

# SKILLED SEEMINGS

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## Abstract

We have seemings as a result of the ordinary workings of our cognitive faculties (ordinary seemings), and seemings as the result of long-standing deliberate training and practice (skilled seemings). Do these kinds of seemings confer justification in the same way? I argue that, in spite of their similar phenomenology, ordinary and skilled seemings have distinct developmental origins and neurological underpinnings, and that these differences matter for the justification of beliefs formed on the basis of these seemings. I identify three key areas where skilled and ordinary seemings differ: cognitive penetrability, metaphysical structure, and social practice.

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## 1 Introduction

Human observers frequently rely on seemings that they only acquire after extensive practice. Birders discriminate species of birds on the basis of subtle cues such as size, shape, color, and habitat. Radiologists can diagnose a patient on the basis of minute differences in grey shade on an x-ray. Even with the naked eye, gemologists can tell apart gemstones that look identical to neophytes through visual properties such as hue, saturation, and luster. These examples involve perceptual seemings, but skills also provide us with intellectual seemings, such as hunches and intuitions. Mathematicians pondering a new theorem may get a sense that it is provable and how it could be proved, before the details of any proof are worked out (Thurston, 2006). A car mechanic, upon looking at a car engine, can get a sense of what is wrong. An epistemologist may form a seeming about whether a given case exemplifies knowledge. My paper will examine whether practitioners of these skills can place trust in seemings like these.

There is no definition of seemings that epistemologists universally agree upon. Some authors (e.g., Hanna, 2011) regard seemings as a kind of non-inferential beliefs, but there are obvious counterexamples. It seems to me that the strawberries of Akiyoshi Kitaoka are red, even when I know they are not. A popular view among epistemologists is the experience view (see e.g., Tucker, 2010), according to which seemings constitute a *sui generis* experience, which has a distinctive phenomenology; they give the distinct feeling that a proposition is true. Huemer (2001) characterizes this feeling as “forcefulness” and Tucker (2010) calls it “assertiveness”. Given that this characterization avoids some of the problems of other accounts of seemings (see e.g., Moretti, 2015, for an overview), I

will adopt it here. Roughly, for  $S$  to have a skilled seeming that  $p$  in domain  $D$  is for  $S$  to have an experience that  $p$  is true, as a result of her expertise gained in  $D$ , following some stimulus or problem posed in  $D$ . For example, a coin collector is presented with a coin, and it seems to her that the coin is an Augustus Denarius. This seeming is the result of her extensive experience with coins of the Roman empire, probably elicited by the shape, size, material and images on the coin. Do skilled seemings confer justification on the beliefs that are formed a result of them? And if they do, is this justification similar to, or different from, a non-trained observer to whom it seems there is a little silver-colored coin with the profile picture of a man on it?

Phenomenal conservatism (PC) (see e.g., Huemer, 2001) holds that a subject  $S$ 's seeming that  $p$  provides  $S$  with defeasible, non-inferential justification for believing that  $p$ . The (PC) principle does not specify whether the seeming results from ordinary cognitive faculties, or from a highly specialized domain of expertise (e.g., Chudnoff, 2011; Huemer, 2001; Markie, 2005; Pryor, 2000; Tucker, 2010). An example is the following thought experiment by Markie, which juxtaposes non-skilled and skilled seemings as a presumed counterexample to (PC).

Suppose that we are prospecting for gold. You have learned to identify a gold nugget on sight but I have no such knowledge. As the water washes out of my pan, we both look at a pebble, which is in fact a gold nugget. My desire to discover gold makes it seem to me as if the pebble is gold; your learned identification skills make it seem that way to you. According to (PC), the belief that it is gold has prima facie justification for both of us. Yet, certainly, my wishful thinking should not gain my perceptual belief the same positive epistemic status of defeasible justification as your learned identification skills (Markie, 2005, 356).

This is a bad case of ordinary seeming (wishful thinking) compared with a good case of skilled seeming (the training that allows the experienced gold prospector to distinguish gold from, say, pyrite). (PC) is appealing because it provides a unified account of disparate kinds of seeming, including moral, religious, a priori, and perceptual ones (Moretti, in press). In this paper I will show that skilled and ordinary seemings differ in their cognitive structure, and that these differences matter epistemologically.

## 2 Cognitive foundations of skilled and ordinary seemings

*Ordinary seemings* are the result of skills that we acquire spontaneously through stable developmental processes. Examples include seemings elicited by ordinary visual perception and intuitions about one's first language. They do not require explicit teaching or dedicated institutional support, and they are cross-culturally widespread. For example, already in infancy, our visual system makes a spontaneous distinction between movements made by animate and inanimate objects (Kaduk, Elsner, & Reid, 2013). Animate objects tend to be self-propelled, whereas inanimate objects behave according to the rules of our intuitive physics (e.g., they only move when acted upon by an external source). We do not need to

make inferences about whether an object is self-propelled; we *perceive* it as animate or inanimate. When Hannah sees some purposeful motion in the foliage, it seems to her (thanks to her evolved perceptual ability to detect animate objects) that there is an animal in the foliage.

*Skilled seemings* arise only after extensive practice in a given cultural domain. They include seemings about music, poetry, philosophical and mathematical intuitions, as well as the expert perceptions of birders, car-experts, coin collectors, and the like. They tend to be more restricted in scope than ordinary seemings, typically only available to a subset of experts. To me, a male or female day-old chick look indistinguishable. But to trained chicken sexers, they look distinct. To have such skilled seemings, experts require not only practice, but also teaching and sometimes dedicated institutional support. A birder requires practice and instruction before she can distinguish different kinds of birds, especially if they look and behave similarly. Hannah's seeming that there is a black-throated green warbler in the tree is a skilled seeming. While it is spontaneous and non-inferential, it required hours of patient observation, learning from experienced birders, and consulting relevant field guides<sup>1</sup>. The distinction between ordinary and skilled seemings is similar to Reid's (1764 [1997], 171) distinction between original and acquired perceptions: "Our perceptions are of two kinds: some are natural and original, others acquired, and the fruit of experience"<sup>2</sup>.

Ordinary seemings are the result of stable developmental processes and minimal cultural input. Totally disrupting their input leads to atypical development, but this requires unusual circumstances. For example, raising cats in striped environments where the stripes all have the same orientation leads to an overrepresentation of orientation-selective cells in the visual cortex. This leads the cats to experience their environment in a distorted way (Sengpiel, Stawinski, & Bonhoeffer, 1999). Skilled seemings, by contrast require two key elements: social transmission (especially teaching), and deliberate practice. Deliberate practice is the type of practice learners engage in to become well-versed in a domain of expertise, often centered on improving weaknesses. For example, in chess and music, the number of hours spent in deliberate practice explains about 30% of the variation in expertise (Hambrick et al., 2014). Teaching is required for humans to acquire socially transmitted skills. Studies indicate that pure imitation, for example, tends to be overtly conservative, as exemplified by many instances of overimitation, whereby subjects imitate elements of the skill that are unnecessary (Nielsen, Mushin, Tomaselli, & Whiten, 2014; McGuigan, Makinson, & Whiten, 2011). Teaching, by contrast helps learners to pay selective attention and it also allows them to become innovators, which is an important element of expertise (Fridland, in press), and is probably crucial for acquiring seemings.

<sup>1</sup>For a similar distinction, see McCauley's (2011) maturational and practiced naturalness.

<sup>2</sup>However, Reid carves the conceptual space up a bit differently from how I do it. He provides examples that involve some form of expertise and thus would fall under the category of skilled seemings, such as a sailor who "sees the burthen, the built, and the distance of a ship at sea, while she is a great way off" (Reid, 1764 [1997], 172). But he also categorized forms of perception that require no deliberate practice or teaching, such as the smell of an apple or an orange, as acquired perception (Reid, 1764 [1997], 171). There is a continued discussion on whether acquired perception is as direct as original perception, and whether there is any inference involved in acquired perception, see Copenhaver (2010) for a defense that acquired perception, even the highly skilled forms (which fall under the category of skilled seemings), are indeed direct.

The apparent effortlessness with which experts can use their skills in specialized domains can lead to the impression that they possess extraordinary mental capacities for memory and attention to detail, epitomized by fictional characters like Sherlock Holmes. However, an accumulating body of research on expertise, particularly in the domains of music, sports, chess, and writing indicates that these superior capacities are restricted to the domain in which one is an expert, and do not readily transfer to other domains. For example, chess players have a better recall (Chase & Simon, 1973) and can scan a wider visual span of chess positions, but their superior performance does not transfer to other domains of memory or visual attention (Reingold, Charness, Pomplun, & Stampe, 2001). The seemings of experts are thus limited to specific domains of expertise: a gemologist may be able to distinguish gems with similar visual appearance through their lustre and hue, but she would not be able to transfer this skill to, say, distinguishing similar-looking orchids.

One reason for this lack of transferability is that expertise relies on specialized neural circuits. Acquiring expertise often involves the redeployment of specialized neuronal systems with older phylogenetic functions in culturally novel domains<sup>3</sup>. For example, the fusiform and occipital face areas underlie face recognition. Car, bird, and dog experts recruit these areas to distinguish between Pontiacs and Oldsmobiles, or between collies and borzois, presumably because like faces, these are members of a same category with visual features that differ in small details. People who are trained to visually discriminate between a novel class of objects that differ in details (greebles) also exhibit the neural signature of face recognition (Gauthier, Skudlarski, Gore, & Anderson, 2000). Nevertheless, visual expertise differs from face recognition in several key respects, particularly in enhanced top-down control. For example, in one experiment car experts were presented with images of cars and planes, and were asked to only attend to a subset of these stimuli (cars or planes). If expertise were purely automatic and stimulus-driven, one would expect to see similar neural activity regardless of task demands. However, brain areas associated with car expertise were dramatically diminished when car experts had to focus on the planes (where they had no expertise in) (Harel, 2016).

A key element of skilled seemings is control. Cognitive scientists (e.g., Dreyfus & Dreyfus, 1986) used to think about skills as routines. However, studies of sports and music performance have indicated that people are sensitive to context and have control over their skill, unlike over purely routine tasks (Fridland, 2014; Christensen, Sutton, & McIlwain, 2016). Through deliberate practice, brain connectivity is altered in a way that is different from pure routine-formation. fMRI studies show that when novices perform a skilled task a network consistently involved in attentional control, including prefrontal, medial frontal (such as anterior cingulate), posterior parietal, occipito-temporal, and cerebellar areas is recruited (Chein & Schneider, 2005). This network helps the novice to focus on doing tasks in the right order, how to position the body correctly, and to anticipate the next step. Over time, as novices learn the skill, the activity in this network reduces. For instance, as adolescents become better at solving algebraic

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<sup>3</sup>The view that culturally novel practices can co-opt the functional properties of phylogenetically older neurological substrates is termed “neural reuse”, “massive redeployment” (Anderson, 2007) or “cultural recycling” (Dehaene & Cohen, 2007).

equations, there is a decrease in activity in their prefrontal cortex, showing they require less executive control to complete the task. Additionally, they also exhibit a decrease in the left parietal region which is normally involved in spatial processing and number, indicating they need to rely less on this as they become more fluent in algebra (Qin et al., 2004). Concurrently, there is an increase over time in activity in modular areas of motor and perceptual processing. The areas vary with the skill that is being acquired. While there is a distinct novice network, there no single expertise network. What distinguishes expertise is changes in activity in domain-specific areas. Neurally speaking, “activity in regions related to domain-specific knowledge distinguishes experts from novices” (Debarnot, Sperduti, Di Rienzo, & Guillot, 2014, 1).

Thus, although skilled seemings and ordinary seemings both rely on modular areas of perceptual and motor processing, skilled seemings are more subject to control than ordinary seemings. This may account for the greater role of background information in skilled seemings compared to ordinary seemings. In particular, high-level cognitive processes play a role in determining the nature of the situation. Once the situation is appraised, the largely automatized processes are adjusted accordingly. For example, a jeweler may use visual appraisal of properties such as luster and brilliance (these are the automatized components of the skilled practice), but before this identification can start, she will inquire about the history of the gemstone which will influence her perceptual appraisals. If she learns that the ring with the stone was bought in a flea market, she will be on the lookout for signs that the ring might be imitation gold, or that the jewel might be fake, whereas if the ring was the client’s grandmother’s heirloom, she would be looking for cues that the stone could be antique paste, an inexpensive substitute for opals, diamonds, and other gems that was popular in the late 19th to early 20th century.

### 3 Justification of skilled seemings

Do skilled seemings provide us with *prima facie* justified beliefs? In this section, I will look at three ways in which skilled seemings are disanalogous to ordinary seemings: cognitive penetrability, metaphysical structure, and social practice. In section 4, I examine whether skilled seemings that *p* can provide justification for beliefs that *p*.

#### 3.1 Cognitive penetrability

Skilled and ordinary seemings share a phenomenological feeling of spontaneity and effortlessness. Although both are subserved by largely automatic cognitive processes which, as we have seen, operate at a modular level, there are subtle differences. Skilled seemings are more cognitively penetrable than ordinary seemings. Cognitive penetrability means that the seemings are responsive to the agent’s mental belief states. As Pylyshyn puts it

If a system is cognitively penetrable then the function it computes is sensitive, in a semantically coherent way, to the organism’s goals and beliefs, that is it can be altered in a way that bears some logical relation to what a person knows (Pylyshyn, 1999, 343).

Ordinary seemings tend to be cognitively impenetrable. The philosophical motivation for not equating seemings with belief states is precisely that seemings don't always cohere with our beliefs, for example, I know that the strawberries in Akiyoshi Kitaoka's optical illusion don't contain any red pixels and yet the picture seems to show red strawberries. But skilled seemings are responsive to my background knowledge. For example, art connoisseur's perception of artworks is influenced by their background knowledge of the identity of its creator. A famous example is the Vermeer forger Han van Meegeren, whose works were hailed as masterpieces by the Dutch artist. In particular, his *Christ and the Disciples at Emmaus* elicited widespread, albeit not universal, praise from art critics. As Robson (2014) points out, after van Meegeren himself showed that the work was a fake, the visual perception of the work by experts shifted markedly. Whereas the colors used to be described as magnificent, splendid, and in perfect harmony, they were later regarded as insipid and lifeless<sup>4</sup>.

What explains the cognitive penetrability of skilled seemings? This is a question of continued debate. According to Fridland (2015, online first), selective attention is key. Experts initiate intentional action, in a way that is sensitive to the condition at hand, and then deploy the selective attention automatically. Once the jeweller knows the ring is my grandmother's heirloom, she will initiate a series of perceptual processes tuned to late 19th-early 20th century jewelry (e.g., the presence of antique paste), whereas the knowledge that it was bought at a flea market will initiate a different set of attentional processes (e.g., looking for cues that the ring is gold-plated). The grandmaster, looking at a board with an endgame position, will use background knowledge about the level of the players when attending to the position (Reingold et al., 2001). Ordinary seemings are sometimes also cognitively penetrable, e.g., people are typically able to make a gestalt switch between visual illusions such as the duck-rabbit or the old woman-young woman. But skilled seemings are more subject to cognitive penetrability, and as a result, are more under control of the subject.

This greater selective control has several advantages, as it allows the perceiver to attend to features of a given situation that are relevant but it also has disadvantages. First, selective attention sometimes results in inattentional blindness. Inattentional blindness has been demonstrated in naive observers who have to perform an unfamiliar task, namely count the number of ball passes in a video. Many participants did not notice a human in a gorilla suit wandering through the game, as they were concentrated on the task at hand. Expert observers, similarly, are often so absorbed in their expert perception that they miss blatant features that are irrelevant to the task. In one study (Drew, Vő, & Wolfe, 2013), expert radiologists were engaged in a familiar task: to look for lung nodules on five chest CTs. On the final trial, a gorilla outline, about 48 times the size of a typical nodule (the gorilla was about the size of a matchbook) was inserted. In spite of its size, 83% of the radiologists missed the gorilla. Eye-tracking revealed that the majority had in fact directly looked at the gorilla's location. Presumably, the experts missed the gorilla because they were on the lookout for nodules, which tend to be much smaller.

The theory-ladenness of skilled seemings, exemplified in the altered percep-

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<sup>4</sup>Robson (2014) regards this shift as evidence for belief polarization and echo chambers in art criticism.

tion of forgeries, may explain why skilled perceivers do not always accord prima facie evidential value to their perceptual seemings. They frequently cross-check their perceptions by other means, such as different methods (e.g., absolute dating methods to supplement archaeological datings based on style) or by seeking independent validation from other experts. Such methods of checking are far more common for skilled seemings than for ordinary seemings, and are in some cases institutionalized. For example, the micropasts project<sup>5</sup> is an online crowd-sourced project that joins archaeologists and amateur enthusiasts in gathering and interpreting archaeological data. One part of the project consists in choosing the best identification (emperor, time period) for specific imperial Roman coins, and asks participants how sure they feel about the identification they provided. Although participants are experts (coin collectors, curators, archaeologists), and have skilled seemings about the coins (“Not Augustus, definitely Tiberius”), there is still a need for validation and cross-checking in a way ordinary perception does not require. For example, no-one would ask if participants are sure the object before them is indeed a coin.

Cross-checking skilled seemings may be partially explained by the high stakes such seemings involve. If the coin expert goes and buys the coin because it seems like a Tiberius in good condition, without consciously going through a checklist, she may be making a buy she will regret. But there are many situations of ordinary perception where the stakes are high, for example, in traffic situations, and where we do not find the need to double-check our seemings. As a result, it is unclear whether (PC) and related principles, such as Pryor’s (2000) dogmatism can be applied to skilled seemings. For Pryor, “when it perceptually seems to you as if  $p$  is the case, you have a kind of justification for believing  $p$ ”, simply by virtue of having an experience as of  $p$  (Pryor, 2000, 519). In his view, need not be aware of one’s experience and appeal to facts about it, or appeal to those experiences as evidence. The perceptual experience provides one with an immediate justification, albeit one that is defeasible<sup>6</sup>. The feeling of truth that accompanies some seemings, such as ordinary perception and intuition (assertiveness or forcefulness) thus seems to be weakened in the case of skilled seemings due to its greater control and cognitive penetrability.

The cognitive penetrability of skilled seemings also raises a skeptical worry. What to think of art critics who first praised van Meegeren’s forgeries, and later dismissed them as dull and insipid once the forgery was revealed? What is the evidential value of such seemings (bright, magnificent colors versus dull, insipid ones), if they are so sensitive to background information? Take wine tasters, whose practice has recently come into doubt through a series of experiments that directly probed their expertise. They are influenced by the color of a wine in experiencing its taste. White wines artificially colored to look red elicited olfactory seemings that are commonly associated with red wines in a panel of expert wine tasters. They described the red-colored white wine as “prune”, “chocolate”, “red currant”, words reserved for describing red wine, rather than “honey”, “lemon”, or “butter”, which are commonly used for white wines (Morrot, Brochet, & Dubourdieu, 2001).

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<sup>5</sup><http://micropasts.org/>

<sup>6</sup>Pryor was not sure in how far his account could accommodate skilled perception, because he did not know in how far skilled perception is basic (Pryor, 2000, 539).

Does the presence of faulty background information (the dye in the wine, the art forgery) merely present a set possible defeaters for skilled seemings, or do they constitute a deeper problem for applying (PC)-type justification strategies to them? Given the importance of background information for skilled seemings, I am inclined to the latter view. I think the prospects of (PC)-style justification strategies for skilled seemings are poor, precisely because they are more influenced by an agent's beliefs than ordinary seemings are. For an ordinary seeming (which is cognitively impenetrable), the seeming that  $p$  can provide justification for my belief that  $p$ . If it seems to me there's a cat on the mat, then that seeming provides justification for my belief that there's a cat on the mat. But for skilled seemings, my beliefs influence my seemings in such a way that they are not properly independent. Jeanne, the wine expert, drinks the red wine (fortunately not colored red by a malicious cognitive scientist), and it seems to her the wine seems to have an aroma of chocolate, prune and red currant. Jeanne's seemings are influenced by her beliefs about what red wines smell like. This diminishes the ability of the seemings to justify the beliefs.

### 3.2 The phenomenal evidence argument

Susanna Schellenberg (2013, 2014) has forwarded a metaphysical argument for the evidential value of perceptual seemings. She argues that they provide evidence due to their metaphysical structure; bad cases of perception, such as illusions and hallucinations, are parasitic on good cases. Take someone who sees a computer (for instance, me as I am writing this text). When I am looking at my computer and forming the belief that there is a computer in front of me, I am using my perceptual capacities that function to pick out particulars, such as whiteness, and shapes, such as rectangles; I also receive haptic input by typing on the keyboard. Through the functional properties of sight and touch, there is a systematic linking between perceptual states and what they are about. In this way, if a subject  $S$  is perceptually engaged with her environment, she is in a sensory state that provides phenomenal evidence. As a result, in Schellenberg's view, even hallucinations provide some evidence (albeit not as much as veridical perception), and it is rational to heed the testimony of our senses. Her view does not require that the perceptual capacities function reliably, and might thus be useful to appraise the evidential value of perceptual skills in the absence of any information about their reliability.

In cases of ordinary perception it is plausible that perceptual capacities pick out properties in our environment. But in some purportedly skilled seemings, there never are any good cases on which the bad cases are dependent. Take as an example *soroban* (Japanese abacus) calculation. A mathematician skilled with the *soroban* can read off results of complex calculations by manipulating the beads and looking at the resulting configuration. If he makes a mistake or misreads the result, the output is still dependent on the function of *soroban* reading (obtaining correct mathematical results) in good cases. By contrast, a trained aura reader "sees" an aura (colorful halo surrounding a human body) as reflecting changes in mood, character, and physical condition. When reading auras, there is never a good case on which the bad cases of aura reading are asymmetrically dependent, because aura reading does not pick out properties in the environment.



If we do not know whether skilled seemings pick out any properties in the environment, we cannot claim that there is an asymmetric dependence of good on bad cases. Thus, we cannot use the phenomenal evidence argument to say that skilled seemings confer *prima facie* justification or that they are some *prima facie* source of evidence. What we would need is independent evidence that the skilled seeming is indeed picking out what it purports to pick out.

### 3.3 Dependence on social practice

I have argued in the previous two sections that (PC) cannot be applied to skilled seemings, and that the phenomenal evidence cannot be applied either. And yet it remains plausible that skilled seemings that *p* provide justification for the belief that *p*. Skilled seemings are the result of training, teaching and other social practices. I will here examine the justificatory potential of seemings that are heavily dependent on social practice. Kitcher (1995, chapter 7) considered this question for scientific practice. An experienced behavioral biologist observes members of a baboon troop interacting with each other. She sees and hears dominance hierarchies, alliance building, aggression, and submissive behavior. It seems to her the baboon on the right is a dominant female, for example. Her PhD student, who is not yet trained in such observations, just sees a bunch of monkeys moving in a seemingly random fashion. Gradually, he learns to discern the signs that indicate social relationships by the observational skills he acquires from his advisor and other experts.

This intimate dependence of current skilled seemings on past practices can be viewed pessimistically: perhaps the skills are not skills at all, and the heavy theory-dependence of observations could make the interpretations viciously circular. Kitcher, however, resists the pessimistic conclusion that skilled perception in scientific practice would be viciously circular, and offers two reasons for optimism. First, in spite of different perceptual trainings, scientists (and other skilled experts) can come to convergent conclusions. Indeed, Japanese and German primatologists have quite divergent views on cultural transmission in nonhuman primates, which may find their roots in religious legacies in Japan and Germany, with Buddhism stressing continuity between humans and other animals, whereas western culture, with its Christian legacy, emphasizes the uniqueness of human beings (de Waal, 2003). In spite of this, Japanese and German primatologists have convergent results, such as the relative absence of shared attention in chimpanzees (Tomonaga et al., 2004; Herrmann, Call, Hernandez-Lloreda, Hare, & Tomasello, 2007). This remarkable convergence of evidence in the presence of different methodologies and background assumptions should bolster the claim that primatologists in Japan and Germany really are discerning properties of chimpanzee social cognition. Second, experts can engage in what Kitcher terms “displays of discriminatory virtuosity”: the behavioral biologist can point out subtle differences between monkeys (such as posture and gait), and can predict what will happen next in a social interaction between them (e.g., the subdominant male will back off). Both convergence in the face of different methodologies and a good track record of predictions can help decide if skilled seemings provide one with justified beliefs.

Kitcher’s proposal places the bar for justified beliefs quite high for skilled

seemings, much higher than for ordinary seemings. It is not always possible to know whether one's judgment would conform to the seemings of other experts, and not all forms of skilled seemings allow for predictions, e.g., an art appraiser who assigns paintings to long-dead artists on the basis of stylistic similarities with other works may not always be able to check if these artists indeed created the works, especially not if she is the only expert on an obscure painter.

## 4 Skilled seemings in an evolutionary and developmental context

Most skilled forms of perception are socially transmitted. When we learn practices that give rise to skilled seemings, could we be led astray by charlatans, who purport to teach us skills they do not really possess? Suppose I would like to learn to distinguish real from fake diamonds (such as cut glass or cubic zirconia), how likely am I to be taught the wrong skills? In game theoretical models of animal communication, the question arises how deceitful communication can be avoided. What prevents communicators from transmitting false information? And, once lies are circulated, what prevents the communication system from breaking down? Acquiring a skill is a lot of work. Given the importance of deliberative practice, several thousand hours are required to master a skill sufficiently to be able to teach it. But once the skill is acquired, demonstrating how to perform it is cheap. In animal signaling, communications that are cheap for a truthful signaler, but hard (or impossible) for a deceitful signaler, can give rise to a reliable communication system that is relatively robust.

As Sterelny (2012) points out, honesty has a byproduct advantage. It is easy for him to present himself credibly as an Australian birder because he really is an Australian birder. Of course, he needed considerable time and effort to learn the requisite birding skills, but once acquired, he does not even need to signal consciously—the evidence for his birding qualities just arises as a byproduct of his daily life. By contrast, someone who wants to present herself as a birder without the requisite skills would need to invest lots of time and effort to be able to pass as such, including at least acquiring some knowledge about birds, and investing in binoculars and a field guide. Not only is knowing-how the norm of skill transmission, as Buckwalter and Turri (2014) have recently argued, it is hard to feign to transmit a skill you do not have, but relatively easy to show and tell a skill you do possess. To take an example from scientific practice, *The bluffer's guide to archaeology* (Bahn, 2007) contains real archaeological knowledge (albeit presented in a jocular fashion), which readers would need to bluff their way into archaeology. A more accurate title of the book would have been *Acquire some elementary knowledge of archaeological practice so as to be able to pass as an archaeologist among non-archaeologists*. Because of the high costs involved in deception when pretending to teach a skill one does not possess, the risk in being deceived when acquiring skilled seemings is low.

While one can discount the risk of deliberate deception in practiced skills, there is still the risk of learning a bogus skill such as aura reading, palmistry, or phrenology. Here, practitioners of such purported skills might not deliberately deceive, but may themselves be deeply mistaken about the nature of their

practices. In some cases, the matter can be settled independently by external evidence, such as gathered by the sciences. For example, there is a plausible naturalistic interpretation for why some people see auras: auras may be a particular form of synesthesia, emotion-color synesthesia, whereby a subject associates emotions or people generating these emotions with particular colors (Ward, 2004). Moreover, scientific studies have failed to identify fields of energy that aura-readers purportedly pick up, and under controlled experimental conditions, alleged aura-readers failed to use their skilled seemings to detect people hiding behind screens using their auric emanations (Gissurarson & Gunnarsson, 1997). Taken together, such scientific evidence calls the skilled seemings of aura readers into question<sup>7</sup>. Unfortunately, many skilled seemings cannot be externally calibrated in this way. As Cummins (1998) has pointed out, philosophical intuitions do not lend themselves readily to external scientific tests.

One reason for trusting skilled seemings is that they are often part of a broader cultural skillset. For example, to become a proficient chess player, one must be able to see more than mere figurines on a board. One must discern positions, pieces that are overburdened or underdefended, potential forks, and the like. Moreover, to the chess expert, the figurines are tools that perform specific motions, and that have particular effects<sup>8</sup>. When the grandmaster Hou Yifan perceives that a situation is hopeless for White she is applying part of the skillset that makes her an excellent chess player. Given her skills in chess, she can be confident in her seeming that White cannot win this particular game from the current position. Precisely these sorts of seemings are required to be an expert chess player.

Similarly, a trained jeweler can be justified in believing a ring is a rhodolite garnet. Being able to distinguish (semi)precious stones and metals is a skill that requires training and practice, which she presumably received from someone who can signal expertise cheaply (another jeweler). While one can be deceived on the flea-market into believing that a ring is made of 18 carat gold, it is much more difficult to be deceived as a trainee in a jeweler's workshop who learns to distinguish gold from counterfeit materials. Moreover, being skilled in the art of recognizing real gold from gold plated objects, pyrite, and other superficially similar materials is crucial for jewelers in their daily life. By contrast, the naive gold digger in Markie's (2005) example, who really wants the nugget to be gold has no justification for his belief. It is not easy to distinguish noble metals without training, so there is no *prima facie* reason for why the belief would be justified, and wishful thinking is in general a bad guide for belief formation.

## 5 Conclusion

In this paper, I have examined whether skilled seemings, the seemings one acquires after deliberate practice in a given domain of knowledge, provide us with *prima facie* justified beliefs. I argue that they in fact do, but that we cannot rely

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<sup>7</sup>Practitioners of bogus skills often are part of superstitious communities that disregard external, invalidating evidence, or are unaware of it.

<sup>8</sup>The medial temporal gyrus, which is activated when people see tools such as hammers and saws, is more strongly activated in chess experts than in novices (Atherton, Zhuang, Bart, Hu, & He, 2003).

on tactics for the justification of ordinary seemings, such as phenomenal conservatism and the phenomenal evidence argument.

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