Experimental philosophy of imagination and creativity

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Forthcoming in A. Kind and J. Langkau (eds.). *Oxford Handbook of Imagination and Creativity*.

Abstract: This chapter presents and contextualizes empirical work done by philosophers on imagination and creativity. It also suggests new directions for future empirical research. It is argued that empirical work on these (and other topics) is not just beneficial but necessary for philosophy of imagination and creativity. Further, it is argued that this work must sometimes be done by philosophers, and it is also often best done by philosophers. Topics discussed include imaginative resistance, counterfactual imagination, scientific imagination, distinguishing imagination from other mental states (e.g., supposition, memory), vividness of imagination, AI imagination, creativity and praiseworthiness, creativity as a virtue, and AI and creativity.

Keywords: imagination; experimental philosophy; imaginative resistance; counterfactual reasoning; scientific imagination; memory; vividness; creativity; artificial intelligence

This chapter has three aims: to argue that empirical methods are beneficial and necessary for philosophers interested in imagination and creativity; to present empirical work done by philosophers on imagination and creativity; and finally, to suggest new directions for empirical research.

Briefly: empirical methods are beneficial for philosophy of imagination and creativity because they produce results that can be used to criticize, complicate, support, or inform existing philosophical accounts, as well as to inspire new accounts. Empirical methods are necessary because philosophy of imagination and creativity requires empirical information. They can get this from elsewhere, but non-philosophers will often be disincentivized to produce that information, so philosophers must produce it themselves. This doesn't mean that all philosophers interested in imagination or creativity need to train in scientific methods. But if we want to do philosophy properly, at least some must.

1. Experimental philosophy

Following other philosophers, we can distinguish between "narrow" and "broad" conceptions of experimental philosophy (henceforth "xphi") (e.g., Rose and Danks 2013; Stich and Tobia 2016; Sytsma 2017).

1.1 The narrow conception of xphi

The narrow conception portrays xphi as a reaction to a certain style of doing philosophy. That style aims to produce definitions of concepts in terms of necessary and sufficient conditions. Philosophers might propose a candidate definition for some concept, which would be probed by means of thought experiments or imaginary "cases." Thinking about these cases should produce

intuitions, which function as evidence for or against the proposed definition, which would be revised in response. This process continues until we are satisfied by the definition.

Narrow xphi attacks the idea that intuitions can be a source of evidence (Sytsma 2017). It has been split into two "programs". The "negative program" takes experimental results to show that the intuitions produced by philosophical thought experiments are not as universal or as stable as they would have to be in order to serve as evidence. For example, experimental philosophers have shown that by manipulating "merely presentational" features of thought experiments, including the font, order of presentation, surrounding physical environment, etc., they can manipulate the intuitions produced in ways that suggest that our faculty of intuition does not track the truth concerning philosophical concepts (e.g., Weinberg et al. 2012). As a result, they suggest that intuitions should not be trusted as evidence. Others allow that intuitions can be evidence, while insisting that experimental methods are needed to tell us when this is the case (Alexander 2012, see also Fischer and Engelhardt 2017). The "positive program" uses experimental methods to push philosophy in new directions by finding patterns of intuitions in participants that suggest new philosophical accounts. In both cases, xphi is about testing philosophical intuitions.[1]

1.2 The broad conception of xphi

Broad xphi differs from narrow xphi in at least three respects: a) it need not be strictly-speaking experimental, in the sense that it might involve other empirical methods such as qualitative methods, b) it can investigate the intuitions of anyone, not just the folk or philosophers, and c) it can investigate things other than intuitions, for example, by investigating any other mental state

[1] There are many criticisms of both negative and positive narrow xphi, and many replies to those criticisms. For overviews see Sytsma and Livengood (2015), Machery (2017), Bach (2024), and Horvath (2010).

or process with any kind of content. This counts as *philosophy* because the empirical results are used to address philosophical questions (Rose and Danks 2013).

For Rose and Danks, broad xphi satisfies two conditions. The first is a commitment to the claim that "empirical data are relevant to certain philosophical questions." The second is that experimental philosophers must themselves actually conduct the experiments (Rose and Danks 2013, 515). The second condition allows us to distinguish xphi from merely empirically informed philosophy (Prinz 2007), which is philosophy that employs empirically generated data that was not produced by philosophers.

Adopting the broad conception of xphi is helpful for avoiding difficulties in defining intuition, and by unlocking new methods and new objects at which to aim those methods. Under the broad conception of xphi, philosophers are encouraged to employ questionnaires, surveys, interviews, oral histories, archival methods, ethnographic methods, narrative analysis, corpus analysis, eye-tracking experiments, fMRIs, and whatever other methods might be helpful in addressing philosophical problems. For the rest of this chapter, I will refer to any philosophy that adopts the above methods as (broad) xphi.

The next section will argue in favour of broad xphi by showing that its main rival, empirically informed philosophy, is not enough to achieve the epistemic aims of philosophers interested in imagination and creativity. While I will argue in favor of the use of empirical methods, I do not claim that we should avoid traditional methods like conceptual analysis, conceptual engineering, reflective equilibrium, deduction, induction, argument mapping, and so on. Every inquiry, including those performed by scientists, makes use of such methods. Rather, the question is whether philosophers working on imagination and creativity ought to do their own empirical research some of the time.

2. Why xphi?

Even if empirical data is relevant for philosophy of imagination and creativity, a lot of good work can be done without requiring philosophers to generate such data. If Knobe is correct, this is now the dominant way of doing philosophy of mind (Knobe 2015): we draw on information from neuroscience, psychology, and sociology and use that to motivate or support our arguments.[2] Prominent examples of this in philosophy of imagination include Currie and Ravenscroft (2002), Johnson (1993), Langland-Hassan (2020), Addis (2020), Nanay (2023; 2021; 2010), and in philosophy of creativity: Gaut (2010), Kronfeldner (2010; 2018), Sowden, Pringle, and Gabora (2015), Stokes (2007; 2011; 2014), Berkowitz (2010), Carruthers (2002), and Shevlin (2020). But can we answer *all* our philosophical questions about imagination and creativity by drawing on empirical information produced by non-philosophers?

We want to know how *best* to characterize imagination and creativity. We want to know how to imagine *well*, and what is so *good* about creativity. Those who use empirical methods outside of philosophy are unlikely to extract *norms* for the use of imagination/creativity. Rather, they show that people reason like *this* or like *that*. This is because publication standards in cognitive science and psychology favor descriptive work that identifies cognitive mechanisms. An intermediate step could take us from how people reason to how people *ought* to reason by testing how people evaluate uses of imagination made by others, for example. And this is precisely what experimental philosophers do by employing vignettes about (real or fictional) people who reason

[2] For an illuminating metaanalysis of how philosophers of mind actually use empirical sources, and what they use them for, see Yan and Liao (2023).

in certain ways, and then get participants to evaluate the agents in those vignettes (e.g., see Dranseika, McCarroll, and Michaelian 2021).

Qualitative methods used by psychologists and social scientists often aim to uncover the norms underlying social practices, so the kind of data produced using those methods can be very useful for philosophers (Kauppinen 2007). But again, psychologists and social scientists tend to stop when they've identified the social meanings and norms underlying a practice. They are not usually interested in probing *why* those meanings and norms evolved, or whether those norms are themselves justified.

In sum, while much of the empirical data philosophers need *could* be produced by non-philosophers, it often won't be. Collaborating with scientists or getting training in empirical scientific methods becomes necessary if we really want an exhaustive philosophy of imagination and creativity.

In the next section, I will consider specific issues in the philosophy of imagination and creativity that empirical methods could be (and in some cases, already have been) used to address.

3. Xphi of imagination

3.1. Imaginative resistance

"Imaginative resistance" is a term that philosophers use to refer to the difficulty people can have when trying to imagine something (for overviews see Gendler and Liao 2016; Miyazono and Liao 2016; Tuna 2020). It is easy to imagine dragons frolicking in the autumn mist or shapeshifting aliens, but it is difficult to imagine that torturing an innocent person for fun is a good thing to do. There is a growing literature on the topic, which is perhaps due to its sitting at

the intersection of many broader issues, including about: the relations between aesthetics and ethics, ethics and psychology; the difference between imagination and supposition; truth in fiction; and the limits of an author's authority. Addressing imaginative resistance using empirical methods seems natural because its existence, nature, and psychological explanation are all partially empirical questions.

Most of the empirical work done on this topic focuses on identifying the factors that are causally relevant for producing imaginative resistance. Early work built on the insight that what is resisted in cases of imaginative resistance is not just a proposition, but a proposition-in-a-context. One important context-defining element is genre. Liao, Strohminger, and Sripada (2014) presented participants with a scenario from Greek mythology. Those who were more familiar with the conventions of Greek mythology experienced less imaginative resistance with the morally repugnant conclusion of the story. In a second study, they presented participants with a story in which a new mother gives up her daughter for human sacrifice, written in a police procedural (realist) style and in the style of an Aztec myth. They showed that participants in the latter condition experienced less imaginative resistance.[3]

One important contention in the literature that is amenable to empirical study is the idea that the only or best examples of imaginative resistance concern propositions that go against what we believe to be morally or aesthetically correct. Call these counter*evaluatives*. These are thought to be more difficult to imagine than counter*descriptives*. Is this true? Kim, Kneer, and Stuart (2018) presented participants with vignettes that featured either a counterevaluative or a

[3] See also Black, Capps, and Barnes (2018), who show that there is less imaginative resistance, for both moral and non-moral statements, among people who have greater familiarity with literature, especially science fiction, fantasy, and contemporary literature. Interestingly, those who preferred romance and mystery tended to experience *more* imaginative resistance. For more by these authors, see Black and Barnes (2019), (2017), (2020), and Barnes and Black (2016).

counterdescriptive. The vignettes varied in terms of how "extreme" or "weird" they were. While counterevaluatives did seem to generate more imaginative resistance, this difference disappeared once the degree of weirdness was controlled for. The authors conclude that counterevaluatives aren't inherently more difficult to imagine; it's just that we encounter them less often. This supports the claim of Liao, Strohminger, and Sripada (2014) that imaginative resistance should be explained at least partially in terms of processing (dis)fluency.[4]

Emotion is another factor that might play a role in the experience of imaginative resistance. Campbell et al. (2021) use empirical methods to show that, indeed, the more negative affect a participant experiences in response to a counterevaluative, the more imaginative resistance they experience.

How do readers actually "cope" with imaginative resistance when it happens? Altshuler and Maier (2022) identify two strategies: take the offending passages merely to present the perspective of one of the characters in the fiction, or that of an implicit narrator. When the author does not explicitly endorse the claims, we need not (try to) take those claims as true, either in the real world or in the fiction, and our resistance disappears. Using survey methods, they find both strategies employed by people who encounter texts that typically cause resistance.

Imaginative resistance is probably the issue related to imagination and creativity that has profited most from the use of empirical methods. Still, we have barely scratched the surface. Here are a few claims drawn from the literature that could be explored using empirical methods.

[4] For more experimental philosophy concerning which possibilities seem "normal," see Icard, Kominsky, and Knobe (2017), Bear et al. (2020).

- Moral realists are more susceptible to imaginative resistance than anti-realists (Todd 2009, 196).
- Imaginative resistance can develop and change as we engage with a fiction over time (Sauchelli 2019).
- The socio-historical-cultural context of the audience can create resistance. For example, it might be easier to imaginatively "go along with" certain "rough heroes" (like Han Solo) than an equivalent "rough heroine," because rough heroes conform with cultural gender norms and rough heroines do not. The claim is that we experience imaginative resistance because *our culture* upholds those norms, even if we reject them (Clavel Vázquez 2018).
- The more poetic license we give to the author of a work, the less resistance we experience (Rosenbaum 2016).
- Imaginative resistance can be explained in terms of the interplay between the content of an imagining on the one hand, and constraints due to physical embodiment on the other (Savojardo 2022).

3.2. Imagination and counterfactual reasoning

When we think about different ways the world could have been, we are engaging in counterfactual reasoning. This kind of thinking is crucial for ethics (Byrne 2020; Mandel and Dhami 2005), law (Harper 1931; Spellman and Kincannon 2001), collective action (Milesi and Catellani 2011), and creating meaning and a sense of self (Kray et al. 2010). It is also thought to be important for knowing whether something is possible. The means for evaluating a counterfactual is often thought to be via imagination. For example, I can imagine myself putting on different socks, and conclude that yes, it's possible that I could be wearing different socks. This view has been called "a plausible part of common sense" (Kung 2016, 448), and forms of it

have been defended at least since Descartes and Hume (Gendler and Hawthorne 2002, 13ff). But what if we want to know whether humans and dinosaurs could have overlapped on Earth, or whether it's possible that we're currently living in a simulation? Interpersonal differences in imagination become relevant in difficult cases like these, and at the same time, how much work the imagination is actually doing, necessary though it might be, becomes less clear.

What have empirical methods taught us? De Brigard, Henne, and Stanley (2021) portray counterfactual reasoning as imaginative mental simulation, where consideration of the antecedent sets off a mental simulation of a possible world, in which we check to see if the consequent is true. Empirical methods were employed to see how people's judgments of similarity between the possible world and the actual world affects how plausible people think a given counterfactual is. This was done by asking participants to imagine possible worlds related to a counterfactual, and then to either consider similarities or dissimilarities between the possible and actual world. Those who considered similarities found the counterfactual more plausible, while those who considered dissimilarities found the counterfactual less plausible. To go further, the authors suggest looking at how conscious attention focuses imagination.

Counterfactual reasoning is also tied to the fields of logic and philosophy of language, in which formal models of counterfactual reasoning have been debated for at least five decades. One interesting debate concerns "counterpossibles," which are counterfactuals with impossible antecedents. While it's impossible that I could have been born a dolphin and still be me, it still seems right to say that *if I had been* born a dolphin, I would have dolphin parts instead of human parts. The orthodox view in counterfactual semantics is that all counterpossibles are true. The reason is that evaluating a counterfactual proceeds by identifying the nearest possible world in which the antecedent is true, and then checking to see whether the consequent also holds in that

world. Since there is no world in which the antecedent is true (because it's impossible), the conditional comes out as trivially true in the same sense that any conditional with a false antecedent is true: by definition. This position has been labelled "the vacuity thesis."

McLoone, Grützner, and Stuart (2023) test this thesis on biologists, who use theoretical models that involve impossibilities (see also McCall 2012). They found that biologists conclude that some counterpossibles are interestingly true (i.e., not trivially true), and others are false. The reasons given hinge on the mathematics of the model, not the modal status of the antecedent. If mathematical model-based reasoning in science is good reasoning, then the vacuity thesis should be rejected as a descriptive account of how people reason, and as a normative account of how people should reason.

There are many other claims about counterfactual reasoning calling out for empirical work. Here are a few.

- Counterfactual reasoning is best understood using Kendall Walton's make-believe account of fiction (Iranzo-Ribera 2022).
- The epistemic goal of counterfactual imagination is not modal knowledge, but modal *understanding* (Vaidya 2010).
- People with more vivid imaginations are better at counterfactual reasoning (Myers forthcoming).
- Imagination plays a role in other, less-studied kinds of counterfactuals, like semifactuals (counterfactuals with false antecedents and true consequents) (McCloy and Byrne 2002), and semi-fictions (fictions which, as far as we know, might be true of the real world) (Knuuttila and Koskinen 2021).

- The norms governing counterfactual imagination are best accounted for using the "impossible worlds" framework in modal logic (Berto 2017; 2021; 2023).

3.3. Imagination in particular domains

Qualitative methods have been used to study *scientific* imagination (Stuart 2019c; 2022a; forthcoming; Stuart and Sargeant forthcoming b), finding that scientific imagination is only approved of for solving maximally specific problems, and only as a last resort (Stuart 2019). Also, while attitudes about the importance of mathematical reasoning, humor, and emotion were consistent across participants, attitudes towards imagination differ depending on whether a scientist is a member of a traditionally underrepresented group and how advanced they are in their career (e.g., graduate student vs principal investigator). Scientists who are early career and/or a member of an underrepresented group tend to have a more negative view about the strength of their own imagination, and about the importance of imagination for science (for discussion, see Stuart and Sargeant forthcoming a). Finally, imaginings appear to be evaluated in ways that are consistent with virtue, deontic, and consequentialist epistemologies. But *when* these frameworks are deployed depends on the temporal relation between the scientist and the imagining being evaluated. When talking about past imaginings, scientists use consequentialist norms. When talking about the use of imagination to solve current, open-ended problems, they use deontic norms. When talking about imagination in general, or in the future, they use virtue theoretic norms. However, their use of these different frameworks seems to be justified by a deeper commitment to consequentialism (Stuart 2022a).

Many more questions about scientific imagination deserve empirical treatment. For example,

- What kinds of imagination are there in the different subfields of science?

- Are there some subfields that employ more sensory, as opposed to more conceptual or propositional imagination?
- How do scientists imagine *together*, that is, are there different norms governing social uses of scientific imagination?
- How do scientists extend the use of their imagination using tools (Stuart 2022b)?

All the same questions could and should be asked for imagination in art, law, architecture, engineering, philosophy, and so on. Doing so is the only way we will ever create a complete map of the human imagination, and empirical methods are required for providing answers.

3.4. Disentangling imagination from related mental states

There are many mental states that are similar to or interact closely with imagination, including belief, supposition, conception, perception, memory, dreaming, and hallucinating (Balcerak Jackson 2016; Arcangeli 2017; Sánchez-Dorado 2020; Stokes 2014; Macpherson and Dorsch 2018; Miyazono and Tooming 2022; Kind 2023). The only empirical studies performed by a philosopher that have tried to tease some of these apart appear in Dranseika (forthcoming). In one study, participants were randomly assigned triples of five mental states – seeing, dreaming, hallucinating, imagining, and remembering – and asked to say which of the three felt the most dissimilar to the other two in terms of what it feels like to have those states. The closest pairs were dreaming and imagining, and dreaming and hallucinating, while seeing and dreaming were judged as feeling the least similar to one another. The next study looked at pairs of mental states instead of triples and found that dreaming and imagining were rated as feeling the most similar, with hallucinating and remembering being rated as feeling the least similar. In still another study, Dranseika identified order effects such that hallucinating feels like seeing, but seeing does not

feel like hallucinating. Finally, some of the clustering was found to be explainable in terms of how likely it was that participants would think that someone might mistake being in one mental state when they were really in another. This was itself explained in terms of metacognitive transparency. A state is metacognitively transparent when it is typically clear to the agent that they are in that state, when they are. Seeing, remembering and imagining were judged to be metacognitively transparent while hallucinating was opaque.

These studies focus on comparing the phenomenology of five key mental states. Another pair of mental states that would be profitable to compare is imagination and supposition, although not all the proposed differences are phenomenological, for example, supposition is thought to differ from imagination in that it essentially has an epistemic aim, it has a weaker connection to emotion, and is thought to be immune to imaginative resistance. Recently, Kind (2023) has argued for a different way to understand their similarities and differences, such that imagining requires more or less skill, while supposing does not. Empirical studies would be helpful here, both to test the claims made by philosophers, and to canvass for new and interesting ways that non-philosophers think of these related states/processes.

In the literature on imagination and memory, *simulation theorists* claim that there is no fundamental difference between imagination and episodic memory (Michaelian 2016), while causal theorists claim that episodic memory requires a causal connection to an experienced event stored in memory (Martin and Deutscher 1966). Middle-path views complicate this picture. For example, McCarroll (2022) argues that while all memories have a mind-to-world direction of fit, some imaginings have a world-to-mind direction of fit, such as when we imagine things in order to motivate ourselves to act. We could use empirical methods to contribute to these debates, by

testing the descriptive and normative adequacy of existing accounts of the relation between these two kinds of process, perhaps expanding the problem and solution space.

Other questions that seem empirically testable:

- How does perspective feature in imagination vs. other mental states (like memory, supposition, etc.)?
- How does the experience of the self feature in imagination and other mental states? (For some xphi results on this topic, see Lin and Dranseika 2021).
- Do people value these closely related mental states in different ways when they appear in the same context (e.g., is imagination worse than memory when it comes to getting the truth)?
- When and how do these states overlap? For example, cryptomnesia is where we take ourselves to be imagining, but we are actually remembering – what goes on in such cases? (See McCarroll and Sant'Anna 2023 for empirically testable hypotheses).

3.5. Vividness

Philosophers disagree about whether imaginative vividness is a coherent notion. Is it a natural kind, or a cluster concept? While the competing philosophical arguments are all supported by empirical evidence from natural science, it seems that this topic should also be investigated using empirical methods. The main issue seems to concern how the "substrates" of vividness are related. Everyone agrees that vividness has something to do with things like clarity, level of detail, brightness, intensity, and perception-likeness. Kind argues that none of these are sufficiently well-worked out such that their combination could capture vividness in a theoretically useful way (2017), while Tooming and Miyazono argue that these form a property

cluster with a common core, explained in terms of the availability of sensory information (2020), and Langkau argues that these features clump into two importantly different notions with different functions (2021).

3.6. Imagination in machines

To what extent can imagination be programmed into machines? Of course, the answer will depend on what we mean by "imagination." If we focus on unconscious imagination (for discussion see Stuart 2019a; Brogaard and Gatzia 2017; Nanay 2021; Kind 2021), then the metaphor of machine imagination looks somewhat plausible: several machine learning algorithms (e.g., AlphaGo, AlphaStar, AlphaZero, MuZero) learn associations in a bottom-up way, and run through the consequences of various in-game decisions to decide on a strategy, without any of this being conscious. Or instead, we might focus on sensory imagination. For example, Kind highlights cases of very imaginative people like Nikola Tesla and Temple Grandin who manipulate mental imagery as a way of experimenting with designs (2018). Can machines do this? Well, algorithms can invent and manipulate graphical representations to produce new and useful designs (e.g., Krenn, Erhard, and Zeilinger 2020). Perhaps whether we want to call this "imagination" depends on whether we want to say that the machine has the right kind of mental attitude towards those representations, or whether it is sufficiently free or intentional in its "actions," or something else. For a final example, Langland-Hassan identifies one kind of imagination as "the having of rich, elaborated sequences of thought about the possible, fantastical, or unreal, in an epistemically blameless way" (2020, 264). What are the relevant senses of "rich," "elaborated," "thought," "possible," "fantastical" and "blameless" such that we can decide whether current or future algorithms satisfy them? Empirical investigations into these concepts might prompt fruitful discussion.

Finally, if imagination is a thick concept, i.e., one we use both descriptively and evaluatively in a way that cannot be disentangled, such that imagination is a certain kind of mental faculty that it is *good* to have (Jones 2023), then whether something counts as an imagining will depend on both cognitive and evaluative properties. Or we might think of imagination as a dual character concept, which is a kind of concept that has both descriptive and evaluative satisfaction conditions, but these conditions can be satisfied individually. For example, following Reuter (2019), ARTIST is a dual character concept because you can be a *bad* artist and still be an artist. Imagination might be a thick concept or a dual character concept, and which it is might depend on the context. This is an empirical question relevant for determining whether machines can imagine because we might first be required to identify the evaluative features of imaginings in order to decide when something counts as one. Are there algorithms that imagine "well enough" to satisfy the evaluative component of imagination? Does being a member of a particular professional group, e.g., computer scientists, scientists of other kinds, legal professionals, artists, philosophers, etc., change the evaluative component of imagination such that the same algorithms count as imagining for some groups but not others?

3.7. Other topics

There are many other topics in the philosophy of imagination that could benefit from the use of empirical methods by philosophers. Here is a very brief list: Transformative experience and imaginative scaffolding, emotions that arise in imaginatively engaging with fiction (the "paradox of fiction"), the dynamics of how imaginings evolve over time (Morales Carbonell 2024), the role of imagination in various kinds of therapy, imagination and mental health, imagination and empathy, imagination and guilt, imagination and envy, imagination and metaphor, social imagination, imagination and credit, sociotechnical imaginaries, and imagination and (moral)

education. One final topic is aphantasia (see Blomkvist, this volume). While philosophers are developing much needed theoretical frameworks to understand this phenomenon (Arcangeli 2023; Blomkvist 2023; Whiteley 2020), there is only one empirical study performed by a philosopher (Humbert-Droz 2019). There will be a great deal more philosophical interest in aphantasia, and to go along with that, we will need more empirical information produced by (or at least in cooperation with) philosophers.

4. Empirical Philosophy of Creativity

Given that imagination is required for, or useful for, or involved in, being creative (see Arcangeli, this volume), many of the empirical findings on imagination will find a place in accounts of creativity. We could also perform empirical studies on the relation between imagination and creativity. How do people see this relation? Is it constitutive or correlational? Causal, or definitional?

Further, we should perform studies on the nature of creativity itself. Typically, philosophers claim that creativity requires novelty and value, with some accounts adding conditions like expertise, flair, or intentionality (Sternberg and Lubart 1999; Boden 2003; Gaut 2010; Stokes 2008). Hills and Bird have argued that we should include imagination as a necessary condition on creativity, and drop value (Hills and Bird 2019). Sánchez-Dorado (2020) has argued that creativity is a thick concept, in the sense that its descriptive and evaluative conditions are entangled. As above, we might think of creativity as a dual character concept instead (Reuter 2019), or as sometimes thick and sometimes dual character. Thus, something might be creative if it is novel but not valuable in some contexts, while in other contexts the value condition is

necessary. Empirical study could be used to identify which of these characterizations is correct, if any, and what elements of the context predicts the kind of concept creativity is.

Creativity comes in degrees. But what makes one person more creative than another? Is it just the degree of novelty, or value, or both, in their creations, or is it personal characteristics like their degree of control, background knowledge, determination, motivation, open-mindedness, or something else? Are there interactions between these aspects, or cross-cultural differences in which are thought to be most central (Paletz, Peng, and Li 2011)?

Answers to these questions would also be helpful in addressing issues about AI and creativity (see Langland-Hassan, this volume). For example, it is natural to think that whether an AI can be creative depends on whether it is "free" and "open-minded," properly "motivated" and "in control." But which senses of these terms is best (Boden 2003; Langland-Hassan 2020; Halina 2021)? Existing empirical work shows that while the folk appreciate the output of an algorithm as art, they do not accept the algorithm itself *as an artist* (Mikalonytė and Kneer 2021; see also Horton Jr, White, and Iyengar 2023). Further work should certainly be done to find out exactly what AI is missing (if anything) that prevents it from being credited as creative.

On the topic of credit, Anscomb suggests that a person's role in a collaboration determines how much creative autonomy they have. For example, project leaders determine the methods and objectives of a work, while technicians and assistants only have power to make smaller decisions (Anscomb 2020). This correlation between autonomy and credit has been verified experimentally by Moruzzi (2022). To go further, it would be interesting to test whether scientists, artists, and the folk agree that autonomy is the *main* factor in determining credit for creative outputs, to locate "phrase transition points" at which relatively small increases in autonomy lead to relatively large increases in credit, and to see how autonomy interacts with other determinants of

credit. Returning to the question of AI and creativity, Khosrowi, Finn, and Clark (2023) argue that AI can be part of collectives. On their account, each member of the collective should get credit according to their level of input relevance, non-redundancy, control, time/effort, originality, leadership, independence, and directness. Empirical methods could be used to test the relative importance of each of these factors in both folk and professional attributions of credit for creativity.

Finally, creativity is thought to be a *virtue* (Kieran 2014a; 2014b; 2018b) because "being a creative person is either a partial constituent of or one of the multiple realisers for a good, flourishing, fulfilling life" (Kieran 2018a). However, creativity is also associated with certain vices, like vanity and narcissism (Kieran 2018a). There is a tension here: if creativity is valued because it makes life better, and being vain makes one more creative, then we have reasons to be vain. But being vain does not make life better: it a vice. Kieran summarizes the empirical evidence on the positive correlation between creativity and vanity and argues that while vanity can cause people to set high standards for themselves, take greater risks, and be highly motivated, it also tends to corrode collaborative relationships, makes one blind to failure points, and causes one to take up conservative aims to please critics and the crowd. However, Kieran argues that while vanity is not necessarily tied to creativity, it can still lead to genuine creative virtue, insofar as the search for adulation leads one to search for genuine value. Plausible as they are, Kieran's arguments are driven by intuition, so empirical work by philosophers would be useful in testing and extending them.

We can still go still deeper and ask why we think creativity makes life better. Kidd (2021) distinguishes between horizontal and vertical explanations of the value of creativity. Horizontal explanations refer to existing institutional, social, and incentive structures, while vertical

explanations look to something more basic, like human nature or the divine. Kidd's preferred vertical explanation is Marx's: creativity emancipates us from existential alienation. It is our nature as humans to want to exercise our creative agency, and the more we do, the more authentically we live. Using creativity to overthrow structures that decrease our autonomy and freedom, whether through political, scientific, artistic, or humanistic means, doubly celebrates our creativity. It would be interesting to see whether and how horizontal and vertical explanations of creativity resonate with creatives in various fields and with the folk, and to what extent they interact with each other.

5. Conclusion

I have suggested that empirical methods are necessary for philosophy of imagination and creativity. After choosing a research question, philosophers of imagination and creativity ought to identify what kinds of empirical information are relevant, and whether the required information already exists. If not, they must decide whether to wait for it or to produce it themselves. They should seriously consider producing their own data when searching for answers to normative questions, e.g., how best to distinguish closely related concepts, how to evaluate uses of imagination, who to praise for creative work and why, and so on.

I also showcased some empirical work being done on imaginative resistance, counterfactual reasoning, imagination in particular domains, aphantasia, imagination and closely related states, vividness, imagination in machines, and creativity. I tried to highlight as many possible directions for new empirical research that I could, but my choices reflected my own experience in the field, and I will inevitably have missed very many.

Acknowledgments

Thanks to Amy Kind and Julia Langkau for inviting me to contribute to this volume, and for helpful comments throughout. Thanks also to Ying-Tung Lin and Chris McCarroll for discussion on an earlier draft of the paper.

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