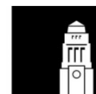
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PHILOSOPHICAL AESTHETICS AND COGNITIVE SCIENCE

ABSTRACT

Philosophical aesthetics is the branch of philosophy which explores issues having to do with art, beauty, and related phenomena. Philosophers have often been skeptical about the place of empirical investigation in aesthetics. However, in recent years many philosophical aestheticians have turned to cognitive science to enrich their understanding of their subject matter. Cognitive scientists have, in turn, been inspired by work in philosophical aesthetics. This essay focuses on a representative subset of the areas in which there has been fruitful dialogue between philosophical aestheticians and cognitive scientists. We start with some general topics in philosophical aesthetics—the definition of art and the epistemic status of aesthetic judgments. We then move on to discussing research concerning the roles that imagination and perception play in our aesthetic engagement. We conclude with a discussion of the emerging field of experimental philosophical aesthetics.

INTRODUCTION

Philosophical aesthetics (hereafter "aesthetics") is the branch of philosophy which explores issues having to do with art, beauty, and related phenomena. Philosophers have often been skeptical about the place of empirical investigation in aesthetics.[1, 2, 3] However, in recent years many philosophical aestheticians have turned to cognitive science to enrich their understanding of their subject matter. This is linked to a broader 'naturalistic' turn in philosophy in which the connections, rather than the differences, between philosophical and scientific investigation are emphasized. Cognitive scientists have, in turn, been inspired by work in philosophical aesthetics

We explore a representative subset of the areas in which aestheticians have interacted with work in the cognitive sciences. We start with some general topics in philosophical aesthetics—the

definition of art and the epistemic status of aesthetic judgments. We then move on to discussing research concerning the roles that two central human capacities—imagination and perception—play in our engagement with works of art. We conclude with a discussion of developments in the burgeoning field of experimental philosophical aesthetics.

1. COGNITIVE SCIENCE AND THE DEFINITION OF ART

What is art? Philosophers often attempt to answer this question by offering definitions of art. Needless to say, though, there is no consensus as to what the correct definition is (indeed, some philosophers argue that art is impossible to define). Debates about these issues have been central to contemporary aesthetics. In this section, we examine points of actual and potential interaction between philosophical aesthetics and cognitive sciences in these definitional debates.

1.1 From Cognitive Science to Definitions of Art

The origins of the contemporary debate about the definition of art can be traced back to Weitz's "The Role of Theory in Aesthetics", where he argues that it is logically impossible to provide necessary and sufficient conditions for the category of art because it has an "expansive, adventurous character" (Ref 4, p.32). Weitz's arguments faced many objections (for discussion, see Davies[5]), and the idea that the very nature of art prohibits its definition did not generally take root. However, Dean[6] offers a defense of Weitz's central claim which relies on psychological work on the nature of concepts. Dean argues that proposed definitions of art are misguided, given that they presuppose the correctness of the classical theory of concepts (i.e., the view that necessary and sufficient conditions underlie our classificatory practice). The classical theory of concepts has, however, been rejected by cognitive scientists.[7,8] Hence, Dean (Ref 6, p.34) argues, definitions of art are doomed to failure.

Other philosophers have used methods and insights from the cognitive sciences to test existing definitions of art or to formulate new ones. Kamber[9] surveyed peoples' intuitions regarding which items are art and which are not, to test the adequacy of existing definitions of art. He argued that his surveys show that extant definitions of art do not successfully track folk intuitions or the judgments of art experts. Of particular interest were folk and expert responses to artefacts that are rarely even discussed by philosophers of art such as Bugatti cars and canal bridges. 53% of all subjects in one study (as well as 46% of art professionals) identified a contemporary Bugatti Veyron as an artwork! Pignocchi[10] went further and used psychological findings regarding concept learning to formulate a novel definition, or, in his words, "characterization" of the concept of art. It states that "an agent intuitively uses the concept of art to categorize an artifact if an only if she infers that this artifacts has been intended to fulfill a function or set of functions which she has already accepted as a function or set of functions that can be fulfilled by artifacts that she considers as typical art" (Ref 10, p. 429). His characterization is a hypothesis about the psychological mechanisms underlying people's intuitive categorization of something as art, based on findings of cognitive scientists[11, 12] regarding the influence of intended functions on people's intuitions about how to categorize an artifact. Pignocchi (Ref 10, P.429) rightly acknowledges that his characterization is merely a first step in the philosophical project of defining art, as philosophical definitions often aim not just to reflect how a concept is used but to show how the concept *should* be used. Pignocchi himself has very little to say about what cognitive science can contribute to such normative definitions. Still, any such normative project starts off with a descriptive step: one needs to know how concepts function before revising their functioning.

1.2 From Definitions of Art to Cognitive Science

Part of Pignocchi's project is to argue that empirical work on folk intuitions about art might benefit from attention to philosophical work on the definition of art (Ref 10, 425-427). Philosophical definitions are potentially relevant for cognitive scientists working on other aesthetic issues, given

that the way in which scientists themselves employ art concepts has an immediate impact on their results. As Seghers[13] points out, the aesthetic fitness indicator hypothesis, which proposes that artmaking evolved through sexual selection as a signaling trait of males, “is heavily dependent on a particular conception of art”, namely a conception that involves a strong bias toward males in artistic production (Ref 13, p.240-1). Davies[14] likewise maintains that scientists often start from inadequate characterizations of art. More specifically, he argues that many scientists[15-17] make their concepts of art overly inclusive, such that they would, for example, class “crude doodlings and clumsy graffiti” (Ref 14, p.28) as visual art. These overly inclusive concepts, Davies argues, have “the result that claims for connections between art and humans’ evolved behavior become trivially true” (Ref 14, p.28). Similar worries arise with respect to other art concepts, such as the concept of poetry. In order to investigate poetry empirically, it has to be decided which items are going to count as poetry in these investigations. In Hanauer’s[18] work on the genre-specific hypothesis of reading, for example, the poems are drawn from introductory poetry courses. It might be considered a benefit that such works are paradigmatic cases of poetry. However, it is possible that including less familiar (or more contested) forms of poetry in such empirical studies would lead to different results. In summary, any cognitive scientist working on art appreciation or art creation needs to make explicit the criteria for inclusion in her studies. Philosophers, on their side, can design definitions of art or other art categories with such work in mind.

2. AESTHETIC EPISTEMOLOGY AND COGNITIVE SCIENCE

In this section we focus on efforts to evaluate the epistemic status of aesthetic judgments. We begin by considering a number of skeptical worries which work in cognitive science generates concerning such judgments. These are worries which seem to suggest that we have far less aesthetic knowledge than is typically supposed. We then outline some responses which have been offered to these charges before surveying some further claims which have been made concerning the relationship

between cognitive science and aesthetic epistemology. Before proceeding, though, it's worth briefly considering one form of skepticism which we won't be addressing here. There is a common view which maintains that the very notion of "aesthetic knowledge" is problematic since there is no genuine right or wrong when it comes to aesthetic matters. For example, according to one interpretation of the famous dictum that there is "no disputing about taste" those who make aesthetic claims only judge what they themselves like or what is good (or beautiful, etc.) "for them" rather than making judgments about some objective, or inter-subjective, truth regarding aesthetic matters. We will not, however, focus on skepticism of this kind here for two reasons. First, most of those engaged in philosophical aesthetics presuppose that (at least with respect to certain debates) there really is aesthetic truth to be had. Second, there is an important sense in which the kinds of skepticism we address below run deeper than these concerns about objectivity in aesthetics. To put things colloquially, the worries we consider raise problems not only for those who claim to know about art but also from those who claim to know what they like (or at least to know why they like it).

2.1 Skeptical Worries about Aesthetic Judgment

Work done in aesthetics often presupposes that certain people are able to reliably judge the aesthetic properties which artworks (and other objects) possess. That is, very roughly, that they tend to arrive at true beliefs about these matters more often than not. This is not to say that the ability to do so is universal or even particularly widespread. Still, it is typically presupposed that there are some individuals who are able to judge reliably of aesthetic matters and whose judgments routinely constitute knowledge. So, how might the deliverances of cognitive science challenge this view?

One common worry is that empirical work has highlighted a number of ways in which our aesthetic judgments are strongly influenced by aesthetically irrelevant factors. In this section, we consider three representative examples; mere exposure, ordering effects, and social factors (such as race and gender). The classic studies concerning mere exposure in aesthetics were conducted by Cutting[19] who reported that mere exposure (i.e., the unreinforced exposure to a stimulus) was

enough to significantly increase preference for particular impressionist paintings over others. Cutting concluded that the mechanism of mere exposure likely plays a significant role in the formation and maintenance of artistic canons (Ref 19, 335).

In terms of ordering effects, a plethora of studies have shown that "[w]henever competing options are considered in sequence, their evaluations may be affected by order of appearance" (Ref 20, p.245). And, with respect to aesthetic judgments in particular, studies have shown that ordering effects can have a profound effect on our judgments of performances in areas as diverse as classical music[21] and figure skating,[20] with, for example, performances which appear first typically being viewed more favorably than those in a middle position.

Finally, irrelevant social factors have repeatedly been shown to influence our aesthetic judgments. To use one famous example, many orchestras have recently introduced screens in their auditions to prevent the gender of the performer from being known to the judging panel. Such procedures are often motivated by the concern that a lack of anonymity might disadvantage women during the audition process. This worry appears to be justified. A series of studies by Goldin and Rouse, for example, showed that "the screen increases–by 50 percent–the probability that a woman will be advanced from certain preliminary rounds and increases by severalfold the likelihood that a woman will be selected in the final round" (Ref 22, p.738).

The underlying worry, then, is that a plethora of such irrelevant factors frequently affect our aesthetic judgments rendering many of them unreliable and, therefore, unwarranted.

2.2 Responding to Skeptical Worries

So, how might anti-skeptics respond to these worries? One line of response involves denying that these experiments really target aesthetic judgments of the appropriate kind. Aestheticians typically focus on a range of different properties which fall under the label "aesthetic" (beauty, elegance, vibrancy, etc.). By contrast, much of the experimental work we have discussed above focuses on

simple judgments of preference or liking. As such, some might object that philosophers and cognitive scientists are merely talking past each other. To some extent this is correct. Mere judgments of liking are typically not of much interest within aesthetics because aestheticians tend to hold that aesthetic judgments have a normative dimension and it is widely held that "while some normative notions may be explainable in terms of others, we cannot express normative notions in non-normative terms".[23] However, it is not clear that this helps the anti-skeptic concerning aesthetic judgment. The mere exposure effect, for example, has consistently been shown to arise with respect to a range of measures including normative measures of goodness.[24] And, more generally, there is no evidence to suggest that there will be any significant difference between results concerning judgments of liking and those concerning judgments of other kinds.

A second anti-skeptical strategy argues that these distorting factors, while genuine, aren't significant enough to make our aesthetic judgments systematically unreliable. After all, the claim that our judgments with respect to aesthetic matters are, by and large, reliable is consistent with their sometimes being distorted in problematic ways. However, many of those who discuss such distorting factors take them to be ubiquitous in a way which is difficult to reconcile with any claims of general reliability. Indeed, Cutting (ref 19, p.335) goes so far as to make the striking suggestion that judgments of artistic quality may be driven entirely by the mere exposure effect. Interestingly, though, some philosophers have recently argued (as we will see below) that such effects may not be as insensitive to the quality of the works themselves as Cutting suggests.

A third line of response is to argue that, while these distorting factors have a significant influence on the judgments of laypeople, they don't undermine the judgments of experts. As such, these experimental results are compatible with a traditional view according to which reliable aesthetic judgment is the purview of a few true judges (Ref 25, p.263). Such a view is supported by a study on ordering effects in music contests by Haan et al. which found that "experts are unambiguously better judges of quality, at least in the sense that the outcome of contests judged by

experts are less sensitive to" (Ref 26, p.72) such effects, and a number of other studies[27] have reached similar conclusions with respect to other distorting factors. However, the news is not entirely positive for the expertise defense. First, a distorting factor's having less influence is importantly distinct from its having no influence and all of the studies mentioned still show that these factors have some effect on the judgments of experts. Worse still, other studies have found that experts perform no better than laypeople with respect to some distorting factors, and still others that in some respects their performance is actually worse.[28]

A final line of response involves accepting that these distorting factors are genuine, and genuinely problematic, but taking efforts to mitigate their effects. In some cases this seems to be a relatively straightforward matter (consider again the orchestra auditions discussed above). In other cases, though, it is not entirely clear how best to counter such effects. Indeed, some prima facie plausible suggestions for doing so actually tend to make matters worse. For example, various studies[29] have shown that encouraging subjects to support their aesthetic judgments with clearly articulated reasons can actually reduce their reliability. Still, some philosophers have suggested methods for eliminating or mitigating distorting factors. Sherri Irvin[30] for example, argues that there is some reason to believe that certain mindfulness techniques might lessen their epistemic impact.

2.3 Other Epistemic Issues

Although the primary focus of philosophical discussion has been the kind of skeptical worry discussed above, this is not the only area where empirical results might be important for aesthetic epistemology. Lopes,[31] for example, has recently argued that work in cognitive science undermines two further claims which are fundamental to much work in aesthetics. First, he highlights that work by, e.g., Nisbett and Wilson[32] undermines the popular view that we, by and large, have reliable introspective aspect to the reasons behind our aesthetic judgments. Second, he highlights that attempts to introspect and articulate the reasons for our aesthetic judgments can have "a systematically distorting effect on our attitudes" (Ref 31, p.33). Both claims appear to undermine the

value which many aestheticians place on our ability to provide critical reasons in support of our aesthetic judgments.

It is also important to highlight that not all results from cognitive science which challenge orthodoxies within aesthetics provide license for skepticism. Indeed, there are some areas where such research might actually undermine traditional skeptical worries. It is, for example, commonplace for aestheticians to deny – following Kant (Ref 1, p.34) – that we can arrive at aesthetic knowledge via any source of judgment other than first-hand experience of the object judged. Other sources of knowledge – such as testimony and inference – which are generally taken to be unproblematic in other domains are impermissible when it comes to aesthetic matters. Further, this view is often supported by the additional claim that we do not, as a matter of descriptive fact, form our aesthetic judgments using these other methods. It seems, though, there is good reason to reject this descriptive claim[33] and a number of studies – such as those by Ginsburgh and Ours[21] and Dixon et al.[34] – have shown that we frequently *do* form aesthetic judgments on the basis of social factors such as testimony.

3. FICTION, IMAGINATION, AND COGNITIVE SCIENCE

To explain our ability to engage with fiction we need to appeal to a cognitive capacity which allows us to represent the world in ways different from those in which we actually take it to be. In other words, we need to appeal to the imagination. (For skepticism about the link between fiction and imagination, see Matravers.[35]) Consequently, we can draw on cognitive scientific work on the imagination to illuminate traditional aesthetic problems surrounding fiction[36] and, on the other hand, by observing our experience of fiction we can learn important things about the imagination.[37,38] In this section, we focus on three phenomena concerning our imaginative

engagement with fiction that are of interest to both cognitive scientists and philosophers: fictional emotions, imaginative resistance, and transportation.

3.1 Fictional Emotions

The label "fictional emotions" refers to our affective responses to fiction, such as our pity for Anna Karenina when we read about her tragic fate, or our fear of Hannibal Lector when we watch *The Silence of the Lambs*. These sorts of responses appear familiar, appropriate and even rational, but they also raise problems: can we really feel pity, or fear towards something which we do not believe exists? And – granted that we do feel them – can such emotions by appropriate and rational?

Traditionally, philosophers addressed these problems – which are gathered under the rubric of 'the paradox of fiction' – using conceptual analysis and appeals to intuitions. So, for example, Walton famously argued that genuine emotions involve both beliefs in the existence of their objects, and some degree of motivational force.[39,40] And, since our affective responses to fiction lack both these features, we should recognize that – even if they are phenomenologically indistinguishable from genuine emotions – they are not in fact genuine, and should rather be classified as "quasi-emotions". In recent years, however, some philosophers have pointed out the limits of this sort of armchair approach, arguing that attention must be paid to relevant work in the cognitive sciences. For instance, Gendler and Kovakovich[41] drew on empirical research by Harris[38] and Damasio[42,43] to challenge Walton's view, arguing that our affective responses to fiction closely resemble real emotions not only with respect to phenomenology, but also with respect to motivational force. More recently, Cova and Teroni[44] also pointed to empirical evidence for the motivational force of affective responses to fiction (e.g. evidence that admiring virtuous fictional characters can motivate real-life virtuous behavior[45]). On the other hand, though, they also pointed to the large body of empirical research on emotion regulation to question the extent to which fictional emotions resemble real ones phenomenologically.[46,47] Further important insights into the nature of fictional emotions come from authors working in the cognitive-scientific program of Simulation Theory.

Authors like Currie and Ravenscroft[48] and Goldman[49] argued that our engagement with fictions is underpinned by the same simulative mechanisms that we use to understand other people – mechanisms which crucially involve some sort of emphatic identification. On this view, our affective responses to fictional characters are not essentially different from those we have towards real people.

Beyond various substantial differences, what all these approaches have in common is an empirically informed stance, which takes evidence from the cognitive sciences to be the ultimate tribunal to adjudicate disputes on the nature of our affective responses to fiction.

3.2. Imaginative Resistance

The phenomenon of imaginative resistance, originally pointed out by Hume,[25] and revived by Moran[50] and Walton,[51] has to do with the comparative difficulty that we encounter in engaging with certain kinds of imaginings – cases of morally deviant imaginings being the paradigmatic example. While we do not typically struggle to imagine scenarios that deviate from our factual beliefs – like a Disney scenario where mice can talk and behave like humans – if we are asked to imagine scenarios that depart from our moral beliefs – such as a scenario where female infanticide is a morally acceptable practice (and is not merely believed to be so) – we are likely to experience some significant difficulties: some sort of imaginative resistance.

Classical explanations of this sort of resistance trace it back either to impossibility or unwillingness. Walton[51] defended the view that a scenario where female infanticide is morally acceptable generates an impossibility that we are unable to make sense of – hence unable to imagine (for a more sophisticate variant of this view, see Weatherson[52]). Against this, Gendler[53, 54] argued that our imaginative resistance in a case of this sort is due to the fact that – even though we are *able to* imagine such a moral aberration – we *don't want to* do so because we fear that this may lead us to actually believing it. Finally, authors like Stock[55] and Todd[56] have expressed some

skepticism about the very existence of imaginative resistance. In their view, resistance seems to arise with artificial philosophical examples that focus on isolated acontextual propositions – while the same propositions occurring in the context of a full-fledged fiction would not be similarly resisted.

Arguably, these different approaches to imaginative resistance all provide valuable insights into different aspects of this complex phenomenon – insights that in recent years some philosophers have started to assess and develop on empirical grounds. Weinberg and Meskin,[57] for example, draw on Nichols and Stich's[58] account of our cognitive architecture in arguing that what generates resistance is not impossibility *per se*, let alone unwillingness, but, rather, the nature of our cognitive systems. More precisely, resistance arises from a conflict between different systems that try to insert contrasting representations into the so-called "imagination-box". When we are asked to imagine, for example, that "female infanticide is acceptable", an "input system" will place this representation into our imagination box. However, our moral reasoning system will respond to the morally salient features of a female infanticide scenario by generating an opposite representation ("female infanticide is unacceptable"). This conflict will generate an imaginative blockage.

More recently, Liao et al.[59] have turned to empirical methods to address skeptical worries about imaginative resistance. They designed two studies which revealed that imaginative resistance does indeed arise outside of philosophical debates. But they also showed that skeptics are right in thinking that contextual factors play a key role in imaginative resistance. Indeed, their results suggest that genre competence (or lack thereof) may play a key role in explaining imaginative resistance or its absence. For instance, reading "The Story of Hippolytus and Larissa", subjects familiar with Greek mythology turned out to experience less resistance to imagining that actions of Zeus-approved trickery are morally right, than those unfamiliar with Greek mythology.

Liao and Gendler[60,61] have argued that imaginative resistance can be illuminated by the large body of empirical research on the so-called phenomenon of transportation. Psychologists use the

term 'transportation' to refer to the experience of becoming immersed in the world of a story to the extent of having the impression of leaving the real world for a while.[62,63] This sort of experience, they say, is made possible by the fact that many of our mental resources – such as attention, imagination, and emotions – become focused on the story and away from the world. This can happen to various degrees, with immersion shading off into mere low-level engagement. Liao and Gendler's idea is that imaginative resistance may be seen as "an extreme case of not being transported at all" (Ref 60, p.85); and that, insofar as this is true, psychological work about the factors that influence transportation can shed light on the mechanisms that determine imaginative resistance.

3.3 Transportation and Learning from Fiction

The idea that fictions can influence our real-world attitudes and beliefs has been discussed by philosophers since ancient times. While Plato was pessimistic about the ways in which they might do so, banning fictions from his *Republic* because of their supposedly dangerous influences, many after him have defended various forms of aesthetic cognitivism – i.e. the view that our engagement with fictions can be a relevant source of learning – claiming that fictions can enhance our understanding of ourselves, our world, and the moral domain.[64-66]

Work in cognitive and social psychology provides evidence that is relevant to assessing these claims. Consider first the aforementioned psychological studies on transportation. Such studies found that transported readers tend to change their real-world attitudes in ways that reflect the views expressed, explicitly or implicitly, by the stories they read. Strikingly, while these attitudinal changes correlate with self-reported degrees of transportation, they are independent of whether subjects think they are reading fiction or non-fiction. Significant degrees of transportation into a story where a young girl is stabbed to death by a psychiatric patient, for instance, were found to influence readers' judgments about violence and injustice in the real world, even when the story was explicitly labeled as fiction.[62] Similar influences of fictions upon our real-world attitudes were also found in a number of other studies. For example, Prentice and Gerrig[67,68] showed that readers tend

to endorse putatively factual statements made by story-characters. Other studies revealed the remarkable influence of TV-dramas upon viewers' judgments about social reality (with, for instance, heavy TV viewers systematically overestimating the real-world occurrence of such items as crime, violence, and marital discord).[69] Psychologists explain these influences of fiction upon us by appealing to non-rational, automatic mechanisms of belief-change – such as what Green and Brock called 'narrative persuasion'.[63] On this view, based on Dan Gilbert's "Spinozistic" account of belief acquisition, humans automatically believe everything they hear, while disbelieving requires an effortful process that for various reasons might not be activated.[70] The engagement with a fiction can be one such reason: by absorbing all the readers' attention, fictions lower their epistemic vigilance, preventing them from activating the adequate processes of belief rejection. Hence, as Gilbert et al. put it: "they can't not believe everything they read" (Ref 70, p.221).

If readers of fictions do come to change their real-world beliefs and attitudes because they simply lower their epistemic guard, this presents a serious challenge to the cognitivist's claim that fictions are a significant source of learning. After all, this appears to be an unreliable process of belief formation and, hence, even true beliefs acquired this way might not count as knowledge. Although such studies do not force us to deny that learning from fiction can ever occur, they suggest that such learning is far from straightforward, and it may require some specific conditions in order to be achieved. Friend[71] has tried to set out what precisely such conditions might be. She suggested that, even if it is true that engaging with fiction lowers our epistemic vigilance, making us more prone to acquire false beliefs, competent readers may ameliorate these effects thanks to their extensive familiarity with the literary conventions of different fiction genres, which allows them to automatically discriminate truth from falsity within the story contents. Other philosophers propose alternative accounts of the influences of fiction. Ichino and Currie,[72] for example, argue that at least in some cases our getting beliefs from fiction may depend upon our making assumptions about the

author's serious communicative intentions, or else upon our taking the story itself as a plausible model of real-world processes.

3.4 From Cognitive Science to Aesthetics – and Back

So far, we've emphasized the ways in which cognitive scientific work concerning imagination can help to shed light on traditional aesthetic problems surrounding engagement with fiction. But the relationship between aesthetics and cognitive science is not just one-way. Aesthetic discussions about such phenomena as fictional emotions, imaginative resistance, and learning from fiction have inspired cognitive scientists, drawing their attention to uses and aspects of imagination that they might otherwise have failed to notice, and prompting them to consider more critically some of their assumptions about the imagination.

For example, the idea that the imagination can elicit real emotions has often been uncritically assumed by psychologists and neuroscientists, who in their trials typically rely on acknowledgedly fictional stimuli in order to draw conclusions about subjects' emotional reactions.[73] Aesthetic discussions on the paradox of fiction have highlighted the need to consider this assumption more critically (see Ref 40, Ch.4).

To take another example, discussions of imaginative resistance have highlighted some complexities concerning the relationships between imagination and belief. Impossibility accounts of resistance have challenged the commonplace idea that imagination is an unbridled faculty, pointing out various ways in which it may actually be constrained and influenced by our (evaluative, and perhaps other) beliefs. Unwillingness accounts have pointed in the opposite direction, emphasizing the power that imagination may have to influence our beliefs – and the limits of so-called "imaginative quarantining".

4. PICTURE PERCEPTION

This section largely focuses on the nature of picture perception. Discussion of picture perception, within both philosophy and cognitive science, has often been linked very closely with discussion of the nature of pictures themselves. For example, Gibson,[74,75] who was one of the first psychologists to talk about depiction, defended a resemblance theory of pictures and used this as a basis for his view of picture perception. The basic idea is that pictures resemble that which they represent. This is an explanation of depiction which states that what makes pictures pictures are certain features of the pictures themselves, and not features of a specific perceptual experience. (There is a significant body of philosophical works discussing the idea that pictures represent objects because they somehow resemble them.[76-79]) This strategy fits his psychological framework, ecological psychology, quite well. Ecological psychology states that one directly perceives the world. Gibson rejects the currently mainstream view in psychology that perceptual experience is a representation of the world. Instead of representing the world in perception, Gibson argues, we are in direct contact with the world. Likewise, Gibson claims that picture perception is not a different way of representing the world; instead, a picture is a different thing which we directly perceive. The question about the essential features of picture perception is, in Gibson's framework, therefore reduced to the question about the essential features of pictures.

4.1 Top-down perception

Art historian Gombrich's[80] views on picture perception and perception in general could be seen as the absolute opposite of Gibson's. Whereas Gibson thought that picture perception is purely bottom-up, Gombrich argued that picture perception is a predominantly top-down process. Gombrich states that cognition is necessary to construct the meaning of the picture. To support this point, Gombrich draws on some psychological work including a famous study by Bruner & Postman.[81] In this study participants are shown different playing cards. Each card appears very briefly to the participants. When black hearts are shown, some participants report that they perceive these hearts as purple. An explanation is that the expectation that hearts on playing cards are red

influences the perceptual experience. The expectation makes the hearts more reddish, so one ends up with a perceptual experience of purple hearts.

4.2 Twofoldness

Another essential feature of picture perception according to Gombrich is that it involves a perception of the picture surface, as well as a perceptual experience of what is depicted. This idea was expanded by Wollheim[82,83] who described picture perception as a twofold experience. The "two folds" of this perceptual experience are respectively the picture surface and the depicted scene. This view has been defended more recently by Lopes[84] and Nanay.[85-87]

A difference between Gombrich and Wollheim is that Gombrich claims that one does not see both the surface and the depicted scene at the same time, while Wollheim argues that one does see the two simultaneously. Seeing the two "simultaneously" can be interpreted in two ways:

> (i) We consciously attend both to the depicted object and to some properties of the picture surface.
>
> (ii) We represent both the depicted object and some of the properties of the picture surface (while we may or may not attend to the surface) (Ref 86, p. 463).

The following phenomenon, also discussed by psychologists, may support the idea of twofoldness.[82,86,88-90] When one looks at a picture from a different angle and thus sees the picture surface in a different way, the depicted scene remains unchanged. Moreover, if one looks at a picture from an oblique angle, one does not see the depicted scene as distorted. This phenomenon is a reason to claim that picture perception is a twofold experience.

Wollheim's idea of twofoldness is also a good fit with some recent findings in vision science. Matthen[91] and Nanay[86] argue that cognitive science provides a good explanation of the twofoldness of pictorial experience. It is widely accepted that the visual system can be divided in two main streams: the dorsal and the ventral stream. The dorsal stream is often called - with a little

oversimplification - the “where pathway” as it is related to action-guided perception, whereas the ventral stream or “what pathway” is related to recognition and identification.[92] Research suggests that people with lesions in the ventral stream have great difficulty in perceiving a depicted scene.[93,94] Whereas people with lesions in the dorsal stream see depicted scenes in pictures, but find great difficulty in perceiving surface properties, more specifically length and distances of lines and shapes.[95,96] Nanay[86] therefore concludes that we have good reason to believe that ventral perception is responsible for representing the depicted scene, whereas dorsal perception is limited to representing the surface properties. Matthen,[91] who was the first to posit a dorsal-ventral view of picture perception, provides a similar scientific explanation for Wollheim's theory.

4.3 Alternative theories

Another empirically informed account of picture perception is formulated by Newall.[97] Newall argues that at least some cases of picture perception can be explained by what in vision science is called transparency perception. Metelli[98] defines this phenomenon as the perception of both the surface behind a transparent medium and the medium itself. Transparency perception is according to Metelli governed by the so-called “laws of scission”, which state that in transparency perception the perceived properties are separated into two sets of scission properties. When one for instance sees a particular colour through a coloured lens, this colour stimulus is split into two scission colours: one scission colour property is attributed to the transparent medium and the other scission colour property to the object one sees through the transparent surface. Newall argues that the same thing happens when one sees a depicted scene in a picture surface. The surface of the picture figures as a transparent medium and the perceived properties when looking at a picture are separated into two sets of scission properties.

In cognitive science of vision, interesting research on picture perception has been done independently from philosophy. For example, Marr, a pioneer in cognitive vision science, claimed that picture perception initially involves the detection of boundaries on the picture surface.[99] This

information is processed, resulting in the ability to recognize the shapes of the depicted objects. For an overview of more recent research on this topic see Goldstein.[100]

This section has discussed some of the most important interactions between philosophy and cognitive science when it comes to picture perception. For further discussion of these, and other, topics see Kulvicki[101] and Seeley.[102]

5 EXPERIMENTAL PHILOSOPHICAL AESTHETICS

Rather than simply mining the results of the cognitive sciences, some philosophers have begun to do experimental cognitive science themselves – using its methods to investigate questions of philosophical concern.[103,104] This branch of philosophical inquiry has come to be known as 'Experimental Philosophy'. Inspired by philosophers' common practice of appealing to what is intuitive, early work in the experimental philosophy movement relied on questionnaire methods and focused on exploring folk intuitions about common philosophical cases.[105,106] But contemporary experimental philosophy also uses a wide range of non-questionnaire methods and explores a variety of aspects of human psychology and behavior.[107] Experimental philosophical aesthetics is the sub-branch of experimental philosophy that deals with issue of concern to aestheticians.[108]

5.1 Objectivity and Value

Is beauty really in the eye of the beholder, or is there some sort of objective standard for beauty and taste? Questions about the nature of beauty, taste and aesthetic value have been central to aesthetics since its birth.[1,25] In recent years, some philosophers have attempted to gain insight into these matters through empirical methods.

It is sometimes argued that folk aesthetics is realist in nature and that this supports aesthetic realism —very roughly, the view that at least some aesthetic judgments are true or false and that their truth value is independent of individual preferences. In a series of studies, Cova and

Pain[109] sought to undercut this argument for aesthetic realism by showing that ordinary folk are not what they call "normativist" about the aesthetic domain. That is, ordinary folk do not seem to think that when two people contradict each other on an aesthetic matter one must be right and the other wrong. Since Cova and Pain hold that realism implies normativism, they take the rejection of normativism by the folk to suggest that ordinary aesthetic thought is not realist. Hence, these results are taken to undercut one positive argument for aesthetic realism.

Another challenge to aesthetic realism comes out of Cutting's work on mere exposure. As mentioned above, Cutting suggested that the mechanism of mere exposure might be a significant factor in the maintenance and formation of artistic canons as well as the formation of aesthetic judgments (Ref 19, p.335). But if canon formation and aesthetic judgment are explained largely by the mere exposure mechanism, then there may be no need to explain them by appeal to mind-independent aesthetic values, and a significant argument for aesthetic realism is undercut. In fact, Cutting's own remarks about judgments of aesthetic quality are decidedly skeptical (ibid.). Meskin et al.[110] investigated Cutting's skeptical suggestions via a study which explored the effect of mere exposure to works by Thomas Kinkade, the American "Painter of Light" whose output been described as "a kitsch crime against aesthetics".[111] Intriguingly, Meskin and collaborators found that increased exposure to Kinkade's works resulted in decreased liking for them. Although the explanation for the effect is not clear, the researchers conclude that even though mere exposure may play some role in canon maintenance and aesthetic judgment, something more (perhaps quality or value) appears to be involved.

5.2 Language and Communication

Traditional aesthetic debates tend to focus on phenomena related to private aesthetic reception; that is, on individual responses to artworks and other aesthetic phenomena. But human engagement with art and beauty is a profoundly social phenomenon: we regularly communicate

about aesthetic matters—criticizing, reviewing, describing, interpreting, and advising. Although it is often said that there is no disputing taste, we appear to dispute matters of taste all the time.

Aesthetic communication and disputation often rely on the use of aesthetic adjectives. Liao and Meskin[112] have adapted psycholinguistic methods from Syrett et al.[113,114] to explore aspects of various aesthetic adjectives such as “beautiful”, “ugly” and “elegant”. These adjectives are clear examples of what are commonly called “gradable adjectives”: adjectives such as “tall” and “short” which admit of comparative constructions (e.g., “Jane is taller than John”). On one well-known account,[115] there are two distinct kinds of gradable adjectives: relative gradable adjectives such as “tall” and “fat” which are context-sensitive and absolute gradable adjectives such as “full” and “flat” which are not used in a context-sensitive manner. In a series of online experiments, Liao and Meskin showed that aesthetic adjectives behave neither like relative adjectives nor like absolute adjectives—subjects seemed to be divided as to whether to treat them as context-sensitive or not. Liao and Meskin go on to argue that these results, which suggest a significant amount of interpersonal variation with respect to a subtle feature of the usage of aesthetic language, may provide some insight into the difficulties that are often said to infect aesthetic communication. In a follow-up paper, Liao, McNally, and Meskin[116] report on the results of a new experimental method for exploring gradable adjectives, the question felicity test. On this test, where subjects are asked about whether it makes sense to ask of various objects whether various predicates apply (e.g., “Is this long?”, “Is this beautiful?”, “Is this spotted?”), subjects treated aesthetic adjectives like absolute adjectives. Corpus research also supports the claim that aesthetic adjectives behave like absolute adjectives, but other semantic tests suggest they behave like relative ones.

In more recent work, Meskin, Liao and Andow[117] have tackled the alleged difficulty with aesthetic communication more directly. As discussed above, although it is a philosophical commonplace that we regularly come to know all sorts of things on the basis of others’ testimony, there is a long tradition of skepticism about the possibility of gaining aesthetic knowledge via

testimony. And it has sometimes been noted that those who are skeptical about knowledge via aesthetic testimony have a tendency to treat their view as a bit of common sense.[118,119] In a series of experimental studies, Meskin, Liao and Andow[117] set out to explore folk attitudes towards aesthetic testimony. Their results suggest that although aesthetic testimony is treated as less epistemically valuable than ordinary non-aesthetic testimony, it is not treated as epistemically valueless. Subsequent studies by Andow[120] suggest that much of the folk skepticism directed towards aesthetic testimony is based on a widespread belief in the prevalence of disagreement and deception when it comes to aesthetic matters.

5.3 Definitions and Concepts

As discussed above, debates about the definition of art have been central to aesthetics in the contemporary era. Liao, Meskin and Knobe[121] have aimed to contribute to the debate about the definition of art by investigating the structure of the concept ART as well as sub-concepts such as LITERATURE, RAP, PUNK, and COMIC. Dual character concepts are concepts which combine a descriptive element (i.e., a set of descriptive criteria) with an evaluative element (understood in terms of abstract values or aims) which underwrites the former.[122] So, for example, the concept PHILOSOPHER seems to combine both descriptive criteria (e.g., having a PhD in philosophy, working in a philosophy department, publishing philosophy papers) and a more abstract normative element (e.g., having a commitment to the pursuit of wisdom). And something very similar is true with respect to various other concepts such as SCIENTIST and FRIEND. Studies by Liao, Knobe and Meskin suggest that ART and many other artistic concepts (e.g., LITERATURE, PUNK, STREET ART) are dual character in nature. So, for example, subjects tend to think that it makes sense, when involved in a dispute about the application of one of these concepts, to refer to values. This is a standard feature of dual character concepts, but is not a feature of ordinary artifact concepts. It might be thought that this suggests that these concepts simply involve positive evaluation, like HERO and MASTERPIECE, but Liao, Knobe and Meskin also report a study which suggests that this is not the

case. They further suggest that these results may shed light on the nature and persistence of first-order disputes about whether or not some object is a work of art (or work of literature) as well as second-order philosophical disputes as to what drives those first-order disagreements. Intriguingly, they also found that a number of art concepts such as ARCHITECTURE, SHORT STORY, BREAKDANCING, and SONNET do not appear to be dual-character in nature.

6 CONCLUSION

In this essay, we have touched on just a few of the liveliest areas of interaction between philosophical aesthetics and cognitive science. There are many other such areas. So, for example, philosophical work on creativity has come to be heavily influenced by work in psychology and computer science.[123,124] It is plausible that this is largely due to the influence of the groundbreaking interdisciplinary work on creativity by philosopher Maggie Boden who is Research Professor of Cognitive Science at the University of Sussex.[125] Another prominent area of overlap concerns evolutionary theory, especially evolutionary psychology, which has influenced a range of philosophers thinking about issues such as the nature and development of art and aesthetic experience.[126,13, 14,127] Issues relating to our emotional responses to the arts have also proven a particularly fruitful area of interdisciplinary research—there has, for example, been important work on disgust and aesthetics in the last few years. [128, 129] In fact, philosophes of art have bequeathed cognitive scientists various problems related to the emotions, most notably the so-called 'paradox of tragedy' which aims to make sense of the pleasure audience members take in works of art which traffic in unpleasant emotions such as sadness and pity[130] and the related 'paradox of horror' which focuses on our delight in artistic representations of the terrifying and loathsome.[131] (For a discussion of relevant psychological research on the enjoyment of frightening or violent media, see Hoffner and Levine.[132]) More narrowly, many philosophes working on issues in the individual arts have utilized the resources of cognitive science to help answer philosophical questions about those particular art

forms. For example, the significance of findings about mirror neurons for the philosophy of dance has been hotly debated,[133,134] and there is a growing body of work at the intersection of the philosophy of music and cognitive science on such topics as musical understanding and musical emotions.[135] For more work at the intersection of philosophical aesthetics and cognitive science, see Shimamura and Palmer,[136] Goldie and Schellekens,[137] Currie et al.,[138] and Currie et al.[139] For another overview of cognitive science and aesthetics, see Stokes.[140]

The preceding has shown that the relationship between contemporary aesthetics and cognitive science is a fruitful one. Not only are aestheticians taking on board the results of the cognitive sciences, they are making substantive contributions to the cognitive science themselves—both by cataloguing intriguing aesthetic phenomena and by doing their own experimental research.[1]

REFERENCES

1. Kant I. Critique of Judgment. Trans. J. H. Bernard. Dover, New York, 1790/2005.
2. Wittgenstein L. Lectures and Conversations on Aesthetics, Psychology and Religious Belief. Basil Blackwell, Oxford, 1970.
3. Dickie G. Is psychology relevant to aesthetics? *The Philosophical Review* 1962, 71(3):285-302.
4. Weitz M. The role of theory in aesthetics. *The Journal of Aesthetics and Art Criticism* 1956, 15(1):27-35.
5. Davies S. Definitions of art. Cornell University Press, Ithaca and London, 1991.
6. Dean JT. The nature of concepts and the definition of art. *The Journal of Aesthetics and Art Criticism* 2003, 61(1):29-35.

[1] Meskin and Robson are co-lead authors of this paper.

7. Smith EE, Medin DL. Categories and Concepts. Harvard University Press, Cambridge and London, 1981.

8. Hampton JA. Psychological representation of concepts. In Conway M, ed. Cognitive Models of Memory. The MIT Press, Cambridge; 1997 81-110.

9. Kamber R. Experimental philosophy of art. *The Journal of Aesthetics and Art Criticism* 2011, 69(2):197-208.

10. Pignocchi A. The intuitive concept of art. *Philosophical Psychology* 2014, 27(3):1-20.

11. Gelman SA., Bloom P. Young children are sensitive to how an object was created when deciding what to name it. *Cognition* 2000, 76(2):91-103.

12. Preissler MA, Bloom, P. Two-year-olds use artist intention to understand drawings. *Cognition* 2008, 106:512-518.

13. Seghers E. The artful mind: a critical review of the evolutionary psychological study of art. *British Journal of Aesthetics* 2015, 55(2):225–248.

14. Davies S. The Artful Species. Oxford University Press, Oxford, 2012.

15. Coe K. The Ancestress Hypothesis: Visual Art as Adaptation. Rutgers University Press, New Brunswick, 2002.

16. Guthrie RD. The Nature of Paleolithic art. University of Chicago Press, Chicago and London, 2005.

17. Barham L. Art in human evolution. In Berghaus, G, ed. New Perspectives on Prehistoric Art. Praeger Publishers, Westport, CT; 2004 105-130.

18. Hanauer D. 1998. The genre-specific hypothesis of reading: reading poetry and encyclopedic items. *Poetics* 1998, 26:63-80.

19. Cutting JE. Gustave Caillebotte, French impressionism, and mere exposure. *Psychonomic Bulletin & Review* 2003, 10:319-343.

20. Bruine de Bruin W. Save the last dance for me: unwanted serial position effects in jury evaluations. *Acta Psychologica* 2005, 118:245-260.

21. Ginsburgh VA, Van Ours JC. Expert opinion and compensation: evidence from a musical competition. *American Economic Review* 2003, 93:289-296.

22. Goldin C, Rouse C. Orchestrating impartiality: the impact of blind auditions on female musicians. *American Economic Review* 2000, 90(4):715–741.

23. Zangwill N. Aesthetic judgment. In: Zalta, E, ed. Stanford Encyclopedia of Philosophy; 2009.

24. Bornstein RF. Exposure and affect: overview and meta-analysis of research, 1968–1987. *Psychological bulletin* 1989, 106:265-289.

25. Hume D. Of the standard of taste. In Miller, EF, ed. Essays Moral, Literary and Political. Liberty Classics, Indianapolis; 1985, 226-249.

26. Haan MA, Dijkstra SG, Dijkstra PT. Expert judgment versus public opinion–evidence from the Eurovision song contest. *Journal of Cultural Economics* 2005, 29:59-78.

27. Carlson KA, Bond SD. Improving preference assessment: limiting the effect of context through pre-exposure to attribute levels. *Management Science* 2006, 52:410-421.

28. Sen S. Knowledge, information mode, and the attraction effect. *Journal of Consumer Research* 1998, 25: 64-77.

29. Wilson TD, Lisle DJ, Schooler JW, Hodges SD, Klaaren KJ, LaFleur SL. Introspecting about reasons can reduce post-choice satisfaction. *Personality and Social Psychology Bulletin* 1993, 19:331–9.

30. Irvin S. Is aesthetic experience possible? In Currie, G, Kieran M, Meskin A, Robson, J, eds. Aesthetics and the Sciences of Mind. Oxford University Press, Oxford; 2014 37-56.

31. Lopes DM. Feckless reason. In Currie, G, Kieran M, Meskin A, Robson, J, eds. Aesthetics and the Sciences of Mind. Oxford University Press, Oxford; 2014 21-36.

32. Nisbett RE, Wilson TD. Telling more than we can know: verbal reports on mental processes. *Psychological Review* 1977, 84(3):231-259.

33. Robson J. A social epistemology of aesthetics. *Synthese* 2014, 191(11):2513–2528.

34. Dixon P, Bortolussi M, Sopčák P. Extratextual effects on the evaluation of narrative texts. *Poetics* 2015, 48:42-54.

35. Matravers D. Why we should give up on the imagination. *Midwest Studies in Philosophy* 2010, 34(1):190–199.

36. Nichols S. Imagining and believing: the promise of a single code. *The Journal of Aesthetics and Art Criticism* 2004, 62(2):129-39.

37. Nichols S, ed. The Architecture of the Imagination: New Essays on Pretense, Possibility, and Fiction. Oxford University Press, Oxford, 2006.

38. Harris PL. The Work of the Imagination. Blackwell, Oxford, 2000.

39. Walton KL. Fearing fictions. *The Journal of Philosophy* 1978, 75(1):5-27.

40. Walton KL. Mimesis as Make-Believe. On the Foundations of Representational Arts. Harvard University Press, Cambridge, MA, 1990.

41. Gendler T, Kovakovich K. Genuine rational fictional emotions. In Kieran, M, ed. Contemporary Debates in Aesthetics and the Philosophy of Art. Blackwell, New York; 2006, 241-253.

42. Damasio AR. Descartes' Error: Emotion, Reason, and the Human Brain. Avon Books, New York, 1994.

43. Damasio AR. The Feeling of What Happens: Body, Emotion and the Making of Consciousness. Harcourt, New York, 1999.

44. Cova F, Teroni F. Is the paradox of fiction soluble in psychology? *Philosophical Psychology* 2016, 29(6):930-942.

45. Thomson A., Siegel JT. A moral act, elevation, and prosocial behavior: moderators of morality. *Journal of Positive Psychology* 2013, 8:50–64.

46. Kim S, Hamann S. Neural correlates of positive and negative emotion regulation. *Journal of Cognitive Neuroscience* 2007, 19:776–798.

47. Mocaiber L, Perakakis P, Pereira MG, Machado-Pinheiro W, Volchan E, Oliveira L, Vila J. Stimulus appraisal modulates cardiac reactivity to briefly presented mutilation pictures. *International Journal of Psychophysiology* 2011, 81:299–304.

48. Currie G, Ravenscroft I. Recreative Minds: Imagination in Philosophy and Psychology. Oxford University Press, New York, 2002.

49. Goldman AI. Simulating Minds: The Philosophy, Psychology, and Neuroscience of Mindreading. Oxford University Press, New York, 2006.

50. Moran R. The expression of feeling in imagination. *The Philosophical Review* 1994, 103(1):75-106.

51. Walton K. On the (so-called) puzzle of imaginative resistance. In Nichols, S, ed. The Architecture of the Imagination: New Essays on Pretense, Possibility, and Fiction. Oxford University Press, Oxford; 2006 137-148.

52. Weatherson B. Morality, fiction and possibility. *Philosophers' Imprint* 2002, 4: 1-27.

53. Gendler T. The puzzle of imaginative resistance. *The Journal of Philosophy* 2000, 97(2):55-81.

54. Gendler T. Imaginative resistance revisited. In Nichols, S, ed. The Architecture of the Imagination: New Essays on Pretense, Possibility, and Fiction, Oxford University Press, Oxford; 2006 149-173.

55. Stock K. Resisting imaginative resistance. *The Philosophical Quarterly* 2005, 55(221):607-624.

56. Todd C. Imaginability, morality, and fictional truth: dissolving the puzzle of 'imaginative resistance'. *Philosophical Studies* 2009, 143:187-211.

57. Weinberg J, Meskin A. Puzzling over the imagination: philosophical problems, architectural solutions. In: Nichols S, ed. The Architecture of the Imagination: New Essays on Pretense, Possibility, and Fiction, Oxford University Press, Oxford; 2006 175-202.

58. Nichols S, Stich S. A cognitive theory of pretense. *Cognition* 2000, 74:115-147.

59. Liao S, Strohminger N, Sripada CS. Empirically investigating imaginative resistance. *British Journal of Aesthetics* 2014, 54(3):339–355.

60. Liao S, Gendler T. Pretense and imagination. *Wiley Interdisciplinary Reviews: Cognitive Science* 2011, 2(1):79–94.

61. Gendler T, Liao S. The problem of imaginative resistance. In Gibson, J, Carroll, N, eds. The Routledge Companion to Philosophy of Literature. Routledge, New York; 2016 405–418.

62. Gerrig R. Experiencing Narrative Worlds: On the Psychological Activities of Reading. Yale University Press, New Haven, CT, 1993.

63. Green MC, Brock S. The role of transportation in the persuasiveness of public narratives. *Journal of Personality and Social Psychology* 2000, 79(5):701-721.

64. Nussbaum M. Love's Knowledge. Oxford University Press, Oxford, 1990.

65. Carroll N. The wheel of virtue: art, literature, and moral knowledge. *The Journal of Aesthetics and Art Criticism* 2002, 60(3):3-26.

66. Gaut B. Art, Emotion and Ethics. Oxford University Press, Oxford, 2007.

67. Gerrig RJ, Prentice DA. The representation of fictional information. *Psychological Science* 1991, 2(5):336-340.

68. Prentice DA, Gerrig RJ. Exploring the boundary between fiction and reality. In Chaiken, S, Trope, Y, eds. Dual-process Theories in Social Psychology. Guilford, New York; 1999 529-546.

69. Shrum LJ, Wyer RS, O'Guinn TC. The effects of television consumption on social perceptions: the use of priming procedures to investigate psychological processes. *Journal of Consumer Research* 1998, 24:447-458.

70. Gilbert D, Tafarodi R, Malone P. You can't not believe everything you read. *Journal of Personality and Social Psychology* 1993, 65(2):221-233.

71. Friend S. Believing in stories. In Currie, G, Kieran, M, Meskin, A, Robson, J, eds. Aesthetics and the Sciences of Mind. Oxford University Press, Oxford; 2014 227-247.

72. Ichino A, Currie G. Truth and trust in fiction. In Bradley, H, Sullivan-Bissett, E, Noordhof, P, eds. Art and the Nature of Belief. Oxford University Press, Oxford; forthcoming.

73. Izard C. Psychology of Emotion. Plenum Press, New York, 1991.

74. Gibson J. The information available in pictures. *Leonardo* 1971, 4(1):27–35.

75. Gibson J. The Ecological Approach to Human Perception. Houghton Mifflin, Boston, 1979.

76. Goodman N. Languages of Art: An Approach to a Theory of Symbols. Hackett Publishing, Indianapolis and Cambridge, 1968.

77. Hopkins R. Picture, Image and Experience: A Philosophical Inquiry. Cambridge University Press, Cambridge, 1998.

78. Greenberg G. Beyond resemblance. *The Philosophical Review* 2013, 122(2): 215–287.

79. Abell C. Canny resemblance. *The Philosophical Review* 2009, 118(2):183–223.

80. Gombrich E. Art and Illusion. Phaidon, New York, 1960.

81. Bruner J S, Postman L. On the perception of incongruity; a paradigm. *Journal of Personality* 1949, 18(2): 206–223.

82. Wollheim R. Art and Its Objects. Cambridge University Press, Cambridge, 1980.

83. Wollheim R. On pictorial representation. *The Journal of Aesthetics and Art Criticism* 1998, 56(3):217–226.

84. Lopes D. Sight and Sensibility: Evaluating Pictures. Clarendon Press, Oxford, 2005.

85. Nanay B. Taking twofoldness seriously: Walton on imagination and depiction. T*he Journal of Aesthetics and Art Criticism* 2004, 62(3): 285–289.

86. Nanay B. Perceiving pictures. *Phenomenology and the Cognitive Sciences* 2011, 10(4): 461–480.

87. Nanay B. Aesthetics as Philosophy of Perception. Oxford University Press, Oxford, 2016.

88. Pirenne MH. Optics, Painting and Photography. Cambridge University Press, Cambridge, 1970.

89. Kulvicki J. Pictorial representation. *Philosophy Compass* 2006, 1(6):535–546.

90. Vishwanath D, Girshick AR, Banks MS. Why pictures look right when viewed from the wrong place. *Nature Neuroscience* 2005, 8(10):1401–1410.

91. Matthen M. Seeing, Doing and Knowing: A Philosophical Theory of Sense Perception. Oxford University Press, Oxford, 2005.

92. Jacob P, Jeannerod M. Ways of Seeing: The Scope and Limits of Visual Cognition. Oxford University Press, Oxford, 2003.

93. Westwood DA, Danckert J, Servos P, Goodale MA. Grasping two-dimensional images and three-dimensional objects in visual-form agnosia. *Experimental Brain Research* 2002, 144(2):262–267.

94. Turnbull OH, Driver J, McCarthy RA. 2D but not 3D: pictorial-depth deficits in a case of visual agnosia. *Cortex* 2004, 40(4–5):723–738.

95. Jeannerod M, Decety J, Michel F. Impairment of grasping movements following a bilateral posterior parietal lesion. *Neuropsychologia* 1994, 32(4):369–380.

96. Jeannerod M. The Cognitive Neuroscience of Action. Blackwell, Oxford, 1997.

97. Newall M. Is seeing-in a transparency effect? *British Journal of Aesthetics* 2015, 55(2):131–156.

98. Metelli F. The perception of transparency. *Scientific American* 1974, 230(4): 90–98.

99. Marr D. *Vision:* A Computational Investigation into the Human Representation and Processing of Visual Information. W.H. Freeman, San Francisco, 1982.

100. Goldstein E. Pictorial perception and art, In Goldstein, E, ed. The Blackwell Handbook of Sensation and Perception. Blackwell Publishing, Oxford; 2005 344-378.

101. Kulvicki J. On Images: Their Structure and Content. Oxford University Press, Oxford, 2006.

102. Seeley W. Art, meaning, and perception: A question of methods for a cognitive neuroscience of art. *British Journal of Aesthetics* 2013, 53(4):443–460.

103. Knobe J, Nichols S. An experimental philosophy manifesto. In Knobe, J, Nichols, S, eds. Experimental Philosophy. Oxford University Press, New York; 2008 3-14.

104. Alexander J. Experimental Philosophy: An Introduction. Polity Press, Cambridge 2012.

105. Weinberg J, Nichols S, Stich S. Normativity and epistemic intuitions. *Philosophical Topics* 2001, 29(1/2):429-460.

106. Machery E, Mallon R, Nichols S, Stich S. Semantics, cross-cultural style. *Cognition* 2004, 92(3):1-12.

107. Sytsma J, Livengood J. The Theory and Practice of Experimental Philosophy. Broadview Press, Ontario, 2015.

108. Cova F, Garcia A, Liao S. Experimental philosophy of aesthetics. *Philosophy Compass* 2015, 10 (12):927-939.

109. Cova F, Pain N. Can folk aesthetics ground aesthetic realism? *The Monist* 2012, 95(2):241-263.

110. Meskin A, Phelan M, Moore M, Kieran M. Mere exposure to bad art. *British Journal of Aesthetics* 2013, 53(2):139-164.

111. Burkeman O. Dark clouds gather over "Painter of Light". *Guardian*, 25 March 2006. https://www.theguardian.com/world/2006/mar/25/arts.artsnews

112. Liao S, Meskin A. Aesthetic adjectives: experimental semantics and context-sensitivity. *Philosophy and Phenomenological Research* 2017, 94(2):371-398.

113. Syrett K, Bradley E, Kennedy C, and Lids J. Shifting standards: children's understanding of gradable adjectives. In Ud Deen, K, Nomura, J, Schulz, B, Schwartz, BD, eds. *Proceedings of the Inaugural Conference on Generative Approaches to Language Acquisition - North America (GALANA), Honolulu, HI*. UConn Occasional Papers in Linguistics 4, Cambridge, Mass; 2006 353-364.

114. Syrett K, Kennedy C, Lids J. Meaning and context in children's understanding of gradable adjectives. *Journal of Semantics* 2010, 27(1):1-35.

115. Kennedy C, McNally L. Scale structure, degree modification, and the semantics of gradable predicates. *Language* 2005, 81(2):345-381.

116. Liao S, McNally L, Meskin A. Aesthetic adjectives lack uniform behavior. *Inquiry* 2016, 59(6):618-631.

117. Meskin A, Liao S, Andow, J. Aesthetic testimony: some empirical evidence. Unpublished manuscript, University of Leeds, 2015.

118. Laetz B. A modest defense of aesthetic testimony. *The Journal of Aesthetics and Art Criticism* 2008, 66(4):355-363.

119. Robson J. Aesthetic testimony. *Philosophy Compass* 2012, *7*(1):1-10.

120. Andow J. Aesthetic Testimony and Experimental Philosophy. In Rehault, S, Cova, F, eds. Advances in Experimental Philosophy of Aesthetics. Bloomsbury; forthcoming.

121. Liao S, Meskin A, Knobe J. Dual character art concepts. Unpublished Manuscript, University of Leeds, 2016.

122. Knobe J, Prasada S, Newman GE. Dual character concepts and the normative dimension of conceptual representation. *Cognition* 2013, 127(2):242-257.

123. Gaut B. Mixed motivations: creativity as a virtue. *Royal Institute of Philosophy Supplements* 2014, 75:183-202.

124. Kieran M. Creativity, virtue and the challenges from natural talent, ill-being and immorality. *Royal Institute of Philosophy Supplement* 2014, 75:203-230.

125. Boden M. The Creative Mind: Myths and Mechanisms. Basic Books, New York, 1991.

126. Dutton D. The Art Instinct: Beauty, Pleasure, and Human Evolution. Bloomsbury Press, New York, 2009.

127. Carroll N. The arts, emotions and evolution. In Currie, G, Kieran, M, Meskin, A, Robson, J, eds. Aesthetics and the Sciences of Mind. Oxford University Press, Oxford; 2014 159-180.

128. Korsmeyer C. Savoring Disgust: The Fair and Foul in Aesthetics. Oxford University Press, New York, 2011.

129. Robinson J. Aesthetic Disgust? *Royal Institute of Philosophy Supplement* 2014, 75:51-84.

130. Hume D. Of tragedy. In Miller, EF, ed. *Essays Moral, Political, and Literary*.: Liberty Classics, Indianapolis; 1985 216–225.

131. Carroll N. The Philosophy of Horror, or Paradoxes of the Heart. Routledge, New York, 1990.

132. Hoffner CA, Levine KJ. Enjoyment of mediated fright and violence: a meta-analysis. *Media Psychology* 2005, 7(2):207-237.

133. Montero B. Proprioception as an aesthetic sense. *Journal of Aesthetics and Art Criticism* 2006, 64(2):231-242.

134. Davies D. ‘I’ll be your mirror?’ embodied agency, dance, and neuroscience. In Schellekens, E, Goldie, P, eds. The Aesthetic Mind: Philosophy and Psychology. Oxford University Press, Oxford; 2011 346-356.

135. Raffman D. Music, philosophy, and cognitive science. In Gracyk, T, Kania, A, eds. The Routledge Companion to Philosophy and Music. Routledge, London and New York: 2014 592-602.

136. Shimamura AP, Palmer SE. Aesthetic Science: Connecting Minds, Brains and Experience*.* Oxford University Press, New York, 2012.

137. Schellekens E, Goldie P, eds. The Aesthetic Mind: Philosophy and Psychology. Oxford University Press, Oxford, 2011.

138. Currie G, Kieran M, Meskin A, Robson J, eds. Aesthetics and the Sciences of Mind. Oxford University Press, Oxford, 2014.

139. Currie G, Kieran, M, Meskin A, Moore M, eds. Philosophical Aesthetics and the Sciences of Art. Royal Institute of Philosophy Supplement, Volume 75. Cambridge University Press, Cambridge, 2014.

140. Stokes D. Aesthetics and cognitive science. *Philosophy Compass* 2009, 4(5):715–733.