank statements’ and a ‘joint bank account’ that she shares with her boyfriend, even if she has no boyfriend and only a very peripheral understanding of the concept.

According to Pinker (ibid., p. 51), Denyse: “obviously had only the most tenuous grasp of the concept ‘joint bank account’ because she complained about the boyfriend taking money out of her side of the account”.

intriguing is that markers of cognitive complexity seem to be associated with truth-telling. This applies to the word category, referred to as exclusive words, which is made up of prepositions and conjunctions such as ‘but’, ‘except’, ‘without’, and ‘exclude’. Exclusive words require the speaker to distinguish what is in a category from what is not in a category. In these studies (for word analysis in deception, see Newman et al. 2003; Pennebaker et al. 2003), truth-tellers used far more exclusive words than did liars. “In the act of deception, it is far too complex to invent what was done versus what was not done” (Pennebaker et al., p. 564). Apparently, and of particular interest here, the lack of connections between expressions and concrete items and actions result in less complex natural language use, because as quoted ‘it is far too complex to invent what was done’.

Why may these studies be of relevance here? As emphasised by Collins (2000), in a very narrow sense, the interactional expert has a certain likeness to a pretender—a liar. To lie is to make up stories of which one has no direct first-person experiences. It could be places one claims to have visited, physical activities one has engaged in, or jobs one has been doing. Common to fabricated stories is the absence of relevant actual perceptions connected to the linguistic description. However, where does the liar fall short? Obviously, and sustained by the above studies, he has to deliberately invent connections within the putative experiences he lies about. To be convincing, he will have to assess possible and plausible connections associated with his acclaimed memory. To stay persuasive in front of an audience, he will have to construct mentally a virtual world in which he consciously installs possible connections which are likely to have formed if his narrative was true. However, to make up connections depends on his recognition of them and this may prove to be quite a task (we return to why this may be so especially in Chap. 6).

What evidence speaks in favour of the liar being able to predict all possible connections? The question is all the more relevant, since many real-life connections tend to emerge and thus reveal themselves only as a result of the process progressing which more or less means something like ‘the road is created while you walk it’. Typically, we come short of predicting real life events down to the last detail. Somewhat ironically, at the same time the unpredictability of life might in fact help the liar in his attempt to disguise his fabricated story.

In support of the alleged difficulties, research on credibility assessments of criminals suggests that deceptive reports may be less coherent or detailed than real memories (e.g., Porter et al. 1999), which could turn out to be ‘the’ crucial point of departure between liars and truth-tellers.

The confusion imposed by the manifold of opportunities or open-endedness may in fact be the very reason why we tend to emphasise direct experiences in expert knowledge. Cleeremans (2008, p. 24) describes how actual experiences may function as a specification of ‘direction’ according to which we may navigate:

We often say of somebody who failed miserably at some challenging endeavor, such as completing a paper by the deadline, that the failure constitutes “a learning experience”. What precisely do we mean by this? We mean that the person can now learn from her mistakes, that the experience of failure was sufficiently imbued with emotional value that it

has registered in that person's brain. The experience hurt, it made one realize what was at stake, it made us think about it, in other words, it made us consciously aware of what failed and why.

In a sense, all events are uniquely composed and might be only fully experienced when lived through.

There are nevertheless two very distinct differences between interactional experts and liars which may eventually render the comparison untenable. First, interactional experts don't lie as part of conversation. Obviously, this is exactly the case with imitation games in which interactional experts are forced into a particular strand of thinking, though. However, under normal circumstances, interactional experts don't pretend. They talk as experts because they *are* experts.

Their knowledge is not interrogated and tested in a way similar to that of a false witness or fraud. Thus, they are not in similar mentally strenuous conditions and the bias in formulations (as demonstrated in liars) are therefore not shared. Second, in contrast to interactional experts, typically a liar may not lie about something of which he or she is particularly knowledgeable. Normally, liars would lie exactly because they *don't* have knowledge to provide them with the truth. If studies on the linguistic characteristics pertaining to liars should prove informative about interactional experts, we therefore had to select those cases where putative liars had a lot of linguistic knowledge about the chosen subject, since interactional expertise emerges from long lasting exposure to the language performed by contributory experts. Following the results from the linguistic studies, systematic biases in linguistic expressions between truth-tellers and liars are more likely to result from liars *not* being experts and therefore simply less knowledgeable.

Moreover, as briefly noted, to know the truth in case of particular events results from being more knowledgeable about specific and idiosyncratic details on a subject matter, say, when expounding on one's whereabouts when charged with accusations. In such cases and in contrast to the interactional expert, knowledge is related to particularities and not what holds about the world in general.

### 2.8.1 *Misinformation Studies*

If we want to investigate putative differences in the quality of the knowledge that makes up linguistic knowledge in conversations, studies on liars and pretense may actually be misleading. Fortunately, we might obtain help from so-called 'misinformation' studies that investigate the possibility and effect of planting entire memories of events that never happened, such as being lost in a shopping mall at the age of six and getting rescued by an elderly or an experience of participating in a hot air balloon riding (Loftus and Pickrell 1995; Wade et al. 2002). In misinformation studies, subjects are exposed to information that elicit so called 'rich false memories' but without actual perceptual support. These subjects believe that they acquired specific experiences, i.e., that they had seen or heard a stimulus that they

have not encountered, and verbally referred to the event in sensory detail that would make it (Loftus 2005, p. 363) “extremely difficult to take a single memory report and reliably classify it as real or unreal”. Recent neuroimaging and electrophysiological studies that compare the brain activity related to true and false memories seem to suggest that systematic differences actually exist at the neural level.

For instance, Stark et al. (2010) have demonstrated that when true and false memories are compared, activity in early regions of the sensory cortex distinguishes the former condition from the latter, leaving true memories with ‘sensory signatures’ (e.g., Fabiani et al. 2000; Slotnick and Schacter 2004; Abe et al. 2008). It is worth noting that according to such studies, neurally we may find differences that suggest a different neural organisation as a result of real experiences whereas at the level of experience, there are no phenomenal differences (see Garry and Polaschek 2000, on the impact of imagination on memory and the so-called ‘imagination inflation’ effect). Accordingly, such studies seem to question a naïve conception that asserts that the phenomenal experience of direct experiences, the sensation that one has experienced a hot air balloon ride is causally derived from a quality of ‘directness’ exclusive to direct experiences. We may conclude that the sensory signatures at the neural level have no significant effect on the experience of truth and falseness of the memory at the phenomenal level. We will return to this particularity of the mind in more details in the following chapters since it may be especially important to the mechanisms of derived embodiment.

To sum up, the idea of interactional expertise by Collins and Evans holds that linguistic knowledge in the sense of competent language use may be acquired to an extent that makes it insignificantly different from the linguistic competences of contributory experts. Linguistic competences are skill-like and therefore depend on tacit knowledge. However, in contrast to dominant conceptions that relate tacit knowledge to the body, Collins and Evans emphasise the association to the social collectivities. Furthermore, the ability to talk competently about a particular domain is not causally dependent on direct experiences of the domain but obtained through linguistic immersion.

This downplays the role of the body substantially. Accordingly, individual experiences have insignificant impact on linguistic skills as exemplified by the so-called social embodiment thesis.

Collins et al. (2006) have conducted experiments in so-called imitation games to provide ‘proof of concept’. These experiments may highlight the fact that the conversational level to which the claims about interactional expertise apply may not generalise to the level of single linguistic categories.

Of importance here though is the fact that most human interactions appear to presuppose the idea of linguistically conveyed information. Thus, the concept of interactional expertise forces us to recognise how we linguistically share an experience and are capable of neutralising the individual perceptions in the sharing even if interactional expertise in the narrow sense of the term among adult interlocutors is less frequent.

In the following, the term ‘interactional expertise-like knowledge’ is used exactly in the sense that many human interactions seem to involve linguistic sharing

in which direct experiences appear irrelevant. And it is in that sense that interactional expertise is of relevance to this account.

Interactional expertise-like knowledge is interesting because it implicitly suggests that linguistic knowledge as viewed from the perspective of conversations operates independently of biological processes and suggests instead that language is based on an individual's social collectivities. The contention is thus that language operates top-down. The suggestion is sustained by misinformation studies that seem to suggest the irrelevance of sensory signatures on the phenomenal experiences on which subjects seemingly rely when reporting on a hot air balloon ride or getting lost in a mall.

It is in that sense that interactional expertise-like knowledge challenges the embodied cognition approach that addresses linguistic knowledge as bottom up, to which we will now turn.

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