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Philosophising About Creativity

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We live in a creativity-obsessed society. Many of our heroes, whether in science, technology or art, are celebrated because of their creativity; entire professions think of themselves as composed of 'creatives', and many of our education policies and priorities are directed at enhancing creativity (Robinson and Aronica 2016). Given this interest, it is no surprise that work on creativity and associated phenomena in disciplines such as psychology has boomed over the past sixty years or more (Sawyer 2012). In contrast, over the same period, philosophy has had comparatively little to say on the topic, despite the fact that philosophers as great as Plato and Kant have made significant contributions to it. Things have, however, started to change in the last fifteen years or so, and one can chart the rise in philosophical interest in creativity through a series of anthologies: Gaut and Livingston (2003), Krausz, Dutton and Bardsley (2009), and Paul and Kaufman (2014). The present volume builds on these volumes, along with other recent writings in the philosophy of creativity, to help advance and shape the emerging field of the philosophy of creativity. We have asked twenty philosophers, each prominent in his or her field, to write about creativity; for many of them, this is the first time that they have published on the topic. The topics discussed are wide-ranging: whether creativity is a virtue, its connection or lack thereof to value, its relation to agency, whether it can be explained and if so how, and how it operates in multiple domains, including philosophy, mathematics, art, morality and politics. These issues are discussed from a variety of perspectives, sometimes

opposing ones. As groundwork for understanding the positions advanced, the present chapter first surveys the state of the art in some central issues in the philosophy of creativity, and then summarises the papers in the volume.

1. The Background

1.1 Philosophy and Creativity

Why should we be interested in creativity from a philosophical point of view?

First, clarifying the nature and value of creativity is important given everyday beliefs about creativity and the value attached to it. Assumptions about what creativity is, why it is valuable and how to promote being creative might be paradoxical or deeply misguided. Society tends to uncritically celebrate and promote creativity, but can't some kinds of creativity be bad, for instance that of terrorists or torturers? And we need to know if policies or practices can achieve what they set out to do and, if not, what we should be aiming for instead (Robinson and Aronica 2016).

Second, as noted, psychology has had much to say about creativity. Philosophical approaches may cast light on or challenge assumptions made in psychology and vice versa. Intellectual progress can be made when problems from one domain are addressed by another or worked on together across disciplines. Psychological measures of creativity, such as Guildford's Alternative Uses Test and the Torrance Tests of Creative Thinking, often involve asking people to imagine as many novel associations or unusual uses for an object as possible. Yet if, as some philosophers argue, creativity involves a value condition or certain kinds of dispositions, then these measures can only be testing an element of creative potential. Philosophical work can also challenge psychological assumptions by bringing to bear alternative explanations. There might be, for example, good philosophical reasons for

holding that delusions involve imaginings rather than corrupted or irrational beliefs (Currie 2000, Gerrans 2014). Conversely, empirical work can pose challenges for philosophy. Many philosophers along with scientists often assume that the functionality of mental imagery underwrites abilities such as perceptual framing, memory, spatio-temporal manipulation and perceptual imaginings (Lacey and Lawson 2013, Thomas 2017). It is also common to assume that imagery plays a key role in creativity (Bailes and Bishop 2012, Chavez 2016). Yet some psychological work suggests that many people lack any experiential sense of mental imagery without thereby impacting the ability to perform associated mental tasks (Phillips 2014). This could pose a problem for linking mental imagery with creativity or push philosophers to come up with different accounts of the representational role of imagery (Phillips 2014) or the nature of mental imaging (Thomas 2009, 2017: 4.5).

So thinking philosophically about creativity may advance our understanding of central issues, take up challenges from elsewhere and inform practical attitudes.

1.2. Constraints on Defining Creativity

Defining just what constitutes creativity is a controversial matter. Most people assume that there is a univocal sense to 'creativity' that any definition should seek to capture, though it could be that there are distinct, related senses (Wreen 2015). A factory worker may create a new screw, by pressing materials on a machine to make this particular new token of a type that he has instantiated many times before. The worker is creative in the sense of bringing a new token into the world. Yet we would not ordinarily describe the act as creative since the term is normally used to pick out something much more demanding; in particular that what is created must be interestingly new in relation to the kind of thing that has gone before. If this is the

sense of creativity we are interested in, then a constraint on any adequate definition must be the element of novelty.

But things can be new in trivial ways, so some have sought extra conditions. For instance, Boden also requires that the new thing be surprising (Boden 2004: 1). A number of questions arise. Must it be surprising to the person involved, or to those making the judgement? And must this be a condition for all creative acts as such? Perhaps if someone were regularly creative, we would not be surprised by her output. Others have required that the creative item not be obvious (Grant 2012), and similar questions arise about to whom it should not be obvious.

Many philosophers have argued that creative acts have to be defined not just in terms of output features but also the process that gives rise to them. One way to show why is to consider the relationship between originality and creativity. In principle something can be original without being the upshot of creativity. Scientific discoveries such as identifying quinine as an anti-malarial agent or Alexander Fleming's famously abandoned Petri dish containing a variety of Penicillium can result from uncreative, fortuitous accidents. A child enjoying playing could accidentally spill paint onto a newspaper thereby creating a new, beautiful poem formed by the only remaining legible words. We wouldn't thereby characterize the child as creative in any interesting sense. Even activity intentionally devoted toward producing something original looks insufficient. An entirely mechanical search, trial and error procedure leading to a new discovery hardly seems the essence of creativity. Hence the thought that any adequate definition of creativity must also pick out something about the kind of process involved (Gaut 2003: 151, Stokes 2011, Kieran 2014a: 126–128). These accounts hold that exercises of some features of agency are constitutive of the creative process, but others argue that the creative process need not

be agential at all: biological evolutionary processes may be creative (Dennett 1995: 70).

In terms of output, some hold that a creative process need only generate novelty to count as a truly creative act. By contrast, in line with Kant, others hold that more than mere novelty must be involved (Hausman 1985). One thought is that this must be so, given that 'creative' is an honorific term and we condemn rather than praise 'original nonsense' to use Kant's phrase (Kant 2000: 186). However, we do seem to recognise that some acts can be creative failures so the creative process and the successful realization of value in outputs might come apart. Exactly how matters are spelt out on this issue may then interact with just what kind of value creativity involves or aims at. It may, for example, be the value of the kind of process involved that matters, whether the resultant output is valuable or not, or that what matters is that the process non-accidentally could lead to the production of new, valuable outputs or, it could be argued, this just shows that a process really doesn't count as creative unless something valuable is produced. Similar issues arise if immoral acts can be creative, though some have denied that this is possible (Novitz 1999).

1.3. Types of Creativity

Thus far we have been talking about creativity tout court but we should distinguish between different types of creativity. The most influential distinction in the literature is Boden's contrast between psychological and historical creativity. Boden characterizes an action as psychologically creative if and only if someone produces something surprising and valuable that is new to the person involved (Boden 2004: 2, 43–46). To use Boden's own example, if a twelve year old who had never come across Shakespeare compared sleep's healing power with 'knitting up a raveled

sleeve' then you would have to say this was very creative for her. This is consistent with the twelve year old's comparison not being historically creative given that Shakespeare got there first. So, what is historical creativity? Historical creativity is a special class of psychological creativity where no one else in human history has come up with the thought before (Boden 2004: 2, 43–46). We might want to make some further elaborations or modifications in line with the spirit of Boden's contrast. In judgements of creativity we often have contrast classes in mind, so, for instance, we might think that the twelve year old in Boden's example is not merely psychologically creative with respect to herself but also creative for a twelve year old or for young people more generally. We also make judgements of historical creativity that are indexed to particular epochs, cultures or traditions. Gutenberg's invention of the printing press was historically creative in the west, though Chinese monks in the east had been using block printing for five hundred years or more before. Hence, as with other kinds of adjectives (Liao, McNally and Meskin 2016), describing something as creative may be relative to context and comparison class.

Boden goes further in arguing that that there are three very different kinds of creativity (Boden 2004: 3–6). Combinational creativity occurs when an act is creative in combining familiar elements in new unfamiliar or unlikely ways (Boden 2004: 40–41). A coach might come up with a new kind of pass in a football game or a poet coin the metaphor 'sea of faith' through just this kind of recombination. A different, deeper kind of creativity, Boden argues, is exploratory creativity: it involves explorations of conceptual space giving rise to something that it had not been anticipated could be realized in the presumed framework (Boden 2004: 58–61). A philosopher might come up with new, radical, unexpected implications from shared assumptions or a musician invent a new sub-genre within electronic dance music in just such a fashion. The third

and most radical kind of creativity, Boden argues, is transformational in the sense that what people then think is 'something which, with respect to the conceptual spaces in their minds, they *couldn't* have thought before' (Boden: 6; also see 61-87). Much of Boden's account remains controversial. To cite just a few points, people have questioned what exactly a conceptual scheme amounts to and whether radical creativity requires pre-existing conceptual spaces to transform (Novitz 1999, Beaney 2005: 177-192) or looked to give alternative accounts of the claim that creative thoughts could not have been had before (Stokes 2011). Nonetheless, Boden's account is the most influential typology to be found in the contemporary philosophical literature.

1.4. Imagination

It is one thing to classify creative actions, it is quite another to say what is involved more substantively in the underlying processes. Traditionally creativity has been held to depend on the workings of the imagination thought of either as a mental faculty or as a suite of mechanisms. A scientist imagines new alternative hypotheses that might explain the data. An artist imagines the look of a scene, how the central figure might be composed, and the possible symbolic associations required to generate the desired effect. A footballer might imagine different ways to go in deciding which pass is the most effective. From calling to mind alternate courses of action and entertaining hypotheses to the construction of perceptual imaginings, the imagination seems fundamental to the creative process. Few think that the involvement of the imagination in forming mental representations is sufficient for a process to be creative. But the idea that the imagination must be at work in the creative process is

very common. Hence there are important questions about just what the imagination is and how exactly it works in generating creative thoughts and actions.

Standardly we distinguish between different kinds of imaginings (Gendler 2016). It is common to distinguish propositional imagining, imagining that P, from non-propositional imagining which is then divided into various sub-types. Propositional imagining involves representing that something bears some kind of relation to what is or might be the case. I imagine, say, that a colleague is in her office or that she might have gone to get a coffee. This might be contrasted with various kinds of dramatic imagination, imagining from the inside what it is like to be a certain kind of person or imagining affectively responding in certain ways. These kinds of imaginings can be contrasted with perceptual imaginings which are standardly taken to involve mental imagery.

Now the imagination seems to be a productive faculty capable of generating new thoughts, ideas and actions. Yet the mere involvement of the imagination seems to be insufficient for creativity (though see Scruton 2009). A person might methodically imagine each possible option in a Sudoku puzzle square, evaluate each one in turn and then opt for an answer. It might even be that, as Kant held, the imagination is involved in the most basic acts of perception. Hence it looks like the imagination must be involved in some kind of constructive process in order to be creative. What kind of process might that be? Imagination as an active, productive faculty is geared toward entertaining possibilities or alternative appearances. As such, imagination, unlike mechanisms straightforwardly geared toward belief and knowledge, is not tied to attempting to track how the world is. Hence, in entertaining what is or might be possible, how things could appear, or even the seemingly impossible, imagining something is variously freed from the constraints of belief.

Indeed, one line of thought traceable through Freud all the way back to Plato considers the creative imagination to be driven by irrational or non-rational processes. In Plato's Ion (2005), for example, imaginative inspiration is taken to be a non-voluntary, irrational state driven by divine prompting – whereas for Freud (1995) it was driven by the unconscious. Alternatively the imagination has been brought together within a more rationalist framework to underwrite distinct claims such as the thought that imagination a) makes the connections between disparate domains required for creativity (Beaney 2005: 193-213); b) has the key features of cognitive manipulation typical of all creative cognitive processes (Stokes 2014); c) is the mental faculty constitutively best suited to be the vehicle for active creativity (Gaut 2003) and d) is the common ground of both pretence and creativity (Picciuto and Carruthers 2014, 2016).

1.5. Virtue

Much philosophical literature is concerned with creative acts and processes, yet there is a further question concerning what it is to be a creative person. One approach that has come to the fore recently, as might be expected given its resurgence in ethics Hursthouse and Pettigrove 2016) and epistemology (Turri, Alfano and Greco 2017), is the virtue theoretic tradition.

In one sense the issue can seem straightforward: a creative person performs creative acts. But does someone count as creative if she has only ever performed one creative act? This seems too weak given that creative acts can be out of character. How about the idea that creative persons continually perform creative acts? This might seem too strong, given the recognition that creative people can fail to manifest relevant dispositions. Hence the attraction of the idea that creativity must be a

disposition of persons to perform creative acts. It is not just that the person possesses certain capacities such as the ability to imagine. Rather, the creative person is disposed to exercise mechanisms and abilities in ways which lead to creative acts (Gaut 2014).

Now some people within the virtue theoretic tradition take creativity to be a virtue or an achievement constituted by virtues in a stronger sense than this (see, for example, Zagzebski 1996: 123-125, 167, Woodruff 2001: 28, Swanton 2003: 161-178, Kieran 2014a and b). What is meant by virtue here? Zagzebski, for one, takes epistemic virtues generally to be admirable, well motivated traits that reliably dispose toward the acquisition of knowledge. Swanton holds that virtues are good qualities of character that dispose toward acknowledging and reacting to features in good ways thereby tracking what is independently valuable. While some hold that the possession and exercise of virtues tend to lead to a flourishing life (Zagzebski 1996, Aristotle 2004 Bk. 1 Ch. 7 10-13 and Bk. 10 Ch. 6 193-194), others hold that the link between creative virtue and well-being may be more attenuated (Swanton 2003, Kieran 2014b). Controversy also arises in relation to the role of motivation. People can be creative and yet badly motivated in all sorts of ways. If that is right, then, as some have argued (Gaut 2014), perhaps creativity cannot be or involve virtue in the fullest sense. Alternatively, this might show that only some virtues, such as curiosity, are partly constitutive of creativity (Kieran 2014b) and we should be careful to distinguish being creative from exemplary creativity (Kieran 2014a).

1.6. Luck and goals

One thing that often plays a role in creativity is luck. Knowledge, abilities and virtues might be taken to make success more reliable (Zagzebski 1996, Kieran 2014a) or,

more minimally, praise should track virtuous, warranted exercise of abilities rather than mere accident or luck (Baehr 2007). Yet if we think about creativity, creative success is not only often very difficult but luck seems to play a much larger role here than elsewhere. How can we square this with the thought that true creative achievement and justified praise should normally rule out lucky success? Or should it? Creative people often seek luck out. If someone is seeking to transform conceptual space or do something a bit differently, then introducing random elements can help. Hence the practice of automatic writing or Brian Eno's oblique strategies card set. Indirect disruption strategies, or unlooked for serendipity, can bring new, otherwise unimagined elements into the creative process, sometimes leading to much better results. It also looks like there might be a tension between reliability and difficulty. We expect truly creative people to be reliably so, yet the more difficult, potentially transformative the work is, the more people work at the edge of their capacities. The more people work at the edge of their capacities, the less reliable they are likely to be.

We might even ask what exactly is it that creative people are working toward? In some cases there is a given puzzle people are trying to solve or an end goal they are striving for. Yet in other cases there seems to be no problem in mind and no goal in sight. A creative person might be idly doodling or playing around, something interesting may start to emerge and then the process takes on a life of its own. This is taken by some to show that creativity by its very nature cannot be goal orientated (Tomas 1958). Even where people start with an end in view, and a sense of the relevant means, the creative process constitutively seems to involve unexpected, unanticipated changes such that the end result can never be fully anticipated until the process itself is complete (Collingwood 1938: 111, Beardsley 1965). By contrast, even if this is necessarily so for certain work types, goal orientated constraints often

seem to play constitutive roles in determining deliberations during the creative

process (Livingston 2009, Elster 2000, Levinson 2003).

1.7. Similarities and Differences

We have been talking so far about creativity in a rather abstracted, general sense. Yet

there might be many crucial differences across specific groups and domains. Just to

give an idea of the range of issues that are relevant here, we might focus on high-end

eminent creativity (Simonton 2004) or lower level ordinary creativity (Sawyer 2012:

389–438) – Big-C creativity or little c-creativity as some psychologists term them

(Kozbelt, Beghetto and Runco 2010: 23) - or wonder how they are related (Weisberg

1993). We might also want to consider relevant similarities and differences across

cultures (Lubart 2010) and species (Reader, Flynn, Morand-Ferron, and Laland:

2016). With regard to domains, what we take the similarities or differences to be may

depend on the relevant background metaphysics. Platonists, for example, tend to think

about creativity in terms of the discovery of universals or types across domains.

Against this backdrop, artistic creativity looks very much like scientific creativity

(Dodd 2007). By contrast, Kant holds genius is found in artists alone because artistic

creativity is radically constructive in a way that scientific discovery can never be. The

genius creates an exemplar for others to follow even though there are no underlying

principles which could explain how this was created. A scientist, by contrast, follows

general principles in applying theoretical concepts to arrive at a discovery (Kant

2000: 186-197). On the other hand, Kuhn's (1970) account of revolutionary science

makes it look less like science as it is characterised by Kant, and more like his

characterisation of artistic creativity. Given the variety of metaphysical approaches,

we might expect many different ways of carving up the similarities and differences in

creativity across domains. The nature of domain values also seems relevant. In morality, consistency and universality are at a premium, so moral creativity might often be concerned with shifts in seeing how principles apply or creating newer, better, fairer institutions. By contrast, individuality in art may be to the fore so artistic creativity might zero in on qualities such as uniqueness of style or expression. Alternatively, assumptions about domain differences may reflect conventional wisdom, rather than revealing anything deeper about creativity in the domains in question.

2. The Volume

With the background sketched we now turn to the papers in the volume. They are arranged into six parts, concerning creativity as a virtue; creativity and value; creativity and agency; explaining creativity; creativity in philosophy and mathematics; and creativity in art, morality and politics. Though we believe that this is a reasonable classification, we could have placed many of the papers in different parts, since most papers address issues relevant to more than one part. And there are some themes in several papers, such as the relation of imagination to creativity, that are not reflected in the titles of any part. So in summarising each paper, we will bring out some of the themes in papers that are not apparent from the part headings, and describe the papers in a way that enables the reader to see some of the less overt connections between them.

2.1 Creativity as a Virtue

The first part consists in four papers, all of which are broadly supportive of the claim that creativity is, or can under some circumstances be, a virtue. Robert Audi's wide-

ranging paper argues that imagination is the chief, though not only, constituent of creativity, and characterises imagination as being largely the capacity to produce new things. Both imaginativeness and creativity can be temporary or a feature of character, and when a feature of character, they may be virtues. When they are virtues, they are characteristically mixed, having both an intellectual and practical aspect. As virtues they are also constituents of the human good, though creative products are not necessarily valuable. Creativity and imaginativeness can be exercised in many domains, including the moral one, and in Aristotle's, Kant's and Mill's ethical theories imagination should play a role if the theories are to be applied correctly. Audi also discusses the relation of creativity to predictability, distinguishing two sorts of the latter; he suggests that imagination may be teachable, though there is no formula to do so; and he rejects the view that surprise is part of the definition of creativity.

Jason Baehr notes that virtue epistemology has shown little interest in creativity, and this ought to be redressed, since intellectual creativity (creativity within the epistemic realm) is plausibly regarded as an intellectual virtue, on a par with virtues such as curiosity, open-mindedness, intellectual courage and intellectual humility. He identifies four dimensions of intellectual virtues: they involve characteristic skills or abilities; they are grounded in love of epistemic goods such as truth, knowledge or understanding; they involve the taking of pleasure in their exercise; and good judgement is involved in knowing when to exercise the constituent skill. He then identifies eight putative features of creativity simpliciter: it has a generative aspect; its products are new or unexpected; they instantiate values proper to the activity in question; creativity involves the imagination (understood as the capacity to identify new or unexpected possibilities); it involves a unique kind of perception; it is related to insight; it operates in a muse-like fashion; and creative

persons find creative activity intrinsically rewarding. Baehr proceeds to develop an account of intellectual creativity that accounts for these eight features and conforms to the four-dimensional structural model of intellectual virtues. In the course of his account he also argues that there are reasons to believe that creativity can be taught.

Katherine Hawley argues that the philosophy of creativity can learn much from considering issues in epistemology, and doing so illuminates issues about creative value and creativity as a virtue. Some philosophers believe that creative products must be valuable in some respect, and others deny this claim. Hawley holds that creative products have to possess creative value, but that the value concerned might depend only on the fact that novel features are conferred by an agential process, specifically, one that involves the creditable exercise of certain virtues; and the creative product might otherwise be lacking in value. So her account of creative value supports the claim that creativity is a virtue. In parallel fashion, the virtue epistemologist explains why knowledge is more valuable than true belief by holding that knowledge is true belief that issues from a creditable exercise of the intellectual virtues. Hawley then employs her account to explain how even failures can be creative, since they may have creative value, in being the production of novel things that are creditable exercises of certain virtues, even though they lack other values. She also argues that injustice in underestimating someone's creative abilities parallels cases of epistemic injustice about testimony.

Matthew Kieran addresses a challenge to virtue theories of creativity. Vanity is a vice, but it seems it may promote creative achievement. If this is so, some personal vices are creative virtues. Kieran characterises a core component of vanity as being a desire for self-glorification, where an implied audience, actual or idealised, does the glorifying. Vanity may promote creative achievement because the vain

person aims to garner the esteem of this implied audience by setting high targets, working at the edge of her creative capacities, taking more risks, persevering, and developing greater discrimination about what the audience esteems as creative. But the features of vanity that promote creativity are fundamentally outweighed by those that undercut it. Vanity tends to lead to creative alienation in undermining collaborations, which are widespread in creative activities; and it leads to creative imprudence in generating creative overreach, blindness to certain risks, and by tracking what the implied audience finds fashionable rather than what is truly creative. So vanity is a creative vice. But of all the creative vices it may be the closest to being a creative virtue, since a vain person can be educated to respond not to actual praise, but to merited praise and ultimately to performing creative acts because they are worth pursuing as ends.

2.2 Creativity and Value

The second part of the volume discusses the relationship between creativity and value from a variety of sometimes opposing perspectives. Alison Hills and Alexander Bird reject the standard view that creativity requires the production of valuable objects. The creative disposition may produce objects that completely lack objective value, attributive value (a thing being valuable of its kind), and value, either subjective or objective, to the creative person. It is also possible to recognise items as creative without making any judgement about their value. Moreover, the standard view has to embrace the psychologically unrealistic claim that there are two distinct dispositions in some creative people: one involving the production of valuable items, and a second, otherwise similar one, involving the production of items that have negative value or are worthless. Hills and Bird conclude by discussing the 'original nonsense'

argument, often attributed to Kant, which holds that genius must involve exemplarity as well as originality, since otherwise someone could be a genius by virtue of producing original nonsense. They question whether the argument is to be found in Kant, and also maintain that the argument, cast in terms of creativity, is unsound.

Paisley Livingston argues that a creative action is one that manifests originality as an effective means to some end. Since the means must be effective (successful), creative actions involve instrumental value; however, no stronger value requirement is involved, since the ends need not be intrinsically good, and may be indifferent, or even bad, as shown by the possibility of creative torture. In arguing for the possibility of immoral creativity, Livingston criticises some of David Novitz's arguments against that possibility, and virtue accounts of creativity that endorse a strong doctrine of the unity of the virtues. He also argues that apparent cases of creative failures do not undermine the success condition of his account. He also discusses Robert Merton's notion of originality, which allows for the possibility of two people being original in independently coming up with the same innovation, and this contrasts with the stronger notion of priority, which is exhibited by only the first person to come up with the innovation, a contrast that anticipates Boden's distinction between psychological and historical creativity.

Berys Gaut defends an account of the value of creativity based on an agency theory of creativity. He argues that creativity is an agential disposition, involving the exercise of relevant reasons-sensitivity and appropriate knowledge-how, to produce new things that are valuable of their kind. Since not all kinds, such as terrorism and torture, are valuable, not all exercises of creativity are valuable: so creativity is only a conditional value, that is, valuable only under some circumstances. When the conditions of its being valuable are met, creativity also has final and instrumental

value. The agential nature of creativity also provides part of the explanation of the value of creativity: by exercising their agential powers, agents can more rapidly and efficiently produce new things that are valuable of their kind than can non-agents; and there is a necessary connection between creativity and spontaneity, including improvisation, in the sense that a creative action cannot be precisely planned in advance.

Charles Taliaferro and Meredith Varie discuss creativity as a valuable trait. Drawing on Coleridge, they hold that the creative person exercises her imagination, as opposed to fancy or fantasy; in doing so she overcomes the obstacles to creation, showing herself to be passionate, driven and willing to struggle; and therein consists the value of creativity. They also argue for a Platonic metaphysics of artworks, according to which all possible works pre-exist as states of affairs, and the role of the artist consists in making some of these states of affairs obtain. This might appear to reduce the creative act to one of making discoveries and so to devalue it, but they argue that it does not: the struggle of the creator still has an important role on this view, in making obtain some states of affairs, whilst the alternative idea of creation ex nihilo, as instanced in one view of God's act of creation, is close to incoherent.

Jennifer Hawkins addresses the prudential value of creativity in relation to that of suffering. There is psychological evidence that for some artists suffering may be a necessary condition for their creative achievements. If that evidence is not misleading, would the prudential value of creativity (the fact that it is good for the artist) sometimes outweigh the prudential disvalue of suffering? Hawkins gives reasons to doubt that this is so. She notes that hindsight bias is often displayed in people's narratives of suffering and achievement, and that we lack a sufficiently rich vocabulary to describe negative affective states. She introduces the notion of a

personal perspective, which underlies and explains more transient moods and emotions. The enduring negativity of a personal perspective is more significant than that of transient states; and when this negativity is intense (amounting to suffering), it is unlikely that, from a prudential perspective, it could be outweighed by the value of creativity. Thus it is only rarely, if ever, that it is worth suffering for the sake of creative achievement, though it may be worth enduring milder negative states. In the course of her argument Hawkins also distinguishes some possible mechanisms by which negative affective states may promote artistic creativity and locates her view within dual process theories of the mind.

2.3 Creativity and Agency

The third part examines the relation of creativity to agency. Margaret Boden has in the past influentially defined creativity as the ability to generate ideas or artefacts that are new, surprising and valuable. In her contribution to this volume she argues for broadening this definition, by substituting 'forms' for 'ideas or artefacts', thus allowing application of the notion of creativity to biology, and not only to agents with psychologies. So on this broader conception there is no necessary link between agency and creativity. In place of the notion of P-creativity (psychological creativity) she substitutes the broader notion of I-creativity (individual-creativity), where the latter denotes the first time that a new feature occurs in the life of an individual entity, thus including biological entities as well as psychological agents. She argues that the broadened concept does useful work in biology: for instance, H-creativity (historical creativity) is manifested in phylogenetic changes, explained by evolutionary theory, and I-creativity in ontogenetic changes, the subject of developmental biology. Biological changes can be new, often awesomely so, valuable, and they exhibit the

same three types of surprise—grounded on combinational, exploratory or transformational mechanisms—as do psychological changes. Biological I-creativity is captured by the notion of self-organisation, which, despite its appearance of near-paradox, can be given a coherent definition; and she discusses some of the mechanisms involved in self-organisation in cybernetics and neuroscience, as well as in developmental biology.

Elliot Paul and Dustin Stokes note that the near-consensus definition of creativity in psychology focuses on products, rather than on persons or processes, and defines a creative product as one that is new and valuable. This definition, they argue, is incomplete, since a creative product must also be the outcome of the right kind of process. Having considered some proposals for what kind of process this is, they favour the view that it is one that non-trivially and essentially involves agency. They offer three arguments for this process requirement, and its agency version in particular. An argument from justificatory practice notes that when people justify their attributions of creativity to some product, they give reasons that appeal to the agentive processes that produced the product. An argument from linguistic practice notes the incoherence of the attribution of creativity to entities that are not the products of agency, such as sunsets. And a modal argument holds that in possible worlds in which objects spontaneously appear without any process, or where the processes that produce them do not involve intentional agency, the objects in these worlds are not creative. From these conceptual or metaphysical claims two epistemological or psychological implications follow: competent judgements about some object's being creative do not support a pure product view of creativity, and such judgements implicitly refer to a generative process that non-trivially involves

agency: judging that some object is creative is elliptical for judging that it is the result of some creative process.

2.4 Explaining Creativity

The fourth part of the volume addresses the questions of whether it is possible to explain creativity, and if so, what kinds of explanations are most promising. Maria Kronfeldner criticises the claim that creativity is inexplicable from a naturalistic point of view. A prominent argument for this view is based on equating creativity with metaphysical (libertarian) freedom, which presupposes the falsity of determinism. Kronfeldner holds that this argument leads to a dilemma: if naturalism is true, no one is creative, but if naturalism is false, everyone is creative. Instead, she argues that creativity consists in originality and spontaneity, which require only partial independence from specific causal factors: from the influence of an original, and from the influence of the creative person's previously acquired knowledge, respectively. She then argues against the Darwinian explanation of creativity, holding that either it confuses a descriptive feature of creativity (that the creative person does not have complete foresight about what she will creatively produce) with an explanatory claim, or, in another variant, that it posits an unconscious chance-configuration mechanism that is hard to test and for which there is evidence to the contrary. She concludes that the most promising explanations of creativity appeal only to a set of ordinary cognitive processes, perhaps operating in confluence and in complex ways.

Michael Wheeler distinguishes three types of explanation of creative activity. The Romantic view of creativity exhibits an inside-to-outside logic of explanation, where the work is essentially complete in the artist's head, and is then expressed in outer form. Explanations with an outside-to-inside logic are exemplified by the

musician David Byrne's account of creativity, according to which creative activity adapts itself to pre-existing technological, social and physical formats. Wheeler argues that these two kinds of explanation are at best incomplete. Instead, creativity exhibits an inside-and-outside logic: creative activity involves a kind of interactive partnership between inner and outer resources. This third kind of explanation is realised in theories of creative cognition as embodied, embedded and extended. The creative mind is embodied (often shaped, in fundamental ways, by non-neural bodily factors), embedded (often causally dependent, in subtle and surprising ways, on the bodily exploitation of environmental props or scaffolds) and extended (elements located beyond the skull and skin sometimes count as constituent parts of the creative mind). In arguing his case Wheeler employs thought-experiments of brain transplants of creative performers, discusses computer-assisted art, computer-based generative art and evolutionary computer art, the role of the Bayreuth Festival Theatre in shaping Wagner's music (a case of cognitive niche construction), and David Byrne's and Brian Eno's song writing practices.

Stephen Davies addresses the question of what explains creative achievements by focussing on technological developments in the Stone Age. Striking technological and other innovations in Upper Palaeolithic Europe has led some scholars to believe that there must have been a fundamental cognitive change in the workings of the brain at about this time. But Davies notes that there were precursors of many of these technologies in Middle Stone Age Africa, notably in the Cape region of South Africa, which predated the European innovations by many millennia, and which disappeared many millennia before the technologies were reinvented in Europe. Innovations in both areas and eras are to be explained by environmental and population changes, Davies argues. Environmental changes, due to rapid climate change or to humans'

migration to a wide variety of environments, encouraged technological creativity as a response to new environmental challenges. Increases in population size, density, and inter-group contact and trade also stimulated creativity, and crucially preserved those innovations that were created: in the absence of large and dense populations innovations were repeatedly lost, including in Tasmania from 14,000 years ago onwards. So in the cases under consideration environmental and demographic factors are crucial components in explaining creative activities.

2.5 Creativity in Philosophy and Mathematics

The last two parts of the volume deal with creativity in individual domains. The fifth part concerns creativity in philosophy, logic and mathematics. Michael Beaney discusses conceptual creativity in philosophy and logic. Creativity is an under-recognised feature of analytic philosophy. Each of the three kinds of philosophical analysis that Beaney distinguishes—decompositional, regressive and interpretive—can be creative, partly because of the role of imagination in them. And they can each exhibit conceptual creativity, of which there are four kinds. Creativity in forming new concepts is exemplified by Cantor's creation of the concept of transfinite numbers. Creativity in modifying concepts is illustrated by Frege's construal of concepts as functions. Creativity in finding new applications of concepts is instanced by Russell's employment of Frege's interpretive analysis in his theory of descriptions. And creativity in forming new conceptual frameworks is exemplified by Kant's 'Copernican revolution' in philosophy. Though Kant's revolution illustrates the forming of a new conceptual framework most strikingly, Beaney argues that the other three examples also exemplify this kind of creativity. He also relates his account to Boden's discussion of three kinds of creativity: the production of new conceptual

frameworks is her transformational creativity, and his four case studies are also instances of exploratory creativity; there is a lesser role for what she terms combinational creativity. Beaney concludes by discussing the prospects of using Boden's computationally-derived distinctions to help explain creativity, and notes that the idea of a generative system has clear applications in at least three of his examples, though historical investigations are also required if we are to explain creativity satisfactorily.

      Alan Hájek continues the discussion of creativity in philosophy, arguing that in philosophy, as in many domains, there are heuristics that enhance creativity. Heuristics are, roughly, rules of thumb that promote problem solving. Their effectiveness shows that philosophical creativity is not purely innate, though their use requires philosophical wisdom in judging when and how to use them, as well as a degree of native cunning. Each stage of philosophical enquiry—whether generative, evaluative or refinement—can be enhanced by heuristics. Hájek describes six heuristics in detail, illustrating their use with examples. The fridge word heuristic consists in searching for philosophical keywords in the problem domain, and combining them in various ways to see if they suggest any problems or hypotheses. The use of constraints, in imposing a set of desiderata on one's theorising, may also spark creativity. Taxonomising and colonising consists in drawing up a table of distinctions in the relevant domain, and seeing whether any spaces are unoccupied by existing views. The use of contrastive stress encourages philosophers to examine the contrast class of the keywords in a problem or thesis, as does the use of the related 'turn the knobs' heuristic to consider all the values of the variables in a problem. Finally, analogical reasoning is a powerful tool to both generate and evaluate philosophical positions.

Christian Wenzel argues that the degree of creativity in mathematics has often been underestimated, particularly by Kant, for whom genius is restricted exclusively to fine art. This misconception is rooted in focusing on the results of mathematics, rather than on the process of doing mathematics. Doing mathematics is similar in crucial respects to the making of art, for the mathematician moves freely and playfully in creating mathematics. In contrast, Kant's view is that in mathematics and science there is a single natural path of inquiry and reflection according to rules. Wenzel argues that this view massively understates the freedom of the mathematician: mathematicians can choose their axioms, there are many proofs that can be given for any theorem, there are an infinite number of propositions that validly follow from each step of a proof, and there are no rules for the application of rules. There is a further connection between art and mathematics, since the mathematician makes tacit judgements of taste in selecting which way to proceed in forming proofs and theories. So, ironically, Kant's aesthetics is a better guide to mathematical creation than are his comments on mathematics. However, since mathematicians must avoid contradictions, their freedom is not quite as unconstrained as that of artists. Wenzel also discusses the role of the unconscious and imagination in mathematical creativity, and how the development of multiple disciplines in mathematics creates affordances that open up new possibilities for creativity.

2.6 Creativity in Art, Morality and Politics

The final part of the volume discusses creativity in art, morality and politics. James Grant argues that creativity (his preferred term is 'imaginativeness') is an artistic merit. Creativity involves thinking of something that was not an obvious thing to think of, and which it was plausible to believe would have a reasonable chance of

success (the latter condition allows for the possibility of creative failures). Creativity is an artistic merit in the sense that it helps to make artworks good of their kind, but this is not true of many other things: creative explanations are not better explanations in virtue of being creative. Grant develops the excellence theory of artistic merit to explain this difference between artworks and many other things. The theory holds, first, that manifesting or being an excellence in realising some other artistic merit can be a (higher-order) artistic merit: for instance, exhibiting courage, intelligence or skill in realising artistic merit is an artistic merit. Second, the reason why these higher-order merits are artistic merits is that excellences have final, not merely instrumental, value. Creativity is one of these higher-order merits with final value. Grant applies the theory to argue that philosophers who have denied that creativity is an artistic merit are mistaken.

Tim Mulgan argues that we need moral creativity in the face of credible futures involving broken worlds (where environmental catastrophe has led to resources inadequate to satisfy everyone's basic needs), virtual reality worlds, and digital worlds (involving AI or brain uploads to computers). Just as Plenty Coups, the Crow chief, had to reimagine the nature of courage in light of the loss of his tribe's hunting grounds, so do we have to reimagine our ethics, with its assumption that the conditions of affluence will continue indefinitely. Given the nature of the threats, we need H-original thinking (in Boden's sense) to address them. Mulgan distinguishes something being imaginative (new, surprising and valuable) from its being creative (which requires the implementation of the imaginative item). Moral imaginativeness is also different from imaginative thinking about morality, as illustrated by moral philosophy and moral fiction, which may exhibit the latter but not the former. Moral creativity is a collective achievement, partly because morality requires second-person

justification and creativity requires social implementation. Future people will need to be more morally creative than we are, given the variety of possible challenges facing them, and their creativity undermines any attempt to predict the future.

The volume concludes with Matthew Noah Smith's discussion of political creativity. The well-supported standard model of creativity holds that creativity is a capacity of an individual agent, manifested in intentional action that intellectually engages with a practice, and which produces something new and valuable. But political phenomena, in contrast to moral ones, are structural, social and systemic, and so the political does not fit the individualist model of creativity. Though there are several prominent philosophical theories of group agency and collective intentionality, which might seem to provide the basis for a model of group creativity, these theories apply at best to small-scale groups, where conditions of mutual responsiveness and common knowledge most readily obtain. Applying these theories to political institutions, which are typically massive and often incorporate essentially contested concepts, is problematic. Moreover, for creative processes to exist, a rich mental life is required, and ascribing the requisite range of mental states to group agents is especially problematic. Smith concludes that we have reason to be sceptical about the existence of political creativity, and even the coherence of its concept.

The papers in the volume thus cover many of the central issues in the philosophy of creativity, and tackle them from a variety of illuminating perspectives. We believe their publication will materially advance the debate and help to consolidate and advance the emerging field of the philosophy of creativity.[1]

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