THE VALUE OF CREATIVE IDEAS

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ABSTRACT

Good ideas are more critical now than ever in a world faced with social, health, and environmental challenges that require creativity. In practice, it is often difficult to identify where an idea begins or ends or to know how ideas will develop over time. However, existing theories of creativity assume that ideas are distinct and recognizable entities that move through the creative process and that it is clear where an idea begins and ends. In this dissertation, I explore the role of ideas in the creative process using a critical literature review and two in-depth qualitative studies. The first essay reviews and synthesizes the literature on the meaning of the construct of an idea, from its roots in philosophy and psychology to contemporary usage in organizational studies. I demonstrate two distinct approaches to conceptualizing and measuring ideas in organizational creativity and innovation. In the second essay, I present a qualitative study of experimental circus groups to examine how groups develop ideas collaboratively. From my findings, I theorize a process of elaborative play through which groups use play to develop ideas and construct relationships between them. In the final essay, I conduct a qualitative study to examine how creative workers' personal experiences shape the way they engage with ideas and experience creative work. I discuss the implications of each study for theory and research.

IMPACT STATEMENT

What are ideas? How do creators develop ideas when what will be created is ambiguous or unclear, as it typically is in the beginnings of creative projects? How do our personal experiences shape the kinds of ideas we have? In exploring these questions, my dissertation advances theory for academic research on creativity, providing a deeper understanding of creative processes, particularly around the boundaries and roles of ideas in the creative process. These findings also have a bearing on policy issues and debates by highlighting i) that the value of ideas is not only subjective but also requires a process of construction by all parties involved, and ii) that there could be an alternative, more humanistic view of creative work in organizations.

Within academia, I problematize the entitative assumption of ideas as objects with independent existences and inherent values or qualities. The term 'idea' is used colloquially in the research literature and the lack of a shared definition has prevented the accumulation of knowledge. By highlighting that the concept of ideas has been taken for granted, demonstrating how even what is considered or recognized as ideas is shaped by research epistemologies and paradigms, and developing recommendations for future research, my dissertation contributes to synthesizing the increasingly fragmented study of creativity to build a coherent canon of knowledge. In addition, I reconsider the relationship between ideas, the creative process, and creative workers to better integrate creators' lived experiences, thus contributing to organization theories being more applicable to practitioners.

Beyond academia, creative ideas are the crux of many of the social, health, and environmental challenges we face in a rapidly changing and increasingly uncertain world. The questions I explore in this dissertation may have a bearing on public policy debates about how we can construct and make sense of innovations. For instance, moving toward a more circular economy as a response to environmental challenges emphasizes turning waste, which

is seen as dirty or useless, into input. For such innovations to be successful, there needs to be a substantive, if not fundamental, shift in what is considered valuable or creative. My second essay, for instance, speaks to how the process through which ideas come to be considered creative is not only context-specific but also often a result of co-construction by the parties involved. In addition, in considering the influence of personal experiences, the findings of my last essay reveal a more humanistic rather than product-oriented view of creativity, which could be useful to managers who are interested in promoting creativity and well-being.

PREFACE

The first essay in this dissertation (Chapter 2) is based on work done in conjunction with Dr Sarah Harvey and Dr Eric Rietzschel. I identified and scoped the literature review, wrote a review proposal and contributed equally to subsequent rounds of reviewing and drafting. The second essay (Chapter 3) is based on work conducted with Dr Colin Fisher. I independently identified and designed the research program as well as collected, analyzed, and theorized around the data as part of my PhD upgrade submission. Dr Fisher and I then worked together to develop the research. All aspects of the final essay (Chapter 4) were designed, conducted, and reported by me. I will adopt the collective "we" in the first two essays and the first-person "I" in the last essay. The studies reported in this dissertation were approved by UCL's behavioral ethics board: 12813/001.

I, Mel Yingying HUA, confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.

For my grandfather 易仁顺

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TABLE OF CONTENTS

1. INTRODUCTION

Ideas are the currency of our knowledge economies. They are at the heart of scientific and technological achievements (Kuhn, 1970), artistic endeavors (Gardner, 2011), and our ability to move forward in quotidian situations (Weisberg, 2006). Following the economic expansion in the U.S. after World War II, creative ideas came to be viewed as the vehicle through which creativity and innovation drove unprecedented economic growth (Osborn, 1963; Romer, 1992; Solow, 1957). Since then, organizational scholars have conducted a great deal of contemporary research on the topic (Glăveanu & Kaufman, 2019; Weiner, 2000). In organizational theory, new ideas can drive change, innovation, organizational performance and, ultimately, survival (Amabile, 1988; Kanter, 1988). Ideas in prior studies have included drawings (Harvey, 2013; Ward, 1994), songs (Long-Lingo & O'Mahony, 2010), new ventures (Grimes, 2018), new types of restaurants (Goncalo & Staw, 2006) or ways to improve one's university program (Rietzschel, Nijstad, & Stroebe, 2010), to name just a few. As ideas are fundamental to theories of creativity, this dissertation focuses on the role of ideas in the creative process.

Creative ideas are defined as those that combine novelty and usefulness (Amabile, 1988; Guilford, 1950; Woodman, Sawyer, & Griffin, 1993). Ideas are seen broadly as outputs of a creative process and starting points for implementing innovations (Anderson, Potočnik, & Zhou, 2014; Van de Ven, Polley, Garud, & Venkataraman, 1999; West, 2002). The novelty of an idea refers to the degree to which it is new or original (Campbell, 1960; Guilford, 1950; Simonton, 2018); usefulness refers to an idea's feasibility, value, or significance (Runco & Jaeger, 2012; Weisberg, 2015). Conventionally, scholars have focused on increasing the production of ideas through techniques such as brainstorming (Gallupe, Bastianutti, & Cooper, 1991; Osborn, 1963; Paulus, Larey, & Ortega, 1995), as these are factors that

facilitate or impede creativity in organizations (e.g., Ford, 1996; Oldham & Cummings, 1996; Woodman et al., 1993).

Several theoretical models of the creative process have described the development of a creative idea (e.g., Amabile, 1988; Amabile & Pratt, 2016; Perry-Smith & Mannucci, 2017; Wallas, 1926). These models capture the progression of ideas through a series of stages from first identifying the task or problem to generate ideas for to preparing for idea generation, generating ideas, and validating generated ideas against task- and domain-relevant criteria (for a review, see Lubart, 2001). The models are dynamic and allow for cycling back to earlier steps until the best ideas are selected from those generated (Campbell, 1960; Simonton, 2003) and moved toward implementation (Baer, 2012; Perry-Smith & Mannucci, 2017). Scholars have conceptualized moving through these stages as an 'idea journey' or the path that an idea follows from inception to implementation (Perry-Smith & Mannucci, 2017).

These theoretical conceptualizations assume that ideas are distinct and easily recognizable entities. Studies on brainstorming, for instance, treat ideas as objects that can be distinguished from one another, counted, stored, and evaluated (Jackson & Poole, 2003; Nijstad, Stroebe, & Lodewijkx, 1999; Rietzschel et al., 2010). A common measure of idea productivity, for instance, is the number of non-redundant ideas an individual or group generates (e.g., Gallupe et al., 1991; Paulus & Yang, 2000; Rietzschel, Nijstad, & Stroebe, 2014). Similarly, to view ideas as a resource that can be managed or stored for future use requires ideas to have clear boundaries and independent existences (Gilson & Litchfield, 2017; Litchfield & Gilson, 2013).

However, an emerging stream of research reveals that ideas are more intrinsically connected and the boundaries between them fuzzier than conventionally conceptualized. For instance, the boundaries that define an idea or distinguish between two ideas quickly become blurry when group members propose, elaborate, and iterate them in real time (Sutton &

Hargadon, 1996). Combining ideas and building on existing ones are key to the creative process (e.g., Kohn, Paulus, & Choi, 2011), but it is difficult to determine when an individual or group is *building on* an idea or *combining* different existing ideas (Berg, 2014; Hagtvedt, Dossinger, Harrison, & Huang, 2019; Harvey, 2013). Studies have shown that it is often not possible to identify a clear idea in the beginning: Creative output emerges over time through the interactions of group members (Hargadon & Bechky, 2006; Long-Lingo & O'Mahony, 2010; Sawyer & DeZutter, 2009). Further, ideas can be provisional, abstract structures or representations that help individuals and groups iterate or reach transitional agreements in order to move forward (Majchrzak, More, & Faraj, 2012; Nicolini, Mengis, & Swan, 2012; Stigliani & Ravasi, 2018). In these cases, ideas function like placeholders in the creative process (Harvey & Mueller, 2021), where they are not even intended for implementation but are nonetheless integral to the creative process by facilitating changes in perspective, drawing of new distinctions, and shifts in paradigms (Biscaro & Comacchio, 2018; Cronin & Loewenstein, 2018; Kuhn, 1970). These studies suggest that the boundaries and role of ideas may be more complex than prior research allows. In this dissertation, I thus explore the role of ideas in the creative process.

The first essay ("What are Ideas?") reviews and synthesizes the literature on 'ideas' from their technical usage in philosophy through to modern-day psychology and organizational creativity. Ideas are fundamental to theories of creativity but scholars have traditionally taken an "I know it when I see it approach" to defining ideas (e.g., Runco & Chand, 1995: 252). As a result, the concepts of creativity and ideas are often used interchangeably, where creativity is a process that produces ideas, and ideas are, tautologically, the products of a creative process (e.g., Litchfield, Gilson, & Gilson, 2015; Unsworth, 2001). I present a framework to show that there are two fundamentally incompatible but equally necessary approaches to understanding and studying creative ideas.

The second essay ("Elaborative Play as a Process of Developing Ideas") is an inductive qualitative study of how creative groups develop ideas and converge on some of them as promising when projects are open-ended and what will be created is unclear. We conducted an inductive qualitative study of experimental circus groups in the early phases of creating new shows (R&D) using field observations of nine experimental circus groups over 10 months. We found that these creative groups developed new ideas through *elaborative play* – intentionally engaging in play to develop ideas in the absence of clear criteria for evaluating them. Through multiple episodes of elaborative play, groups were able to both develop new ideas and clarify the open-ended aspects of their projects.

In the third and final essay ("How Personal Experiences Shapes Creativity"), I present an inductive qualitative study of how creative workers engage with their personal experiences and incorporate them into creative ideas. Even though creativity is experienced as highly personal, existing research focuses on generalizable processes and says little of how personal experiences shape creative ideas and the creative process. Through primary interviews with circus artists and archival interviews with artists and scientists, I find that creators engage with personal experiences both directly – by applying or using them in specific creative products – and indirectly – by using affective processes to determine which experiences are relevant in the first place and allowing that to shape their understanding of what kinds of ideas are worthwhile.

In sum, my dissertation explores the role of ideas in the creative process to understand i) what ideas are and how different research paradigms and traditions undergird different conceptualizations; ii) how ideas are developed and elaborated, especially when creative tasks are open-ended and what is worth pursuing is unclear; and iii) how personal experiences are incorporated into creative ideas and shape how creators engage with and experience creativity. The findings of this dissertation will contribute to organizational

theories of the creative process and expand our understanding of the role of ideas in creativity.

2. WHAT ARE IDEAS?

Ideas have been central to most of human history. They are at the heart of our scientific and technological achievements (Kuhn, 1970), our artistic endeavors (Gardner, 2011), and our ability to move forward through the situations of everyday life (Weisberg, 2006), as well as many of the conflicts, wars and other problems we face (Weaver, 2013). Arguably, ideas are so fundamental to our humanity that we cannot conceive of our existence without them. They have therefore been discussed by philosophers, psychologists, and political and legal scholars since the beginnings of their respective disciplines.

In most organizations and organizational research, ideas are similarly central. Ideas are what drive change, and therefore organizational performance and, ultimately, survival (Amabile, 1988; Kanter, 1988). The sub-disciplines of research on creativity, innovation, knowledge creation, design, entrepreneurship, and creative work, all of which aim to study how something new comes to exist in the world, have grown around understanding the role and consequences of ideas, and the processes and antecedents through which they arise (e.g., Amabile, 1988; Burt, 2004; Fleming, Mingo & Chen, 2007; Grimes, 2018; Guilford, 1950; Nonaka, 1994; Sutton & Hargadon, 1996. Ideas are understood, broadly, as the outcome of a creative process (Amabile, 1988) – that is, the result of purposeful effort towards generating some form of novelty (Ford, 1996; Grimes, 2018; Lingo & Tepper, 2013). Since Guilford's (1950) seminal paper on the psychology and measurement of creativity, ideas have become the central unit of analysis and inquiry for creativity research and associated fields as an outcome in themselves.

However, it is not always clear what scholars mean when they use the concept of an idea (cf. Inie & Dalsgaard, 2017; Sukhov, Magnusson, & Netz, 2019). Some acknowledge the lack of a definition of ideas (e.g., Sukhov et al., 2019) and others deem it self-evident when and whether something is an idea (e.g., Runco & Chand, 1995: 252). Similarly,

although researchers typically explain what they mean by a *high-quality* or *highly creative* idea (often one high in novelty and usefulness; e.g., Litchfield et al., 2015), they usually do not define what they mean by an idea in the first place. This lacuna in the literature has been noted by others. For example, Inie and Dalgaard (2017: 393) point out that design ideas "are commonly used as an indicator of success of design methods and processes, yet it is very rarely defined what precisely constitutes 'an idea', and how such an idea manifests itself to the researcher". Similarly, Sukhov et al. (2019) note that "Despite the existing body of literature on the front end of innovation, there is surprisingly little written about the definition of an idea" (p. 30). Whereas both of those papers seek to remedy this problem with a definition or typology, they provide only domain-specific insights into the nature of ideas. Given the breadth of usage of and research about ideas across organizational research, the lack of a common definition remains to be fully resolved.

The lack of a common definition is all the more pressing since closer examination of the sub-fields involved in the study of ideas reveals that, in the practice of research, ideas take on different forms. Ideas in prior studies have included such diverse output as concrete creative products like drawings (Harvey, 2013; Ward, 1994), songs (Long-Lingo & O'Mahony, 2010), new ventures (Grimes, 2018), and patents (Singh & Fleming, 2010); abstract representations like concepts for a new type of restaurant (Goncalo & Staw, 2006) or ways to improve one's university program (Rietzschel et al., 2010); metaphors like "electric wires" used by a chemist to help collaborators make sense of an unknown material (Biscaro & Comacchio, 2018); solutions to problems, like ways to address a series of corporate human resource issues (Shalley, 1995); and high-level shifts in perspective, like moving to a fundamentally new technology (Anderson & Tushman, 1990) and new categories of knowledge (Tsoukas, 2009). All of these outcomes have been treated as ideas for the sake of

building theory and testing hypotheses, but they vary substantially in terms of complexity, detail, and level of abstraction.

Moreover, the boundaries of ideas are often drawn inconsistently across studies, with the same outcome being considered an idea in one study but not in another. For example, some studies recognize that new ways of understanding existing knowledge or ideas (e.g., that medical IV bags could be modified for use in shoe design) are themselves ideas (Hargadon & Bechky, 2006), yet other studies state explicitly that they are not (Harvey, 2014). Consider, for example, a television show – where would we look for ideas here? A broad review of organizational research suggests that different aspects of the show (such as a particular character, a specific piece of dialogue, the global narrative arc, the genre of the show, etc.) may equally be considered to be ideas by studies in different sub-disciplines. For example, brainstorming studies may view the concept behind the show as an idea that might be generated and elaborated in response to a task or prompt in a brainstorming session (e.g., Berg, 2019); network studies may view the narrative arc of the TV show as an idea that may have arisen from being exposed to other different filmmakers (e.g., Uzzi & Spiro, 2005); and innovation studies may consider a new genre of television to be an idea resulting from a consequence of combining diverse knowledge (e.g., Taylor & Greve, 2006). At the same time, studies of knowledge creation may emphasize the way an idea is enacted in dialogues between actors (e.g., Tsoukas, 2009); studies of the design process may reveal how an idea involves reframing the audience's experience of a television show (e.g., Stompff, Smulders, & Henze, 2016), and studies of creative work may suggest that an idea is the script that emerges through interactions in the writer's room or even during rehearsals for the show itself (e.g., Sawyer & DeZutter, 2009).

Although different literatures look for different kinds of ideas and posit different processes about how they come about, the phenomena studied under the name ideas are

diverse. Moreover, their conceptualization and operationalization may not always be compatible. This inconsistency is hinted at in the television show example. A concept for a show or a genre of television is a cognitive construct that has not yet been fully elaborated but that a creator can share with producers or actors, whereas acted dialogue or a script takes on a concrete form that demands some interaction and interpretation to come to understand. Correspondingly, researchers may study those ideas in different ways. Concepts and narrative arcs can be captured and compared with one another, but dialogues and experiences are more challenging to decontextualize. Correspondingly, researchers could ask creators to write or share a list of concepts or genres but need to observe creative work to understand how a script or experience emerges. Specifically, our review of the set of idea-centric sub-disciplines reveals four issues along which ideas have been inconsistently conceptualized and operationalized: i) how ideas are measured; ii) how they are produced; iii) where they are located; and iv) how they are assessed.

Inconsistency in conceptualizing and operationalizing ideas is problematic for building a base of knowledge. Equating different definitions of ideas, or ignoring the differences between them, blurs the generalizability of empirical findings, making it difficult to compare across studies and build a base of knowledge about their production. Lilienfeld and Strother (2020) argue that the "replication crisis" in psychology and neighboring disciplines is partly due to unwarranted assumptions regarding measurement. In that context, they draw attention to the "jingle fallacy", referring to "the error of assuming that two or more phenomena, such as two or more psychological measures, are identical merely because they bear the same name" (Thorndike, 1904: 2). In other words, simply because multiple studies call something an idea does not mean they actually study the same phenomenon or processes. Moreover, focusing one's research method on only one kind of idea may preclude the occurrence and observation of other kinds, challenging the generalizability of results.

Inconsistency in conceiving and operationalizing ideas also hinders the development of practical interventions to help the generation, development, or implementation of creative ideas and makes it difficult to formulate and implement organizational strategies for dealing with them (e.g., facilitating their emergence and recognition). To follow our earlier example, a vision for a possible TV show will benefit from different kinds of support, elaboration, and feedback than a concrete draft for a plot twist or a sketch for a possible storyboard (Perry-Smith & Mannucci, 2017). The processes involved in such different kinds of ideas are likely radically different, drawing on different traits, skills and expertise. That further suggests that they will be stimulated by different states, contexts or interventions. For example, Smith (1998) classified the "active ingredients" of 172 idea-generation techniques into broad categories. Whereas some categories may be helpful for the generation of all kinds of ideas, others – like using physical objects as stimulation materials or refraining from stating the problem at the outset of a process – may only apply in certain settings.

The purpose of our review, therefore, is to systematically explore and integrate research across those organizationally relevant communities for whom ideas are central. To do so, we draw on the literatures where a critical mass of scholars discusses ideas in a substantive way, even if they use different conceptual language to refer to and describe them (Cronin & George, 2020). Specifically, we review the study of ideas in the creativity, brainstorming, creative work, innovation, entrepreneurship, knowledge creation, networks, and design thinking literatures.

The Current Review

We first trace the notion of ideas to its earliest roots in philosophical thought and induce a working definition for the construct. We show how the meaning of the term ideas has evolved over time from a metaphysical and almost spiritual concept to a more psychological one, until taking on its current meaning, which is best defined as *provisional*

and communicable mental representations. We further illustrate how ideas have more recently become the province of creativity and innovation studies (and adjacent disciplines), such that idea has become almost synonymous with *new* idea. In the second section, we use the components of our working definition to review the conceptual and operational approaches to studying ideas across the different literatures. Because an idea is not always an outcome that is measured in studies (studies typically *use* ideas as their raw materials but do not *study* them in terms of trying to find out what they are), we focus not on the findings of studies per se, but instead on the way that ideas are conceptualized and operationalized, as evidenced through how they are treated or observed in empirical studies.

In reviewing the literatures, we will show that the multitude of different approaches to ideas does not merely reflect diversity or inconsistency but actually rests on two fundamentally distinct and incompatible ways of thinking about ideas: as distinct entities with inherent qualities, or as emerging over time and not possible to bound to any one moment. These two ways of thinking are distinguished by their theoretical stance and core assumptions regarding the nature of ideas, which manifest in differences in the ways that ideas (or more broadly creative output) are operationalized and measured, research questions, and theoretical insights. Based on our review, we introduce the metaphor of *wave-particle duality* to describe these two ways of understanding ideas. A core insight derived from this duality is that, for a full understanding of ideas and their role in the creative and innovative process, both approaches are indispensable – both have the potential to contribute unique information and insights, yet each also comes with inherent limitations. We address the implications of this duality for future research across organizational studies.

A HISTORICAL OVERVIEW OF IDEAS

To make sense of the diverse use of the term *idea* across disciplines today, we first trace its history in philosophy and psychology. We provide a review of the idea literature across periods and domains from early philosophy to modern psychology and use our review to derive a general working definition that aims to encompass the concept in all its breadth. We then connect the historical roots of ideas as a technical philosophical and psychological term to the way it has been borrowed and appropriated by organizational research related to creativity and innovation.

The Concept of Ideas in History

Theorizing about ideas has a tradition almost as old as philosophy itself, but usage of the term has changed repeatedly over the centuries. Although philosophers and other scholars have disagreed (and sometimes still disagree) on what ideas are, reviewing the history of the term gives rise to a general definition of ideas as *provisional and communicable representations.* Thus, ideas stand for something (like a concept, category, object, property, action, etc.) but are not the thing itself; they are neither absolute nor unchangeable; and they have the potential to lead to some utterance, description, or action. As we will see, this definition is broad enough to accommodate a variety of interpretations and approaches to ideas, while capturing their essence across several domains and disciplines.

Our review reveals three successive developments in thought about ideas over the course of philosophy and psychology that give rise to our definition, with ideas moving from being conceptualized as *representations* in classical philosophy to *provisional* in modern philosophy and, finally, *communicable* in early psychology.

Ideas in classical philosophy: ideas as representations. Some of the earliest questions by philosophers concerned how people perceive reality, how it is possible to think about objects other than through direct perception, and the relation between thoughts and

external reality. Those questions played an important role in early metaphysics and ideas were central to addressing them in this early work (e.g., Russell, 2009; Urmson, 2006). Theorizing about the relationship between reality and the way we think *about* reality, philosophers have always seen and discussed ideas as *mental representations of objects of cognition or perception*. That is, ideas are representations of a thing, rather than the thing itself. In fact, the English word "idea" is a transliteration of the Greek word *ἰδέα* (idea, "form, pattern"), which in turn derives from the word *ἰδεῖν* (idein, "to see") (OED, 2021).

In early antiquity, ideas occupied a somewhat exalted status in philosophy, so that the nature of the representation was seen to be the real or true essence of things. Plato's theory of Ideas or Forms was one of the earliest philosophical discussions of ideas, where they were considered to be eternal and to have independent existences. In the Platonic view, then, the idea of "a cat" is separate from the (or indeed any) physical cat we encounter. Thus, a Platonic idea is not a thought or a notion in the mind, but rather has meanings closer to our contemporary understanding of ideals (Urmson, 2006). Moreover, ideas determine the nature of objects or events: "It is, for instance, the presence of evil in an act that makes it evil, the presence of beauty that makes a picture beautiful" (Boas, 1974: 543). Thus, ideas have primacy over the objects of perception or thought, being more real or grounded more fundamentally in reality. In contrast, Plato's pupil Aristotle linked ideas more to human thought and perception, arguing that our ideas or concepts are in fact abstractions derived from the real world. At the same time, ideas could guide human action, such as in the case of an artist (say, a sculptor) who has an idea of what he/she aims to make and what it should look like. Thus, ideas could be both abstractions derived from perception, and ends or purposes guiding action (Boas, 1974). In both cases, however, ideas are representations.

Plato's view of ideas as eternal, ideal, and independent objects had a huge influence on later antiquity and the Middle Ages (Boas, 1974; Russell, 2009; Urmson, 2006), but in a

modified or expanded fashion. One of the most important and early modifications of the Platonic view is the religious concept of ideas as the thoughts of God, or arising from the thoughts of God. Boas (1974: 546) refers to this as "Christian Neo-Platonism", attributing this to the writings of Saint Augustine in particular. Similarly, Peter Abelard, a 12th-century French scholastic philosopher, argued that Platonic ideas occupy the divine mind as patterns of creation and are, in fact, God's concepts (Russell, 2009). Thomas Aquinas wrote about ideas as "the divine essence, which everything resembles to the extent that it exists and is good". However, departing from the Platonic notion of ideas as ideals or universals, Aquinas also suggested that "there are as many divine ideas as there are ways of thinking about the divine essence" (Nevitt & Davies, 2020: 339).

***Modern philosophy: ideas as provisional*.** Later thought about ideas was characterized by a development away from divine concepts and, more in line with the Aristotelian conception of ideas, closer to human thought (Blackburn, 2016). A major aspect of this shift in meaning is that ideas lost their absolute connotation, and instead took on a more *provisional* aspect related to individual human thought. This development was foreshadowed by Aquinas (as quoted above), who pointed out that different ideas about the same thing could exist, even in the mind of God.

However, ideas need not be thoughts in the mind of God or abstract universals, but can also be human thoughts about concrete things or actions – in fact, echoing Aristotle, Aquinas also noted that "the word 'idea' implies that there is a form thought about by an agent who intends to produce an external object that resembles it. A builder, for instance, first has the form of a house in mind, which is a sort of idea of the house to be made out of matter" (Nevitt & Davies, 2020: 339). Aquinas's use of the word "implies" suggests that this non-divine and concrete meaning of idea as a form or plan in (human) thought was already in common use by then. Thus, when the word was taken over into the French and English

vernacular in the 16th century, there were two elements in the concept of an idea: that it was an exemplar or pattern, and that it was a thought in the mind. As such, around the 17th century, the term idea often or usually meant, in lay usage as well as for philosophers, "mental image" (Urmson, 2006). René Descartes wrote in *Meditations* (1641; in Urmson, 2006): "Some of my thoughts are as it were the images of things, and it is only in these cases that the term 'idea' is strictly appropriate – for example, when I think of a man, or a chimera, or the sky, or an angel, or God". This was further developed by the British empiricists, most notably John Locke, who said that "ideas are… the immediate objects of our mind" (Locke in McRae, 1965). David Hume similarly thought that "all our simple ideas are derived from impressions which exactly represent them" (Hume in Russell, 2009).

The link between perception and ideas remained tenuous in that empiricist philosophers posited that all knowledge comes from perception, whereas other philosophers (such as Descartes) had also clearly acknowledged our ability to think (and hence have ideas) about things we cannot (directly) perceive. The associationist school of thought, to which Locke and Hume also belonged, posited that thought was a matter of combination and manipulation of ideas (mental images derived from perception). This is also called the "image theory" of thinking (Blackburn, 2016). Thus, the mind is thought to be furnished with its raw materials through perception. In imagination and thought we can build new ideas, but only by recombining the elements (ideas) already given. Such new ideas would therefore be complex, and the basic elements from which they are built are the simple ideas (Blackburn, 2016). Eventually, this approach to thinking was considered inadequate and abandoned and, by the late 19th and early 20th centuries, discussion of ideas as exact representations of experience was practically eliminated from Continental and British philosophy. Exemplifying this shift, for instance, Kant describes ideas as "a necessary concept of reason to which no corresponding object can be given in sensation" (Kant in Urmson, 2006).

Thus, ideas were increasingly conceptualized as different from direct sensory experience or its results. In addition to being representations, ideas were understood as *provisional possibilities*, rather than literally or exactly corresponding to some external object, event, or category. Any idea is one of multiple possible ways to represent something, and many different ideas may exist about a particular object of cognition or perception (Borghi, Binkofski, Castelfranchi, Cimatti, Scorolli, & Tummolini, 2017). For instance, different people may have different ideas of beauty or fairness. Similarly, different people may have their own way of understanding a story, a piece of music, or a work of art. This notion of provisionality in the sense of ideas not being absolute or objective representations persists to the present day – for example, we talk of a person's idea or conception, implying that the idea indicates that person's way of understanding (OED, 2021).

Early and present-day psychology: ideas as communicable. In the United States in the late 19th century, ideas became central in the pragmatist school of philosophy, represented by Charles Sanders Peirce, William James, and John Dewey, among others (Urmson, 2006). Central to pragmatist philosophy was the link between ideas and action. As such, the notion of ideas as provisional representations had become firmly entrenched in philosophical thought. For example, Dewey defined ideas in this way in *Logic: The Theory of Inquiry* (1938: 109): "An idea is first of all an anticipation of something that may happen; it marks a possibility." Further, Dewey (1938: 110) wrote that: "Every idea originates as a suggestion, but not every suggestion is an idea. The suggestion becomes an idea when it is examined with reference… to its capacity as means of resolving the given situation". Dewey, like Peirce before him, was not interested in "pure ideas", but rather in the *functionality* of ideas. Dewey's pragmatic theory of inquiry as action and ideas as tools for directing our activities continues to influence research on innovation and creativity today (e.g., Carlile, 2002; Stark, 2009).

While the pragmatist school of philosophy linked ideas to action and human behavior, with the advent of experimental psychology, ideas came to be understood as not just provisional representations but importantly also as *communicable* mental products, in the sense that the form of the representation is something that can be put into some externalized form, either verbal or nonverbal, and often one that can be shared with others (Rothberg, 2004). This is partly due to methodology – for mental products such as concepts, attitudes, and ideas to be empirically studied, they cannot just exist inside the minds of individuals but must be expressed or communicated somehow, even if just to the experimenter or some sort of data-gathering device (such as a questionnaire). Similarly, the link between ideas and behavior – such as in ideas as a blueprint, as described by Thomas Aquinas, or ideas as spurring on action in the pragmatist school of thought – presupposes some sort of possible expression or communication. Even if an idea is not verbalized, drawn, or otherwise communicated, it should be possible to do so. Other psychological constructs may cause actions; for example, a sudden rush of affection may cause us to embrace somebody. However, unless there is something about the link between feeling and behavior that could, in principle, be expressed more explicitly ("you looked so forlorn, I thought you could use some support"), we would not describe this action as resulting from an idea.

One decisive development in this regard was the advent of operationalism in psychology. Originating in physics in the early 20th century as the view that we can only know about any concept, process or entity if we have a way of measuring (operationalizing) it (Bridgman, 1927), operationalism (also called operationism) became a dominant approach in psychology with the rise of the behaviorist tradition. Pitting itself against the more traditional psychological approaches such as introspection, behaviorism aimed to re-shape psychology into a truly behavioral science, researching the relation between stimuli (such as reinforcement) and responses without the need to resort to invisible or unobservable

constructs or processes (such as, presumably, ideas). Of course, even in the earlier introspectionist traditions in psychology, the ability to report on one's thoughts or sensations was a crucial precondition for the empirical study of mental processes and products. One of the complications of introspective psychology, however, was that it did not seem possible to isolate single ideas from what William James (1890) called the stream of consciousness, let alone doing so in a standardized way that would allow for systematic study. In his seminal work *The Principles of Psychology*, James (1890: 277) diverges from the earlier empiricist notion of ideas as he writes: "mental atoms or molecules [of consciousness] are what Locke called 'simple ideas'… it is often *convenient* to formulate mental facts in an atomistic sort of way… [but a] permanently existing 'idea'… is as mythological an entity as the Jack of Spades".

Operationalism, as a reaction to the pitfalls and complications of introspectionist research, constituted an attempt to place psychology on a more sound and objective footing as an empirical science (e.g., Fancher & Rutherford, 1979). Ideas played no role in the behaviorist tradition as explanatory concepts; this changed with the advent of social psychology, which focused on explaining people's behavior by studying such invisible constructs as beliefs, opinions, and attitudes – all of which are sometimes called ideas in everyday language. Nevertheless, adequate operationalization of such theoretical constructs has always remained a crucial element of psychological research.

Another important development in this regard was the rising prominence of assessment psychology as a consequence of the two World Wars, which spurred the development of standardized tests in order to measure people's abilities and personality in order to predict future behavior and performance. This psychometric development meant a strong emphasis on quantification and the development of reliable and valid measurements of previously intangible constructs such as intelligence and potential. The influence of this

approach on the study of ideas is, of course, most visible in Guilford's (1950) seminal article, which is generally considered the starting point of modern creativity research. Guilford (1950) made the case for the study of creativity, arguing that this area had previously been neglected, yet should be considered the province of psychological research like any other form of behavior.

The approach in this article was strongly operational in the sense that creativity (and, as such, ideas) should, according to this analysis, be studied (and theorized about) in terms of observable behaviors which would allow us to derive (and test) hypotheses about the underlying factors and processes. Remarking that "In defining personality, as well as other concepts preparatory to an investigation, definitions of an operational type are much to be preferred", Guilford (1950: 444–451) argued that analysis or description of creativity in terms of, for example, genius, intuition, inspiration or incubation "tells us almost nothing about the mental operations that actually occur". What is necessary instead is some way of studying the observable results or consequences of creative abilities or personalities. Guilford adopts a psychometric approach, strongly oriented towards developing reliable and valid ways to quantify creative ability and/or performance. As we will see, this approach has shaped much of the subsequent empirical and theoretical work on creativity, and many current measures of creativity are derived directly from his work. Ideas are the observable products of creative behavior and can be counted and coded in order to assess and compare people's creative performance (and hence to draw conclusions about, for example, their creative abilities).

Working definition*.** In sum, having traced the evaluation of the concept of ideas over time, we identify the three defining features of ideas that constitute our ***working definition: *Ideas are provisional and communicable representations.* Ideas are representations because they stand for something, such as a concept, a category, an object, or an action (or series of actions). Ideas are provisional because they are changeable and subjective – they are not a

matter of direct perception nor absolute truth. Finally, ideas are communicable: they can be communicated, shared, and/or enacted – for example in words, visually, in tangible form, or through actions.

Current Usage: Ideas as Linked with Creativity and Innovation

With the nature of ideas having been debated and discussed throughout history in philosophy and later in philosophy, and moving from a general notion of representations to more provisional and psychological/behavioral representations, ideas have undergone another shift in meaning in more recent times. Specifically, the term idea has transitioned from a technical philosophical and psychological term to being increasingly borrowed and discussed in the narrower context of creativity and innovation. Today, most discussions of ideas happen in areas of research that involve creativity and innovation. In these fields, the ideas that people deal with are typically *new* ideas; that is, ideas that imply some novelty or change, such as new product ideas, ideas for improvements, artistic ideas, etc.

The aspect of novelty was already implicitly present in the provisionality of ideas, in the sense of ideas being representations of *possibilities* (possible interpretations or reality, possible actions, etc.) rather than absolute truths, but only became a dominant characteristic of ideas in the 20th century as ideas became less prominent in philosophical discourse and more popular in everyday usage. Following the economic expansion in the US after World War II, creativity and innovation (as opposed to traditional factors such as labor and capital) were identified as the drivers of the unprecedented economic growth (e.g., Solow, 1957). This had two consequences.

The first was a surge of popular (business) writing that used ideas interchangeably with creativity, imbuing the term with a normative connotation that was not present through most of history. In Alex Osborn's influential *Applied Imagination* (1963: 5), for instance, he makes frequent statements such as "agricultural ideas have made far richer the rich soil of our

country" and "ideas are the keys to better employee relations". In these and similar writings, the term is used broadly, but the author clearly implies that he is interested in and referring to only a subset of ideas: valuable, creative ideas. In other words, *the kinds of ideas that are worth seeking (and studying) are new ideas*. We continue to see this influence in contemporary research, where the concepts of creativity and ideas are often used interchangeably, where creativity is a process that produces ideas, and ideas are, tautologically, the products of a creative process (e.g., Litchfield et al., 2015; Unsworth, 2001).

The second, related consequence of creativity and innovation being identified as key drivers of growth was the view of ideas as economic goods. This is perhaps best exemplified in the writings of economist Paul Romer (1992), who argued that "using ideas and producing ideas" are key strategies for economic growth. This view continues to the present day, exemplified for instance in Florida's (2002: 37) controversial book *The Rise of the Creative Class*, where he claims that creative workers control, in a sense, "the means of production because it is inside their heads". This marks a shift in the language we use to discuss ideas – today it is taken for granted to use phrases such as "producing ideas" or "generating ideas", but that ideas could be "produced" would have been a radical proposition before the aforementioned social and economic changes. Although the associationist school of philosophy allowed for the production of new ideas through the combination of existing, perception-derived ideas, the focus there was never on the production of new ideas in the sense of creative or innovative ideas – in fact, Godin (2015) argues that "innovation" had a negative meaning of something undesirable for most of human history, and only became something to strive for over the course of the 20th century.

Historically, the rise of ideas as new ideas that individuals produce was accompanied (and perhaps made possible) by the development of intellectual property law and the

intellectual changes underscoring it. The notion that the individual (rather than, say, a god, a force of nature, or a muse) creates ideas, information, and technical principles only began taking root during the Enlightenment of the 18th century (Woodmansee, 1984). In Renaissance Venice, for instance, legal protection of new printing techniques or images was granted on a first-come-first-served basis, instead of rewarding the "originator" (Nard & Morriss, 2006). Only towards the end of the century did a construct of "possessive individualism" evolve, wherein the author or inventor creates new ideas through his/her mental labor and is seen as the owner of their intellectual creation (Bracha, 2016: 3).

The elevation of the value of ideas and the individual's mind as being the source of creativity and innovation is also evident in other areas such as the emergence of conceptual art in the 1960s. Sol LeWitt, a prominent artist in the movement, argued that "in conceptual art the idea or concept is the most important aspect of the work… and the execution is a perfunctory affair" (LeWitt, 1968).

Table 1 contains a selective overview of definitions of ideas used in current research that illustrate this shift towards new ideas in organizational research. We therefore continue our review by narrowing our focus to the use of ideas in organizational studies.

REVIEW OF IDEAS IN ORGANIZATIONAL RESEARCH

As outlined in the previous section, following a long historical evolution, ideas are now linked closely with creativity, innovation, and the production of knowledge in modern scholarly and popular discourse, such that they are a fundamental unit of study in organizational research. Specifically, interest in ideas spans research on creativity, brainstorming, innovation, networks, entrepreneurship, creative work, design, and knowledge creation. In this section, we review current usage of the term in organizational research. In doing so, we will demonstrate how current conceptions of ideas (both in terms of explicit definitions and descriptions and in terms of how they are implicitly studied or used) are

closely aligned with the general working definition on the one hand, yet display considerable diversity on the other – to such a degree, in fact, that we will argue for the existence of two separate views of what ideas are and how they can be studied.

What are Ideas in Organizational Research?

Consensus with historical definitions. Although the "idea-centered" literatures mentioned above primarily study and theorize *new* ideas, both the few explicit definitions and operationalizations of ideas that are available (illustrated in Table 2.1) and the nature of ideas implied by their usage in research still fit with our working definition of ideas as provisional, communicable representations. Explicit definitions emphasize the representativeness of ideas; for example, "An idea is an object of thought... intangible, and evidenced indirectly. While an idea cannot be seen, it can be represented, discussed and symbolized." (Rothberg, 2004: 1060). Other work defines ideas as scenarios (Sukhov et al., 2019), mental images (Thorleuchter, Van den Poel, & Prinzie, 2010), or general concepts of what might be feasible (Knudsen, 2007). In particular, current definitions of ideas often emphasize them as representing *actions* or steps to be taken, such as when trying to solve a problem or achieve some other goal (such as product development). Many definitions contain words and phrases such as "proposal", "way of doing something", or "input to action" (see Table 2.1). In other words, most current definitions take it that ideas are meant to achieve or solve something (e.g., as a response to "a context that is deemed unsatisfactory"; Sukhov et al., 2019: 40), or at least represent some step *towards* some solution or goal attainment.

Provisionality is also very strongly represented in these explicit definitions, as evidenced by such words as "embryonic", "suggestion", and "initial". Ideas are still viewed as tentative, subject to change, and requiring further development. Although some definitions refer to the importance of clarity and comprehensiveness (e.g., Sukhov et al., 2019), it is also often understood that ideas are not the "plan of action" themselves – instead, they are

suggestions or proposals that have "not yet been formally designated as projects or programs" (Rubenstein, 1964: 627). In addition to tentativeness, many contemporary definitions mention some form of novelty, using words and phrases like "new product or service", "make a difference", "unique approach", and "recombination of old ideas". This recently emerged aspect of novelty is also closely tied up with provisionality, since a novel idea always represents a possibility rather than a certainty. Some authors also refer to novelty as a consequence (rather than a property) of ideas; for example, Sukhov and colleagues (2019: 29) mention that one function of ideas is to "trigger new associations and give rise to new ideas", and Proctor (1991: 225) mentions that ideas (or insights) "can lead to a restructuring of that problem and the development of further insights into the solution of the problem". The novelty of an idea could reside in its being a new way to achieve a known goal, or could also represent a new goal (such as a new product). Alternatively, "an idea could be the usage of an [existing] invention in a new environment" (Maier, Suarasan, & Nicoara, 2012: 482). More important than normative novelty, then, might be the fact that ideas are thought to bring some kind of change, such as a change in the way we think about a problem or task (Cronin & Loewenstein, 2018) or in the state of an (as yet) unsolved problem or design challenge.

Further, in line with our historical overview, the consensus among the definitions appears to be that ideas are communicable. Some definitions explicitly refer to ideas as verbal descriptions, while others point out that they could be diagrams or even physical objects. Thus, definitions use words and phrases like "textual pattern", "represented", "discussed", or "narrative"; Rhodes (1961: 309) explicitly defines an idea as "a thought which has been communicated to other people in the form of words, paint, clay, metal, stone, fabric, or other material." In sum, the papers that have explicitly defined ideas in organizational research cohere with the historical view of ideas as provisional, communicable representations.

Besides those explicit definitions, the way that ideas are used across organizational studies also implies that they are seen as provisional and communicable representations. For example, contemporary models of creativity typically represent idea generation as a cognitive process of divergent thinking resulting in mental representations that can then be elaborated, assessed, and implemented (Amabile, 1988; Guilford, 1950; Perry-Smith & Mannucci, 2017). Psychological perspectives of creativity, for instance, often view creative thinking as a type of problem-solving (Parnes & Meadow, 1959). These approaches imply that ideas are worked on in the mind through mental processes and operations (e.g., Finke, Ward, & Smith, 1992). The cognitive nature of representations is also fundamental to organizational theories that deal with ideas. In innovation research, the creation of ideas in one's mind is seen as the first step of the innovation process (Garud, Teurtscher, & Van de Ven, 2013; Utterback, 1971); in a manner of speaking, "creativity is thinking about new things, innovation implementation is about doing new things" (West, 2002: 357). Similarly, entrepreneurship research has equated ideas with new relationships between concepts – a new means-end relationship (Shane, 2012) – and more recently, as plans for an imagined future venture based on an entrepreneur's subjective beliefs (Shane, 2012; Davidsson, 2015). Network research also describes how brokers synthesize disconnected and diverse information into new mental representations (e.g., Burt, 2004).

The notion of provisionality is also embedded in our theories of creativity and innovation, in which ideas occur early in the creative process and are often considered to be incomplete versions or containing partial features of the final product or solution. Those literatures describe ideas as "embryonic" (Montoya-Weiss & O'Driscoll, 2000) and "initial" (Berg, 2019). Ideas are therefore provisional, and indeed may never turn into the object itself. For example, an idea for a novel may never get written, or the idea may transform fundamentally during the writing process so that the initial idea never manifests.

The fields of creativity, innovation, and entrepreneurship focus on explaining how ideas move from a vague provisional state that occurs at an early stage in the process into more specific ideas elaborated with detail. Initial ideas that lack detail are conceived as incomplete, but over time they become more detailed as they move towards finalization (Berg, 2019). Adding detail to an idea through idea elaboration has been considered a core creative process (Finke et al., 1992), and elaboration is sometimes proposed as a measure of idea quality (besides e.g., originality and usefulness). Entrepreneurship studies similarly explore how ideas for new ventures are created and developed (e.g., Neck, Meyer, Cohen, & Corbett, 2004; Stough, Haynes, & Campbell, 1998) or why some venture opportunities are identified but not developed and pursued (e.g., Short, Ketchen, Shook, & Ireland, 2010). The entrepreneur's idea about a new means-end relationship or combination forms a template for a venture that gives direction to the venture, which can be modified, developed, and elaborated over time (Bird, 1988). That literature often treats ideas as synonymous with "opportunities" (e.g., Eckhardt & Shane, 2003) or "possibilities" (e.g., Hill & Birkinshaw, 2010), which implies a level of provisionality.

Finally, usage across sub-disciplines implies that ideas can be transmitted holistically from one person to another. For example, research on scientific discoveries (Ben-Menahem, Von Krogh, Erden, & Schneider, 2016; Wuchty, Jones, & Uzzi, 2007) takes an idea as a final manifestation of a creative process where the discovery can be written or told to other researchers (e.g., Singh & Fleming, 2010). In their study of the network structure underlying Broadway musical hits, Uzzi and Spiro (2005) distinguish between creative ideas (as the whole musical) and creative material (as in conventions or basic components of music, dance, and lyrics in the domain). In another example, Simonton (2003) treats research papers as the dependent variable and argues that papers have one core idea, even though many concepts, thoughts, and insights likely go into that holistic idea. The view that ideas can be transmitted

between people is perhaps most evident in network research, where ideas are conceptualized as moving through the network to different agents (e.g., Burt, 1992). Similarly, in the innovation literature, Sukhov (2019: 38) defines ideas as "a short contextual narrative consisting of a solution to a certain problem", suggesting that an idea is a (brief description of a) full solution that can be passed on to users, customers, other creators, etc. This approach is also in line with work in brainstorming and other creativity experiments, where participants are typically asked to write down their ideas as a response to questions on how certain things can be improved or how certain problems can be solved (e.g., Diehl & Stroebe, 1987). Thus, many studies address communicability in terms of explicit verbal or non-verbal transmission of ideas.

Diversity within organizational research. Despite strong consensus about the features of ideas, both in terms of how they are (explicitly) defined and (implicitly) used, our review also uncovered a huge diversity in the way that those features have been applied and understood. The three definitional features therefore offer a historically consistent yet limited slice of the nature of ideas as they have been studied in organizational research.

Although the dominant view is that ideas are mental representations, some scholars have also hinted at ways that representations can exist in physical or material form; that is, representations that are embodied, material, or enacted. From that perspective, ideas are representations of perception or behavior rather than cognition. For instance, a dancer may move in a way that invokes the feeling of an animal (e.g., Harrison & Rouse, 2015). In doing so, the dancer's idea is the movement, and the movement represents a particular feeling, which in turn shapes our experience and how we interpret more abstract entities (Heracleous & Jacobs, 2008). The roots of the view of representations as embodied are present in early philosophical and psychological writing on ideas. Indeed, in medieval times there was no stark divide between the mental and the embodied – the arts, for instance, were considered a

skill or an activity (Weiner, 2000), and only in modern history did we consider the conceptual and the enactment a dualism (see Glăveanu & Kaufman, 2019, for a discussion). Similarly, in early psychological work on creativity, Guilford (1967: 8) suggested that the cognitive processes of divergent thinking and transformation "depend upon the media in which the person is working – for example, whether he deals with lines and colors, sounds, or words, as in the various arts", raising the possibility that the form that an idea takes depends on whether and how a creator works with (physical) material to develop it.

This way of understanding representations has gained more momentum recently, with some current strands of creativity research, particularly studies of creative work, taking the approach that ideas are embodied representations (Biscarro & Cammachio, 2018; Harrison & Rouse, 2015; Stigliani & Ravasi, 2018; Sutton & Hargadon, 1996). The line between ideas as embodied representations, on the one hand, or mental representations that happen to get physically communicated, on the other, is not always clear. However, scholars adopting this view suggest that there is something physical about these ideas themselves, or at least that there is no clear dividing line between the mental and embodied aspects of ideas, and that something crucial about the idea occurs at the interface of the material and the person dealing with that material. For instance, Withagen and Van der Kamp (2018: 1) view creativity as "the discovery and creation of unconventional affordances (action possibilities) of objects and materials", defining ideas as representations of possibilities for action rather than cognitive concepts. Following that approach, research describes how aesthetic knowledge, derived through bodily sensations, becomes incorporated in creative work (Sawyer, 2000; Stephens, 2020). That sentiment is echoed in organizational research on design by Stigliani & Ravasi (2018: 749), who note that "the production of sketches, drawings, and prototypes not only is a way to represent provisional design ideas, but also central to how these ideas are developed intuitively in the first place". Heracleous and Jacobs (2008) similarly describe

material ideas as “embodied metaphors”, arguing that embodiment shapes our experiences and perceptions, which in turn influences how we interpret more abstract entities. Thus, although ideas have largely been conceptualized as mental representations, there are hints across the literatures that ideas can also be interpreted as embodied representations.

In most studies, ideas are provisional because they are vague or early-stage representations that are not fully formed and will need to be elaborated with detail. A growing stream of research, however, views ideas as provisional in the sense that multiple different representations of the same thing can exist, so that many ideas may exist about a particular object of cognition or perception (Borghi et al., 2017). For instance, one person’s idea of fairness may mean the distribution of benefits to those who deserve them most; another’s may mean the distribution of benefits to those who need them most; and another’s may mean the equal distribution of benefits. Similarly, each individual may have their own unique way of understanding a story, a piece of music, or a work of art. Common usage confirms that we talk of a person’s idea or conception, implying that the idea indicates that person’s way of understanding (OED, 2021). Indeed, the notion of shifting perspective (for instance, by shifting from one category or way of understanding to another) is fundamental to theories of how ideas are created and developed (e.g., Duncker, 1945; Guilford, 1950; Kuhn, 1970). For example, if faced with the question of how to improve or redesign a hospital chair, a shift in perspective would be a new way to think about what a hospital chair could be (Stigliani & Ravasi, 2018). A historical example, described by Hofstadter and Sander (2013), is Galileo’s discovery of the moons of Jupiter. The crucial idea, they argue, was not the observation of objects orbiting a distant heavenly body, but Galileo’s representation of these objects as *moons* (i.e., as members of a category), a word that until then had only been used in a singular sense (‘the moon’).

Reflecting this view of provisionality as differing interpretations, some literature on creative cognition, design thinking, and knowledge creation is devoted to understanding how people and collectives shift between one way of understanding and another. For example, research has long suggested that flexibility to generate ideas from different categories is a foundational cognitive process for creativity (e.g., Guilford, 1950; Rietzschel, Nijstad, & Stroebe, 2010), and reframing problems is a core skill for creative thinking (e.g., Getzels, 1975; Reiter-Palmon & Robinson, 2009). In design thinking, problems are also understood to be ill-defined (Buchanan, 1992) and reframing problems is often a turning point in solving them (Inie & Dalsgaard, 2017). In addition, research on knowledge creation emphasizes the need to reconcile different ways of interpreting diverse knowledge (Carlile, 2002; Majchrzack et al., 2012) in explaining how new ways of understanding emerge (e.g., Nonaka, 1994; Tsoukas, 2009). It appears, then, that the provisional nature of ideas is conceptualized in two very different ways in the literature, with the dominant view being about the degree of finality, completeness or detail, and an emerging view that instead focuses on the multiplicity of possibilities or ways an idea can exist.

Finally, whereas the dominant perspective assumes that ideas are communicable in that they can be transmitted from one person to another, from another perspective ideas have been treated as Uzzi and Spiro's (2005: 448) "creative material", and as such can only be communicated through action and interaction. This parallels the notion of tacit knowledge, which has a personal and implicit quality that makes it hard to formalize and communicate, and is deeply rooted in action, commitment, and involvement in a specific context (Nonaka, 1994; Polanyi, 1966). From that perspective, ideas are procedures or schemas for actions and so cannot be simply passed from one person to another, but rather can only be understood when the other observes or responds to the idea. The meaning is contained, or even created, in the interaction, the initial action and the response together (Tsoukas, 2009). For example,

in a study of improvisation in work teams, Vera and Crossan (2005) discuss the exchange of and building upon each other's ideas as central to group or team improvisation. Thus, one example they cite from an interview with an organizational team member is: "There was a mechanical breakdown of an air-conditioning system... We came up with the idea to set up a sprinkler system to cool the unit down so that it would actually run" (quoted in Vera & Crossan, 2005: 211). In this sense, ideas are components of creative output or a creative product that reside in different creators or parts of a system: they are the concepts that can be combined, or the smaller insights that lead to the creative breakthrough, but only when brought together through interaction. Thus, to sum up, the communicability of ideas is theorized about in different ways, with most studies viewing it as something that can be externalized explicitly, but there are hints from a growing body of work about communicability being more implicit and embedded in interactions.

Summary. Our review thus shows an enormous diversity in the ways ideas are conceptualized and operationalized in organizational research. Whereas the view of ideas as primitive (not fully formed) mental representations that can be passed between people dominates, there is also evidence that ideas may be embodied and interpretable representations that arise in the interactions between people. Moreover, that view may be a better match for at least some forms of ideas, such as those represented by performances, that develop through discussion, drawing, or prototyping, or that develop their meaning based on how others interact with them.

How Are Ideas Studied in Organizational Research?

To better understand these two potential meanings of ideas, we systematically explored research findings about ideas across the sub-disciplines in our review. In particular, we aimed to understand what is known about each of the following questions: (1) How are ideas measured? (2) How are ideas produced? (3) Where are ideas located? and (4) How are

ideas assessed? Organizing findings about ideas in this way revealed two distinct approaches to research on ideas that underlie the observed diversity of meaning.

One approach – most evident in the literatures on brainstorming, organizational creativity, networks, entrepreneurship, and innovation – views ideas as *discrete entities* that appear instantaneously in individual minds and have inherent qualities (e.g., novelty). While these literatures are diverse, they tend to address two broad topics. One topic is how ideas are generated and how people respond to them. For example, research in that vein examines factors that increase the production of ideas during creative idea generation (e.g., Paulus et al., 1995; Rietzschel et al., 2014) or for entrepreneurs developing venture ideas (e.g., Perry-Smith & Coff, 2011) and how employee creativity is evaluated in organizations (e.g., Shalley & Gilson, 2004). A second topic is how ideas act as the raw material or starting point around which other processes occur. For example, some studies consider ideas as a result of occupying an advantageous network position (e.g., Burt, 2004) or overall network structure (e.g., Capaldo, 2007), the identification of entrepreneurial market opportunities (e.g., Shane, 2012), and how ideas are implemented and exploited through innovation processes (e.g., Laursen & Salter, 2006). These literatures typically utilize deductive methodological tools such as online or laboratory behavioral experiments, in the case of brainstorming (e.g., Diehl & Stroebe, 1987; Paulus et al., 1995; Taylor, Berry, & Block, 1958); surveys, field studies, and experiments, in the case of organizational creativity (e.g., Berg, 2019; Dailey & Mumford, 2006; Mueller, Melwani, & Goncalo, 2012; Somech & Drach-Zahavy, 2013); and patents or revenue data, in the case of innovation and network studies (e.g., Laursen & Salter, 2006; Oldham & Cummings, 1996).

The other approach views ideas as continuous and emergent over time, embedded in actions and social relationships and contexts through which the qualities of ideas are constructed. That approach can be found in a growing number of studies in the broader

creativity literature, often also connecting with literatures such as networks (Long-Lingo & O'Mahony, 2010), coordination (Harrison & Rouse, 2014), and education (Sawyer & DeZutter, 2009), as well as in studies of design (e.g., Stigliani & Ravasi, 2018), knowledge creation (e.g., Ewenstein & Whyte, 2007) and parts of the innovation literature (e.g., Garud et al., 2013). Compared to the former, more dominant approach, this does not share a clear research paradigm and is more diffused across research areas. It therefore addresses a broader array of research questions, including how novelty is produced (e.g., Harrison & Rouse, 2014, 2015; Harvey & Kou, 2013), how new knowledge is created across disciplines or boundaries (e.g., Bereiter & Scardamalia, 2014; Hargadon & Sutton, 1996; Tsoukas, 2009), and the role of materials in the design process (e.g., Ewenstein & Whyte, 2007; Sutton & Hargadon, 1996). These studies have tended to be inductive and thus have often captured ideas in different phases of development and different forms. They therefore evade consensus on a set of specific questions, yet they share a set of underlying assumptions and understandings about ideas that can be usefully contrasted with studies of brainstorming, organizational creativity, innovation, networks and entrepreneurship.

In the sections below, we consider how each approach provides different answers to our set of four questions that are logically important for the study of ideas: (1) How are ideas measured? (2) How are ideas produced? (3) Where are ideas located? (4) How are ideas assessed? We find that, in many cases, the different approaches produce assumptions about ideas that are inconsistent and sometimes incompatible.

i. How are ideas measured?

Ideas as discrete entities. Many studies assume that ideas are discrete entities and can be measured as such, either in the way they are observed to occur or by actively eliciting them as separate ideas. For example, in the field of applied creativity, brainstorming (Osborn, 1963) is almost the archetypal idea-generation task. Brainstorming studies usually count

participants' ideas to derive a measure of ideational fluency. The fluency factor, as first theorized by Guilford (1950: 452), referred to the degree to which people were "capable of producing a large number of ideas per unit of time", and implies that ideas can be counted and hence distinguished from each other. Brainstorming was designed as an idea-finding technique in the highly applied context of advertising and organizational problem-solving. During idea-finding, the goal is to come up with tentative ideas as possible leads. In this tradition, ideas can be captured – whether in the form of a verbal statement, a drawing, a prototype, or another kind of instantiation – and stored. Research on brainstorming has mostly focused on participants' ability to come up with such ideas under varying circumstances (e.g., in groups or as individuals, using different kinds of instructions, etc.).

Since brainstorming was specifically designed to increase ideational fluency (the number of ideas generated), this has traditionally been the dependent variable of interest in this line of research (see Stroebe, Nijstad, & Rietzschel, 2010, for a historical overview). The ideas elicited in such brainstorming experiments are typically counted and coded individually. Moreover, since participants are encouraged to generate as many ideas as possible, the ideas tend to be relatively briefly phrased. Thus, for example, participants might write down ideas such as "Changing the layout of supermarkets so that people are more likely to see healthy products than unhealthy products" (Rietzschel, Nijstad, & Stroebe, 2007), "Use hypnosis to increase students' concentration," (Rietzschel, Nijstad, & Stroebe, 2006), or "Fire professors who don't do enough research" (Reinig, Briggs, & Nunamaker, 2007). The experimental set-up is such that participants are instructed to input their ideas in discrete spaces, for example writing down one idea per line on a page or per piece of paper (e.g., Rietzschel et al., 2006), and this way of capturing ideas assumes that ideas are bounded and discrete (as well as forcing participants to write down their ideas in a bounded and discrete fashion).

Another classic creativity task that approaches (and elicits) ideas as discrete entities is the Unusual Uses Task (Torrance, 1962), where participants are asked to generate as many unusual ways to use a well-known object (such as a brick or a cardboard box) as they can. The task was originally designed as an assessment instrument for people's creative potential and, in line with Guilford's (1950) suggestions for the operationalization of creativity, performance on the task is measured by counting and coding (e.g., for novelty) the uses generated. Many experimental studies on creativity use some variant of brainstorming or the Unusual Uses Task, thus treating ideas as discrete entities (e.g., Baer, 1988; Beaty & Silvia, 2012; Berg, 2019; Lindauer, 1990; Lissitz & Willhoft, 1985; Rietzschel, De Dreu, & Nijstad, 2007; Silvia, Nusbaum, & Beaty, 2017; Van Kleef, Anastasopoulou, & Nijstad, 2010; Van Leeuwen & Baas, 2017).

That ideas are discrete entities is also evident in the subfield of organizational creativity, where novel and useful ideas are defined as the output of creative processes (Shalley & Gilson, 2004: 34; see also Oldham & Cummings, 1996; Shalley, Zhou, & Oldham, 2004; Woodman, Sawyer, & Griffin, 1993). The focus of this research is on the contextual and personal factors that contribute to (or hinder) employees' creative performance, such as leadership, feedback and support, job design and characteristics, and employee personality and skills (see e.g., Shalley et al., 2004, for an overview). Studies typically use supervisory ratings or some more objective measure of creative performance, such as patents or submitted ideas, to assess organizational creativity (e.g., Oldham & Cummings, 1996). For performance-oriented measures, researchers may also collect the actual ideas generated by employees or teams in order to count or rate them (e.g., Somech & Drach-Zahavy, 2013).

Ideas as continuous. While the dominant way of measuring ideas is as discrete, countable entities, research on design, knowledge creation, and in-situ studies of people

engaged in creative work reveals that ideas may be more intrinsically connected and the boundaries between them fuzzier than sometimes conceptualized. For instance, when group members propose and elaborate ideas in real time, the line blurs between the group's original vision, group members' suggestions, the integration of their comments, and the fully developed idea (Sutton & Hargadon, 1996). Combining existing ideas and building on ideas are key to the creative process (e.g., Kohn et al., 2011), but it is difficult to determine, for example, when an individual or group is *building on* an idea or is *combining* different ideas (Berg, 2014; Hagtvedt et al., 2019; Harvey, 2013). Moreover, studies have shown that it is often not possible to identify an idea in the beginning: creative output emerges over time through the interactions of group members (Hargadon & Bechky, 2006; Long-Lingo & O'Mahony, 2010; Sawyer & DeZutter, 2009).

Consistent with that research, ideas can be viewed through a process lens, and are understood to continually develop, change, and evolve throughout the creative process or journey (Amabile, 1988; Lubart, 2001; Perry-Smith & Mannucci, 2017). For example, Harrison and Rouse (2014) examined how dance groups collaboratively developed choreographies and found that there was no unitary idea with clear boundaries. Rather, the final creative product (the choreography) was composed of segments of movements, suggestions, and interpretation of movement prompts – it was difficult, if not impossible, to point to a particular thing and identify that as the idea. That makes it hard to know where the idea begins and ends or at what point it can be captured, and implies that ideas are continuous rather than discrete.

Studies that examine ideas as continuous show that they evolve over multiple iterations (Harrison & Rouse, 2014; Harvey & Mueller, 2021), often linking with one another in a non-direct or non-obvious way (Hagtvedt et al., 2019) or in a way that integrates multiple ideas into a whole (Long-Lingo & O'Mahony, 2010). This work also reveals that even once

an idea seems to have reached a final, elaborated state –even one that can be or is implemented – it is not necessarily complete, nor can it be easily encapsulated as a discrete entity, because even its interpretive use in a new context is part of what the idea is (Baralou & Tsoukas, 2015). Thus, studying ideas as continuous means that attempting to capture an idea at any point in its journey will produce an extremely underspecified version of the idea. This view is therefore at odds with viewing ideas as discrete entities.

In addition, more recent research and studies from outside the core organizational work on creativity and innovation recognize the continuous and evolving nature of ideas by focusing on how ideas unfold over time through interaction, rather than trying to pinpoint what the idea is (Obstfeld, 2012; Sawyer, 1992). For example, Obstfeld (2012) focuses on creative projects – the means (in this case organizational routines) by which organizations pursue novelty – implying that, since people are continuously working and changing what they are working on, it makes more sense to capture these dynamics over the course of the project than to attempt to track the journey of any discrete idea. This research also describes how, when group members propose and elaborate ideas in real time, the line blurs between the group's original vision, group members' suggestions, the integration of their comments, and the final, elaborated version of the idea (Sutton & Hargadon, 1996). Similarly, during a musical improvisation, ideas can occur on different levels, ranging from single notes or even timbres of notes to rhythmic patterns, melodic phrases and broader musical styles, such as playing something like Miles Davis might (Sawyer, 1992). Scholars adopting this perspective recognize that the idea is a continuous process of combining all of these levels in a way that is "impossible to segment" (Sawyer, 1992: 258). From this perspective, then, ideas are neither held within nor predictable by the parts from which they emerge (Sawyer, 2000); the ideas cannot be separated from the process in which they arise.

ii. How are ideas produced?

***Ideas as appearing instantaneously*.** Creativity research largely starts from the assumption that coming up with an idea is an act of generation that brings it into existence. As such, there is an identifiable moment in time before which the idea does not exist and after which it exists (and is readily recognizable as such). This view is evident in common metaphors used by scholars that ideas are born (cf. Mainemelis & Ronson, 2006), or that creators bring ideas to life (cf. Berg, 2019). From this perspective, an idea begins in a creator's mind and has no existence until the point at which it is generated (Campbell, 1960; Perry-Smith & Mannucci, 2017). This perspective therefore emphasizes creators' cognitive creative thinking skills (cf. Amabile, 1996) and the ways in which ideas take on their shareable form.

An example from the brainstorming literature is Nijstad and Stroebe's (2006) SIAM model. In this model, ideas are generated in a two-step process: in the first step, an "image" in long-term memory is activated, making relevant knowledge accessible; in the second step, this image is used to generate ideas "by combining knowledge, by forming new associations, or by applying knowledge to a new domain" (p. 192). Thus, ideas are actively formed by a process of activation and (re)combination of domain knowledge (cf. Koestler, 1964). However, it is not assumed that people explicitly construct ideas by deliberately putting together specific pieces of knowledge; rather, knowledge is thought to be combined through a process of spreading activation in an associative network. Cognitive models like these provide an explicit account of how ideas are actively generated at a specific moment by using or combining knowledge or information in certain, novel ways. There is acknowledgement that the generation of creative ideas may (at least in some cases) require directed and sustained *effort* (e.g., Baas, Koch, Nijstad, & De Dreu, 2015; Roskes, De Dreu, & Nijstad, 2012), but there is still a clear before and after of an idea being produced. In this sense, the

approach of ideas as arising suddenly is closely tied to the approach of ideas as discrete entities.

In experimental research using idea-generation tasks like brainstorming or the Unusual Uses Task, ideas are generated in response to a prompt, such as the object one has to generate uses for, or a statement of a problem that needs to be solved. Alternatively, however, ideas may arise more spontaneously and unexpectedly, such as when people suddenly achieve a certain insight. This is captured in the oft-cited description of creative insight by mathematician Poincaré: "the idea came to me, with… brevity, suddenness and immediate certainty" (Poincaré, 1913: 182). These kinds of insights are studied experimentally with tasks such as the Duncker candle problem (Duncker, 1945) – typical of such "insight problems" is that they require a restructuring of the problem before it can be solved (for example, in the candle problem, participants need to change their interpretation of a box of tacks from a mere container to a potential platform) and that the solution arises suddenly (in a "eureka" moment) after an initial impasse (Sternberg & Davidson, 1995).

This assumption of ideas appearing instantaneously is evident in other areas of organizational studies. For example, because network scholars emphasize the structural relationships between people, they imply that good ideas will be generated simply by proximity and so will appear when people have better access to the information of others (e.g., Burt, 2004; Fleming et al., 2007). That ideas will appear in an instantaneous, categorical manner is also evident in the network research premise that ideas are formed through "reconfiguring known approaches" (Perry-Smith & Shalley, 2003: 90). Even though the gathering of information may take place over some time, the crystallization of a new approach or idea is still momentary. In entrepreneurship research, the recognition of ideas or opportunities is similarly viewed as "discovered" when new information triggers some association with complementary information one already possesses (Shane & Venkataraman,

2000) and the idea is suddenly there. Finally, in innovation, ideas are seen as the result of recombining conceptual and physical materials that were previously in existence (e.g., Nelson & Winter, 1982). This literature focuses on the search for existing materials rather than the process of recombination (e.g., Fleming, 2001), implying that if the materials or configuration of materials are right, the idea will "click into place". Thus, while ideas are often seen as the result of some combinatorial process or a process of reframing or redefining (parts of) the problem, they are then thought to come into existence relatively suddenly – one moment the idea is not there yet, the next moment it is.

Ideas as emerging over time. While the dominant view assumes that ideas appear instantaneously, another stream of research instead views ideas to be what emerges at the end of a creative process and argues that there is no clear moment that marks the existence of the idea. In other words, it may be clear (at the end) that an idea was generated, but it would not be possible to pinpoint where in the process this happened. This is true, for example, when ideas are considered to be more complex discoveries or changes in perspective, such as scientific theories. For example, research on scientific discoveries (Ben-Menahem et al., 2016; Wuchty et al., 2007) takes the idea as a final manifestation of a creative process where multiple thoughts, concepts, or associations may have been generated and one idea has been selected, or a set of smaller components has been integrated to form the idea (e.g., Singh & Fleming, 2010). New knowledge, for instance, is thought to result from "building up a structure of ideas... out of simpler ideas", as is the case with a theory or a complex design (Bereiter & Scardamalia, 2014: 35). Similarly, Uzzi and Spiro (2005), in their study of the network structure underlying Broadway musical hits, distinguish between creative ideas (the whole musical) and creative material (conventions or basic components of music, dance, and lyrics in the domain) from which the idea is formed.

Thus, viewing ideas as what exists at the end of the creative process implies that ideas are holistic, and hence cannot be reduced to single momentary insights. When looking back in time, it is easy to identify a moment or a thing as an idea, but in the flow of interaction, each utterance or act provides a range of creative options with each having the potential to result in radically different end points (Sawyer, 2000; Tsoukas, 2009). For example, when a chef experiments with a technique for producing part of a dish, it may produce an unusual texture that triggers an idea for a new flavor to combine with the dish, and so be seen as the beginning of the idea for a new dish; equally, it may leave the food uncooked and inedible but trigger a thought for a different technique to try, or it may produce no change to the dish at all. It is only in retrospect that we can understand whether trying the technique was the beginning of an idea. Similarly, if a group member suggests, during a brainstorming session, "what if we thought about it this way?", we can only know whether that will be viewed as an idea if it turns out to be productive for the group. Thus, ideas are emergent because they come together over time, where elaborations or additions to the idea cannot be understood in isolation because they are reactions to the notions that came before them within the creative process (Cronin & Loewenstein, 2018; Tsoukas, 2009). Even knowing all of the elaborations and additions in isolation cannot add up to the complete idea without understanding how they unfolded over time – the sequence in which each elaboration and addition occurred, and the way that it responded to something that came before, are also relevant to understanding the idea.

One implication of viewing ideas as emergent is that ideas are not reducible to component parts. Ideas can exist at different levels of complexity or completeness but the relationship between them is not compositional in that one idea is not made up of recognizable constituents in the form of other (simpler) ones. Consequently, ideas can neither be described as a combination of other ideas nor as a holistic idea from the beginning whose

parts are made clear through elaboration. For instance, Tsoukas (2009) describes how new understandings or new meanings emerge through dialogue, where it is the response in the context of an initial statement or utterance that contains the meaning, but not the initial statement or the response itself.

iii. Where are ideas located?

***Ideas as having independent existence*.** The prevalent view of ideas is that they have an independent existence. Typically, the idea indexes the agency of its creator, who conceived it in the mind before its realization in the material (e.g., Gell, 1998). Ideas may be elicited or arise spontaneously and may consist of combinations of other, earlier ideas, but in any case they are clearly generated by a person or a group of persons. Cray and Schroeder (2015) define ideas as "systems of causal-historically related token mental states of the same type", and further state that "An idea is generated when a person (or group of people) comes to have a novel token (contentful) mental state." Thus, although an idea may exist in a "system" composed of many minds, it is located in the minds of these people. Once an idea has been generated and developed (in the mind), its enactment is a matter of course. Enactment in this view plays no particular role except perhaps to illustrate (e.g., Lu, Bartol, Venkataramani, Zheng, & Liu, 2019) and is missing from most models of creativity that emphasize the cognitive processes.

That ideas are located in people's minds and are assumed to come from an agentic process is also evidenced in research that explores the psychological effects of experiencing ownership over ideas. For example, studies show that generating creative ideas is experienced as disclosing information about or aspects of oneself (Goncalo & Katz, 2019). Further, studies examine the effects of psychological ownership over ideas, such as how that affects the adoption of others' suggestions for change (Baer & Brown, 2012) and how feeling territorial about ideas decreases information elaboration (Knight & Baer, 2014).

However, if ideas exist independently, they can also exist elsewhere. Indeed, this is the premise of research on idea management (Vandenbosch, Saatcioglu, & Fay, 2006) where, for example, ideas are thought about as a collection of objects in a museum (e.g., Litchfield & Gilson, 2013). This further implies that ideas have a certain meaning and value in and of themselves and it is possible to *own* them – for example, in the form of intellectual property such as patents or copyrights. Having a source and allowing for ownership, ideas are often seen as items that are produced (e.g., by employees), which in turn means that it makes sense to attempt to stimulate, organize, and reward this production through managerial actions (e.g., Amabile et al., 1988; Baer, Oldham, & Cummings, 2003), just as is done for other forms of job performance and productivity. Thus, this view of ideas gives rise to management strategies aimed at measuring idea-generating productivity and necessitates a way to deal with idea ownership and the recognition of contributions.

Ideas as embedded in action and relationships. A growing body of work suggests instead that ideas are found in actions or relationships. For example, Sawyer and DeZutter (2009) suggest that ideas are emergent in collaborative creative work due to the nature of collective work, in which "parts" of an idea are distributed between collaborators. This does not mean that pairs or groups are directly involved in generating an idea as we may typically assume; rather, because ideas are embedded and contain what came before, they are shaped by the social environment both directly – for instance, through conversation (e.g., Harvey & Kou, 2013; Sawyer & DeZutter, 2009; Tsoukas, 2009) and the way that creators interact with their materials (Ewenstein & Whyte, 2007) – and indirectly – for instance, by the assumptions and paradigms present in a particular domain (e.g. Amabile, 1996; Csikszentmihalyi, 1999; Drazin, Glynn, & Kazanjian, 1999). Ewenstein and Whyte (2007: 698) describe how, in creating new architectural designs, the ideas are not located in a designer's mind as a holistic concept, nor as an accumulation of sketches and illustrations,

but rather emerge through “a conversation between the designer and the drawing”. Similarly, Tsoukas (2009) describes how new understandings or new meanings emerge through dialogue, where it is the response in the context of an initial statement or utterance that contains the meaning, but not the initial statement or the response itself. Being representations, ideas always carry some meaning, but this meaning will often depend on the context of the conversation, group process, larger project, and so on, rather than being a matter of a particular creator’s intention as captured in a canonical description.

Studies done from this perspective show that the context of the creative process – in terms of what is being done and how others are responding – changes and shapes what the idea is. For example, in an inductive study of perfume making, Endrissat and Noppeney (2013) describe how a visual collage of pictures is used to capture the emotion of trust and used by the team to develop the perfume. The dominant perspective might view either the concept of trust or the visual collage itself as the idea, but here the different responses of the group members to the visual collage (seeing laurel leaves meant a Sunday roast for one creative worker and the Roman Empire for another) are part of the idea. That is, to understand what the idea is, one must look at how people are relating to the collage and to each other, because only in those relations and understandings can the “actual” meaning of the idea be found.

Interestingly, because ideas need not be located (or originate) in an individual’s mind, some ideas can, contrary to conventional understanding, start in a physical, material or visual form and develop into a mental representation. For example, Stigliani and Ravasi (2018) describe how designers move from a mood, which may be a feeling or captured in tangible representations on a mood board, to a mental concept that then encapsulates that mood. Prototypes provide perhaps the most vivid example of that process: whereas prototypes are usually viewed as early-stage efforts towards implementation, manifesting ideas in a more

concrete material form can also reveal new, abstract understandings (Bechky, 2003; Carlile, 2002; also see Withagen & van der Kamp, 2018). This body of work has studied the interaction between creative workers and various material forms, including sketches, images, prototypes, mood boards, visual collages, physical movements and performances (Biscarro & Cammachio, 2018; Endrissat & Noppeney, 2013; Harrison & Rouse, 2015; Stigliani & Ravasi, 2018; Sutton & Hargadon, 1996).

iv. How are ideas assessed?

***Ideas have inherent qualities*.** Organizational creativity is typically defined as "the production of new and useful ideas concerning products, services, processes, and procedures" (Shalley & Gilson, 2004: 34; see also Oldham & Cummings, 1996; Shalley et al., 2004; Woodman et al., 1993). That literature is output- or product-focused because the value of ideas is thought to lie in their novelty and usefulness, which ultimately (it is hoped) translates into profit (e.g., Katila, 2002; Luo, 2014; West, 2002).

Studies in this tradition typically use consensus, expert ratings, or quantifiable output to judge the value of ideas, and the use of these methods assumes that an idea has some inherent qualities that can be observed or uncovered. In other words, various aspects such as the originality, feasibility, or semantic content of ideas are attributes of the idea that can be measured – if not objectively, then at least with a high degree of intersubjective agreement (Amabile, 1982). In experimental research, as mentioned before, ideas (such as those generated in a brainstorming task) are usually coded (e.g., for novelty, feasibility, or "creativity") by multiple raters who are expected (and usually found) to substantially agree on different ideas' relative qualities. In organizational studies, supervisory ratings or other measures of creative performance such as patents are considered more or less adequate measures of ideas (e.g., Oldham & Cummings, 1996). The rating measures usually ask supervisors to indicate how often employees contribute creative ideas (e.g., Janssen, 2000).

For performance-oriented measures, researchers may also collect the actual ideas generated by employees or teams (e.g., Somech & Drach-Zahavy, 2013) in order to count or rate them. Like experimental work, then, this research implicitly adopts a view of ideas as quantifiable "products" generated by employees, the quality of which can be meaningfully assessed by raters who themselves are not part of the creative process. In innovation and network research, scholars often use quantifiable metrics such as patent count (e.g., Katila & Ahuja, 2002), paper citation (Uzzi, Mukherjee, Stringer, & Jones, 2013), and revenue (Uzzi & Spiro, 2005) as indicators of the inherent or "true" quality of ideas.

More recently, researchers have shifted their attention to what Zhou, Wang, Bavato, and Tasselli (2019) call "the receiving side of creativity" – that is, the way people, teams, and organizations respond to, evaluate, select, or act upon ideas. These studies often compile a set of stimulus ideas to present to participants, and as such the researchers need to make some sort of decision as to the value of these ideas. Most of this work has used ideas as they would be (or actually were) generated during typical idea-generation tasks (e.g., Herman & Reiter-Palmon, 2011; Rietzschel et al., 2006; Runco & Smith, 1992; Zhu, Ritter, Müller, & Dijksterhuis, 2017). In other studies, however, researchers have *created* stimulus ideas, and these tend to be somewhat more elaborated and better described than those typically produced in idea-generation tasks, where ideas tend to be short (because participants are expected to generate as many as possible). Examples of this are Mueller et al.'s (2012) running shoe product idea, Dailey and Mumford's (2006) use of project proposals as ideas to be evaluated, and Berg's (2016) video recordings of ideas for new circus acts. These studies emphasize manipulating or varying input (i.e., the idea), implying that variation in quality stems from the ideas themselves and that in an ideal scenario with perfect information (i.e., no uncertainty), people would be able to discern the true value an idea possesses.

***The qualities of ideas treated as constructed*.** While most research focuses on finding objective assessments of idea quality, asking the question "what is the quality of an idea", an alternative approach views ideas as having no inherent quality and asks instead "where is the value". In this approach, there is an emphasis on the importance of context in understanding what an idea means and hence its value, as well as the view that an idea does not exist unless it is being evaluated (or at least observed). In other words, ideas have a certain meaning and/or value by virtue of their functions or consequences, or by the way they are embedded in a continuously evolving network of causal relations.

For instance, Csikszentmihalyi (1999) argues that what is recognized as a new idea is constructed through interactions between producer and audience; evaluation does not happen through individuals merely uncovering some inherent qualities of ideas, but through social systems making sense of and valuing products. Scholars in this tradition are emphatic that something new has no meaning (and hence no specific "quality" or value) without taking into account the old, i.e., what already exists in a domain (Bailin, 1994; Csikszentmihalyi, 1999). Echoing this perspective, Harvey and Kou (2013) examined the evaluation of ideas not as a static moment of a decision point in the creative process but as ongoing and situated as an idea becomes collective (i.e., the collective idea exists) when they are evaluated. Similarly, Coldevin, Carlsen, Clegg, Pitsis, and Antonacopoulou (2019: 1371) show how, in collaborative creative work, ideas are constituted on an ongoing basis by group members actively locating them in relation to other ideas or the broader domain, showing that "ideas of what to do were linked to ideas of what is worth doing". Further, addressing the question of whether people are discerning or able to recognize their best ideas, Silvia (2008: 141) points out that "I suspect that most creativity researchers, in their heart of hearts (or brain of brains), would agree that there is no gold standard for creativity", going on to argue that "Creative products probably do not have a true, innate level of creativeness" and recommending a focus

on agreement rather than accuracy, with high agreement between self-ratings and other, external criteria reflecting high discernment. This again points to a more contextualized notion of idea quality, where the quality of the idea is not thought to reside in the idea itself but rather in what happens to it (e.g., in terms of appreciation or success) in the world.

Two Sets of Incompatible Assumptions

In this section, we have reviewed studies dealing with ideas across organizational studies and showed how two distinct ways of understanding emerged about what ideas are how to study them. Those approaches are not only different—they are in contention with one another. For example, it is unclear whether or how an idea can be both an object with clear boundaries and a continuous process with no identifiable beginning and end. Underlying those approaches are two competing sets of assumptions.

On the one hand, the traditional and dominant approach treats the social world as external to humans, made up of "things" that exist independently of an observer and possess properties that can be captured (i.e., represented) by the human mind (Sandberg & Tsoukas, 2011). This has been referred to as "modern scientific rationality" (Sandberg & Tsoukas, 2011: 340), treating ideas as reified objects that travel through stages of a creative or problem-solving process (e.g., Amabile, 1988; Lubart, 2001; Perry-Smith & Mannucci, 2017). Precisely because ideas are considered sufficiently meaningful in and of themselves, the literature devotes significant research attention to understanding the conditions under which individuals and groups can produce more of them. In other literatures that make these assumptions, such as most studies in network research, entrepreneurship, and innovation, it is often taken for granted that there are identifiable things called ideas, and research focuses on what can be done *to* ideas – for example recognizing opportunities in entrepreneurship (Shane, 2012; Shane & Venkataraman, 2000; Short et al., 2010), or exchanging and combining ideas through occupying certain network positions (Burt, 2004; Fleming, 2001).

On the other hand, research that adopts a process or practice lens recognizes that ideas are not valuable, meaningful, or creative by themselves; they only become so when people engage with them (see Feldman and Orlikowski, 2011). In this view, ideas are not things but reciprocally constitutive with action, so it does not make sense to talk about either idea or action/interaction without the other. The conceptual language of scholars adopting a practice lens focuses on action rather than objects – for example, knowing vs knowledge, valuing vs value (Orlikowski, 2002; Stark, 2009). A process view leads us to understand ideation as *emergent* (continuous and emerging over time), *embodied* (as evident in the intertwining of cognition and action), and *embedded* (contained within actions, interactions, and relationships rather than existing outside of them) (Orlikowski, 2002, 2006). Researchers in this tradition argue that the framework for understanding and theorizing practice is one of being "entwined" (Sandberg & Tsoukas, 2011: 343) or "inextricably entangled" (Orlikowski, 2006: 466). From this view, for an idea to *be*, it needs to show up as part of a meaningful relational existence with other beings – there are no free-floating particles of ideas out there. As such, there are no inherently creative or good ideas, because creativeness or goodness are not properties of ideas but something that people construct or do (Coldevin et al., 2019; Dewey, 1938).

These principles or assumptions cannot be taken in isolation, as they implicate one another, forming two sets of beliefs. The two approaches draw on specific ontologies of the world and reflect different research traditions. It should come as little surprise, then, that the ideas we observe with one approach seem to have little in common or are incompatible with those we observe with the other. In this case, it makes little sense to talk about reconciling the two approaches, as the underlying issue is not just a matter of fragmentation across silos of research areas but, as we have argued, of different foundational assumptions held by different communities of practice. Crucially, however, the two approaches are not conceptual

oppositions, but are inherently related and complementary – only taken together do they provide us with a full understanding of ideas. In the next section, we introduce the metaphor of wave-particle duality to further illustrate this point.

DISCUSSION: A WAVE-PARTICLE DUALITY OF IDEAS

Our review has revealed that despite substantial convergence in the use of ideas by organizational scholars, meaningful incompatibilities also exist. To point out a fundamental tension in the way ideas are conceptualized and operationalized across (and within) different literatures, we use the metaphor of the *wave-particle duality* from quantum physics. Given the complexities and pitfalls associated with theorizing about quantum physics in the area of psychology, we should emphasize that our use of the wave-particle duality is meant as a metaphor only – while we do believe that some analogical features make this metaphor helpful, we do not claim that ideas are actually analogous to matter or energy, nor do we aim to present a "quantum model of ideas". Our goal is to point to a fundamental duality in the nature of ideas, with two seemingly incompatible perspectives which, we argue, are both indispensable to fully understanding them. Thus, we propose that research to date supports viewing ideas as both particles – discrete entities with inherent features – and waves – processes that are entangled, contextualized, and inextricably connected.

It is also important to note that, while we identify two ways of thinking about ideas that are grounded in empirical research, these are by no means two cohesive or easily identifiable perspectives on the topic. Indeed, a key challenge across the idea-centric sub-disciplines of research is that researchers are not cognizant of or explicit about their assumptions about ideas. In addition, these two ways of thinking about ideas are not equally prevalent – the particle view dominates mainstream creativity and innovation research, and the wave view (although evident across a number of literatures such as studies of the creative process and knowledge creation) is more dispersed.

Ideas as Particles

Clearly, the view of ideas that dominates most of the history and current usage of the concept is that of *ideas as particles*. In this view, ideas are treated as identifiable, discrete entities, such as specific mental representations or mental states, propositions or proposals, concepts or solutions, or sometimes even products such as sketches or drawings. Throughout the history of philosophy and psychology, several scholars have referred to ideas as particles or used similar terms to refer to them, such as the "mental atoms or molecules" argued against by William James (1890: 277). This is most strongly represented in the associationist school of thought, according to which cognition is a matter of different (and particle-like) ideas being continuously connected and combined. Studies of ideas in the fields of psychology and management often provide definitions that reflect a particle view. For example, ideas have been defined as "a proposal for action" (Brem & Voigt, 2009), "a concrete suggestion" (Karlsson & Törlind, 2013), "a thought which has been communicated to other people" (Rhodes, 1961), and "an object of thought" (Rothberg, 2004).

According to a particle view of ideas, an idea is a mental state representing something, which can be shared between people but is still *discrete* in the sense of identifiable and bounded: ideas are "concrete attitudes with complete propositions (or some similar entities) as contents" (Cray & Schroeder, 2015). As we have seen, several scholars have explicitly described or defined ideas in such terms. However, a particle approach is implicitly present even in those traditions, theories, and approaches where ideas are not explicitly seen as particles, atoms of the mind, or discrete mental states, in the sense that ideas are *not* seen as inextricably bound up in an ongoing process. Thus, for example, the classic Platonic idea as an ideal category or abstract concept is particle-like in the sense that it is clearly distinct from other ideas (e.g., the idea of a cat is fundamentally different from the idea of a table) and primarily analyzed or theorized about in terms of its nature and

properties, as opposed to its function in a larger whole or its role within a dynamic context. Of course, a particle view of ideas does not imply that ideas are assumed to lack any context, or that they are not believed to develop – rather, particle researchers choose to study ideas as independent entities that can meaningfully be studied separately from each other. As an analogy, one could think of particle ideas as being studied like billiard balls, in the sense that each ball (idea) is an identifiable object that can be counted, judged, collected, discarded, and stored. One can arrange the balls into new patterns (e.g., a triangle, a circle, etc.), but each ball is still a separate ball. One can hit one ball with another and change their relative positions, but the balls do not change or disappear as a result. Similarly, ideas as particles, although they may go through changes and are part of a larger context, remain identifiable entities that may be counted, coded, and stored discretely.

Ideas as Waves

Besides the dominant view of ideas as particles, our review also uncovered a substantial body of work that provided a more wave-like way of understanding ideas. That understanding is prevalent in the sub-discipline of design thinking, in the literature on how people engage in creative work, and in studies of knowledge creation. These literatures do not make explicit statements (for the most part) about what an idea *is*, but they share an underlying logic or set of assumptions that shapes the way they portray the nature of ideas. A commonality across studies that share an understanding of ideas as waves is that they reject the view of ideas as discrete and independent entities that have inherent properties or characteristics. Instead, informed by practice- and process-based traditions, these studies often emphasize that ideas cannot be understood or even recognized without taking context into account, with scholars arguing that ideas "have no independent existence in themselves [and are] nothing if not worked on" (Coldevin et al., 2019: 1371).

In physics, waves are not things but disturbances that travel through a medium. Previously, we described how particle ideas are like billiard balls. In contrast, wave ideas could be compared with a ripple in a pond – the ripple disturbs the water and is made of water, but the water itself does not produce the ripple and the ripple is not the same as the water. Similarly, the "wave" as performed by fans in a stadium moves through the people present, but the wave is not any particular person. Indeed, if we focused on just one person standing up and sitting down, we would not be able to observe the wave. In other words, waves cannot be understood by looking at one static position or moment; they can only be understood and described holistically and in motion.

Applying the wave concept to ideas means that they emerge over time and cannot be understood by any single point in the creative journey. Each point in the journey is embedded in a set of interactions or connections that are essential for understanding that point (much like the standing and sitting behavior of a sports fan caught up in a wave can only reasonably be understood in the context of the surrounding fans' behavior). This notion has long been recognized when we consider novelty – asking whether an idea is novel begs the question of novel "relative to what?" Novelty can only be understood in terms of what came before it (Csikszentmihalyi, 1999; North, 2013). More fundamentally, the idea-as-wave view suggests that we can only know an idea if we understand what came before, and indeed after.

Thus, particle-like ideas such as "a play about the aliens" or "a building with a u-shaped roof" would be more like end products from a wave perspective. In contrast, wave ideas would include, for example, the collective development of the play and the progressive conversation between sketches and models of the building. Notably, these can still be understood as provisional, communicable representations. For instance, the collective development of the play includes representations made and communicated between writers and actors as they figure out how to enact a particular emotion or illustrate an insight, and

those representations are in continual flux as they develop, regress, and shift. What is different here from the particle view is the acknowledgement that ideas in this example are inextricable from their development and context – in fact, the development is part of the ideas inasmuch as, for example, a change in perspective can be (part of) an idea.

The view of ideas as waves can be traced back to early psychology in William James's (1890: 279) writing about streams of consciousness: "In a sense a soap-bubble has parts; it is a sum of juxtaposed spherical triangles. But these triangles are not separate realities; neither are the 'parts' of the thought separate realities… You can no more make a new thought out of 'ideas' that have once served than you can make a new bubble out of old triangles. Each bubble, each thought, is a fresh organic unity". In organizational research today, this view is entwined with process and practice perspectives on creativity.

Particles, Waves, and Measurement

The prevalence of the particle approach in the modern literatures on ideas can be credited to Guilford's psychometric approach to creativity, aimed at deriving reliable, valid, and objective (or as objective as possible) measurements of creative performance and potential. This parallels the wave-particle duality in physics, in that a particle approach to ideas is closely tied to issues of measurement. Measuring creativity in terms of either the quantity or quality of ideas requires the ability to identify and distinguish specific ideas and their properties, which in turn leads to the creation or use of tasks or measures that elicit particle-like ideas (such as the Unusual Uses Task). In other words, the more researchers focus their attention on ideas as things to be measured, the more particle-like ideas inevitably become. Libben (2017: 53) writes the following about quantum physics as a metaphor for psychological processes: "One of the most important early insights in quantum physics was that it is almost impossible to separate the method of observation from that which is observed". More specifically, one core idea in quantum physics is that measurement causes a

collapse of the wave function. In essence, what this means is that before measurement, a system is not in a particular state but rather in a "superstate" consisting of a probability distribution of many possible states; this probability distribution is often referred to as a "wave function" (Heisenberg, 1958; Rosenblum & Kuttner, 2011). Upon measurement, the wave function collapses (i.e., one of the many probabilities is realized) and the system enters one specific state (which provides the measurement result). Similarly, the roots of the modern ideas-as-particles approach are entwined with a strong focus on the quantitative measurement of ideas.

Although we have to be wary of taking the analogy too far, one interesting implication is that it points toward the limitations of adopting one particular approach. For example, from a wave perspective, ideas are not fixed entities and do not have a fixed meaning or value – the provisionality of ideas partly lies in their equivocality (Sawyer & DeZutter, 2009), as different ideas may take on different meanings for different people or at different moments in time. As such, if we capture ideas from a group of people at a specific moment, we may in fact be capturing each group's activities at a different point in the wave function, which makes it difficult to compare these groups or their performance. Returning to the sports stadium example and comparing two fans, one of whom is standing up and one sitting down, could easily lead to erroneous conclusions if we do not know that a wave is taking place among the audience. Capturing ideas at one point in time metaphorically collapses them into particle-like ideas with specific (but limited) meanings. This is evident in, for example, brainstorming studies, where participants are asked to write down or articulate their ideas one at a time, but also in organizations when people are asked to pitch their ideas to management, or when a specific deadline is set for delivery of ideas or concepts.

Clearly, then, the adoption of a wave or particle view has implications for how ideas are studied, and vice versa, the adoption of a particular method will mean that one ends up

studying particle or wave ideas. In the next section, we therefore address the question of when it might be appropriate or useful to use either of the approaches. To make this question more concrete, we discuss the limitations of each of the two perspectives using examples from the authors' research.

When to Use a Particle View of Ideas Versus a Wave View of Ideas

We propose that the particle and wave views are most valuable for asking distinct questions about ideas and for understanding different aspects of the phenomenon. Specifically, we suggest that the particle view is most appropriate for examining specific, regular, and important points in the life of an idea, when its development pauses and a snapshot can be taken that can be readily understood by others who view it. In contrast, we suggest that the wave view is most appropriate for understanding how ideas develop, evolve, and change over time and how they may be interpreted and used in different ways. Thus, underlying these suggestions are two determinants of when to apply a particle or a wave view: 1) whether the idea is stable or in flux, and 2) the extent to which a shared understanding of the idea can exist.

Using the particle view of ideas. The particle view can be used to understand points in the development of an idea where it is not changing. For instance, at some point, creators choose to share their ideas or move them forward – a novelist finishes a book proposal and sends it off to an agent, an employee suggests a new training program, or an improvisational troupe agrees to a theme for a performance. In these examples, even though the process is still ongoing, individuals and groups have reached a temporary end point where they have a social object. The book proposal, the training program suggestion, and the improv theme are all provisional, communicable representations. They are open to some interpretation, yet there will probably be a common understanding of what the novel, the training program, and the improvisation will be about. At that moment, the idea could be examined as a particle and

it would make sense to, for example, try to explain variance in the quantity or quality of the proposed ideas.

This has been the approach through much of the research that falls within this camp to date – taking ideas at what is assumed to be an (intermediate) endpoint. The endpoint does not necessarily refer to the termination of the broader creative process (i.e., the point when the initial goal is achieved and a project is over). This point, however, differs across research streams. For brainstorming research, the end occurs once the idea has been generated; for organizational creativity research, the end occurs after the idea has been elaborated and proposed by a creator (e.g., when an employee proposes it to a manager); and for innovation research, the end occurs once the idea appears in some material form, like a research paper or a product prototype. Taking each of those ideas collapses the wave function at that point, but in fact they are different points in the life of an idea and therefore are comparing different wave ideas as if they are the same. Thus, when applying the particle approach, researchers should be careful to consider at what point in the wave function an idea is being captured and what this may mean for the conclusions drawn from the data.

At the same time, there may well be other points at which the development of ideas pauses that have yet to be explicitly considered in research. For instance, other points where it may make sense to look at particle ideas are when a problem is first presented or defined, when creators first begin to interact with materials (for instance, when they begin sketching an idea out), or when creative activity pauses (for example, when there is a creative block or a period of distraction or incubation). Further research should explore meaningful points of pause where particles can be captured.

As mentioned above, a further condition for applying the particle view is that the snapshot taken of an idea can be commonly understood by those viewing it. This is more likely when people view the idea from a similar perspective, or when an idea contains

sufficient information to make such a common understanding possible. For instance, if the aim is to study how an audience will respond to an idea – or how different audiences may respond differently to the same one – the particle view is appropriate as long as the idea can be commonly interpreted by those in the audience. That is unlikely if viewers have very different relationships to the idea. For example, idea generators, idea evaluators, and impartial observers are all likely to view ideas differently (Berg, 2016; Mueller, Melwani, Loewenstein, & Deal, 2018) because they have different knowledge about what came before that point and how it is embedded in a broader context. Researchers applying a particle view should therefore consider whether an idea can be commonly interpreted by relevant viewers (e.g., researchers, idea evaluators) at the point where it is captured.

Applying the wave view. In contrast, a wave view is more appropriate when research aims to understand how ideas develop, evolve, are elaborated, and change over time while creative activity is occurring. For instance, in the examples above, the wave view can be applied to understand the novel proposal as it is being written (and then assessed by the agent), the training program as the employee conceives it (and then the manager considers it), and the improv theme as the group comes to consensus around it (and then the audience experiences it). During those processes, the idea is represented in the actions and interactions of creators and assessors and is open to interpretation.

A growing body of work explores these issues in the context of the creative process (e.g., Amabile & Pratt, 2016). However, much of the work that falls into that category collapses aspects or stages of the process, so that divergent thinking, idea generation, or idea evaluation, for instance, are treated as a single variable – an activity or a general state that can be compared across creators. This mirrors research on emergent states in groups, in which processes that have a beginning, an unfolding, and eventually an ending are treated as a stable state of the group (e.g., Roe, Gockel, & Meyer, 2012). That approach obscures the

relationships between stages, activities, and ideas. For instance, it separates idea generation, evaluation, and problem formulation, whereas from a wave perspective they are integrated. Similarly, it separates ideas from the context that produced the idea – alternative ways of generating or evaluating, for example. Thus, in applying the wave approach, researchers should be attentive to the full context of how the process of engaging with ideas unfolds.

Another implication of applying the wave view is that adjacent processes that operate on ideas should not be treated as external to the creative process, but as inextricably linked with it. For example, creative feedback is typically examined as if it is a unit of information injected into the creative process (for instance, by an external expert or judge) that triggers creative revision. Consistent with that view, research has addressed how to reduce fear of evaluation to shelter the creative process from negative feedback (e.g., Kim & Kim, 2020) and how ownership can improve creators' receptiveness to feedback (Baer & Brown, 2012; Grimes, 2018). From a wave perspective, however, feedback is an integral part of the creative process with its own dynamic interaction with ideas over time (e.g., Fisher, Pillemer, & Amabile, 2018). That implies that feedback is not injected into the process, but that feedback changes the trajectory of the idea and is processed through creative engagement with it, and resulting changes to it may in turn elicit new and different kinds of feedback. This approach has been echoed by innovation scholars who treat ideas as path-dependent, with each new development changing the trajectory of a project and in turn shaping the development of the idea (Van de Ven et al., 1999).

A further condition for applying the wave view is that creative activity is ongoing. Once an idea has been turned into the final output – that is, once the novel has been published, the training program delivered, and the improv performed – it can be viewed as a more stable entity until new creative activity emerges around it (for example, if a book group reads and re-interprets a novel, the idea moves to a state of flux in that context). When

applying a wave view, therefore, researchers must consider whether they can capture the idea while it is a subject of creative activity versus capturing retrospective accounts of that activity once the idea has moved to a more stable state.

Particles and waves on the receiving side of creativity. An example of a field that would be particularly likely to benefit from a balanced consideration of whether and when to adopt a particle or wave approach is the burgeoning research on the receiving side of creativity (for a review, see Zhou et al., 2019). After a long period of prioritizing idea generation, research attention has recently begun to shift towards the receiving side of creativity – that is, the way that individuals and groups respond to creative targets after their generation (Zhou et al., 2019). The receiving side of creativity includes judgements about whether an idea is novel and useful, decisions to accept or reject it, forecasting its likely success, and choices to adopt or implement it. In that sense, this field can be seen as overlapping with innovation research on the implementation and adoption of ideas (e.g., Fennell, 1984; West, 2002).

A foundational assumption of research on the receiving side of creativity is that there is a target that can be evaluated, selected, or implemented (Zhou et al., 2019). Thus, research to date has predominantly taken an approach consistent with a particle view of ideas. For example, in a study of how individuals forecast the value of ideas, Berg (2016) asked participants to watch videos of circus performances and assess their novelty and likelihood of success. The accuracy of those estimates could further be evaluated based on actual audience reactions. That approach treats the idea – the performance – as if it exists and has inherent qualities that others can perceive at one point in time. In cases such as this, where the goal is to predict how others will react to the idea that they also experience for the first time in the same way as the judge, this particle approach is appropriate.

In other cases, however, generating ideas and judging them are intermingled (Harvey & Kou, 2013). This means that even within a group that is working on a seemingly unitary idea, the same idea can be experienced in different ways by different group members because decisions about moving ideas forward and final decisions about selection are unfolding simultaneously. For example, Harvey and Mueller (2021: 296) describe how groups engage in a dynamic process of building consensus to retain an idea and put it forward for further selection decisions. They note that building consensus involves evaluating ideas as soon as they are generated "as groups explicitly and implicitly navigate which ideas to keep alive and develop further versus which ideas to let go", so that evaluation also entails a series of implicit assessments about when and whether to build on or elaborate some ideas versus others. In that case, treating ideas as particles would produce a set of challenges. For example, when a group member makes an implicit judgement by choosing to discuss an idea, how do we know what interpretation of the idea they have evaluated, and at what point in the development of the idea the evaluation occurred? Moreover, their interpretation and, consequently, their evaluation will necessarily have taken into account the full unfolding of that idea – all of the elaborations and evolutions that came before the assessment. Applying a particle perspective to understand such processes makes little sense. We therefore suggest that applying the wave view to understand the way that creative ideas are assessed, selected, and adopted can add new insights to the receiving side of creativity.

Limitations of the particle view: An example from Eric Rietzschel's research. To more concretely illustrate how adopting a particle view may impose limits on the questions that researchers ask and on the way they treat their data, we first discuss an example of studying the receiving side of creativity from a strong particle perspective (Rietzschel et al., 2006). In this work, the main question was whether the lower productivity of interactive as compared to nominal brainstorming groups would affect the quality of idea selection. The

results showed that nominal and interactive groups performed similarly, both at chance level – i.e., that groups did not select ideas that were more original and feasible than their average generated idea.

The particle view is highly evident in several aspects of this work. For example, idea selection was taken to consist of choosing from previously generated ideas; the operationalization of selection performance assumed that ideas could be meaningfully coded as individual entities; participants were instructed to generate ideas and then make a selection from their ideas; ideas were to be written down on sheets of paper divided into separate sections to facilitate identifying and counting them individually; participants received a specific problem for idea generation ("how can education at the Department of Psychology be improved?") and ideas were only counted and coded as such if they provided an intelligible answer or solution to that question. Thus, the research question and method were both strongly informed by a particle view of ideas as discrete entities that could be elicited, counted, coded, and subsequently compared along specific dimensions using standardized procedures and materials.

Informative as these results were, the strong particle nature of the study may have limited our findings in several ways. For example, participants were not given opportunities or options to re-define the problem, unless this was accompanied by an idea that the researchers could clearly code. Thus, if a participant had written down a general question like "what is education for?", we might have not counted or coded this idea, and in fact might even have been a bit annoyed at the participant for "not following instructions". From a more process-oriented perspective, however, such a question would have been particularly interesting, because it represents a fundamental reframing of the problem (if we want to improve education, it does make sense to think about which goals education is supposed to serve). Given that creativity is often thought to crucially depend on the ability to question

fundamental assumptions of one's task or problem, this kind of behavior should be seen as interesting, rather than a complication. Moreover, since we only wanted to count unique (i.e., non-overlapping) ideas, two variants of the same idea (such as "more practical elements during lectures" and "practical demonstrations during lectures") might have been considered identical and in that case would only be counted once. However, from a wave perspective, it would be interesting to see how these two versions of the "same idea" arose: although they might have seemed synonymous when we looked at them as a collapsed point in the creative process, we might have found that they held distinct meanings or been able to see how one led to the other if we had taken into account the interactions of the group. Thus, such "errors" would have been an interesting opportunity for further inquiry.

Finally, on a more fundamental level, the issue of selection effectiveness is somewhat dubious from a wave perspective, since (at least in the way it is usually studied) it reduces effective selection to maximizing scores on some specific dimensions. Although it is certainly the case that selecting ideas of (especially) low originality raises doubts about the point of organizing a brainstorming session in the first place, idea quality is thereby reduced to a static property of ideas, and selection becomes only a matter of correctly identifying (and then choosing) ideas according to those properties. From a wave perspective, however, the question is not so much under which circumstances participants make the *best* selection but rather how people may make *different* selections under different circumstances, and *how* (or why) these different selections come about. For example, one of the assumptions behind the study was that people would be making a selection from their previously generated ideas (which was what we instructed them to do); yet, in practice, several groups wrote down ideas on their selection sheet that contained elements of multiple previously studied ideas. Interesting as this was, at the time it constituted more of a nuisance factor than a phenomenon we felt able to integrate into the study (let alone leave room for in the instructions). In

contrast, a wave-oriented researcher would probably have been primarily interested in these kinds of changes and developments to ideas as they unfolded through the creative process.

Limitations of the wave view: An example from Sarah Harvey's research. A paper drawing on the wave view that fits with the receiving side of creativity is Harvey and Kou's (2013) study of the role of idea evaluation in healthcare policy groups. That paper uses an inductive methodology to explore how evaluation is situated in the ongoing interactions between group members during discussions of new ideas. A key finding of the paper was that groups evaluate ideas *throughout* generative processes – for example, by comparing them with one another as they are generated, by choosing to discuss them in detail as they occur, and even by allowing them to fall out of the group discussion. As a result, the paper finds that collective creative processes are not all well described by the idea-generation-centric sequence of the creative process and proposes an evaluation-centric alternative.

The wave view is evident in the paper's conceptual foundation and theoretical contributions. By tracing group discussion of ideas, the paper assumes that they are continuous and emergent. Even though we were motivated by the wave insight that evaluations are embedded in a group's discussion of ideas, we were still influenced by the dominant particle tradition to treat ideas as more identifiable than a strong wave view would suggest. This was evidenced in our analysis of the data, where we traced ideas from when they first arose in a group meeting until discussion about the idea was resolved during that meeting. One of our early observations, then, was that it was exceptionally difficult to tell where any idea began, or to capture with regularity the way that the idea changed over time. We resolved this by focusing on how group members interacted with the idea (e.g., did they build on it or disagree with it) and theorized about the nature of interactions rather than assessing the ideas, as is consistent with the wave approach. Thus, a key conclusion of the

paper is that generation and evaluation are deeply entwined, so that one cannot be understood without the other, nor without the context of the group discussion.

Although the wave approach was productive for uncovering new insights about collective creativity, it also limited our findings by obscuring the differences that may have existed in the content of the idea and the way that its form changed. For instance, although we can say that group members engaged in integrating ideas, this approach did not enable us to say whether group members drew on different categories to produce ideas or whether a final proposed idea actually integrated their knowledge. It was also clear that groups discussed ideas that existed in different forms – in some cases, their proposed solutions were technologies, products, or services; in others, they were recommendations to change regulation; in still others, they were ideas for new processes for delivering healthcare. Without a more particle approach that captured ideas at given points along the process, understanding those changes in form would not be possible.

Opportunities for Expanding Research Using the Wave-Particle Duality

A key insight of our review is that understanding ideas involves accepting that they sometimes act like waves, shifting and evolving over time, and sometimes as particles, putting a stake in the ground and pausing in meaning at that point. By uncovering the wave-particle duality of ideas, therefore, our review suggests that scholars can move research forward by better drawing on and integrating the two perspectives. In the previous section, we already discussed the example of research on the receiving side of creativity to illustrate when and how adopting either of the two perspectives might be fruitful (or limiting). In this section, we further describe how the findings from our review can provide new insights and suggest ways to study ideas more broadly to encompass both particle and wave understandings.

***Unpacking the temporal dynamics of ideas*.** While the wave view provides deep process explanations of developing ideas, studies in this vein have tended to use qualitative methods based on small samples that make it difficult to consolidate knowledge on how the processes integrate and influence one another. Applying a particle view to understanding processes could help to provide such integration because there may be some regularity to the sequences through which processes unfold under different conditions. For example, in groups, members may go through a particular number of exchanges before the meaning of an idea emerges, and perhaps the number of exchanges differs between diverse groups and more homogeneous groups. In particular, wave-oriented researchers could capture particles at multiple points in time across a process – in effect, taking a series of snapshots to see how ideas transform between those points, and so examine how particles shift and change. This would retain a wave view by examining the snapshots across the lifespan of ideas within a single case (i.e., a single idea or creative process). Yet, it would integrate that with a particle view that compares one full lifespan of an idea with another, and indeed an entire set of ideas. The wave and particle views are therefore complementary approaches for understanding processes (e.g., Roe et al., 2012).

Capturing changes in the form of ideas. One striking observation from our review is that ideas come in many forms and some forms are more prevalent or evident in a particle view and vice versa. As such, attending to both perspectives can lead to new insights on how ideas can cycle through different forms and their influence on other organizationally important processes (e.g., different forms require different types of championing to be accepted). Among the studies we reviewed, some examples of forms are vague intentions (e.g., Bird, 1998; Obstfeld, 2012), moods or feelings (e.g., Stephens, 2020; Stigliani & Ravasi, 2012), performances (e.g., Sawyer, 2000), new ways of seeing (e.g., Hargadon & Bechky, 2006; Uzzi & Spiro, 2005), and various others. Some research to date treats

particular forms as distinct from other manifestations of creativity – for example, some work elaborates the unique nature of improvisational creativity (Fisher & Barrett, 2019), and other research emphasizes the special nature of prototypes (Carlile, 2002); for the most part, however, such differences in form have been taken for granted. Instead, changes in the forms of ideas have been described as elaborations or adjustments that do not change the idea itself. Indeed, research to date generally fails to distinguish situations where the form of a final idea to be generated is known by creators – such as when creators are asked to produce an idea for a new product or service (e.g., Berg, 2019) – from those situations where the form is open – such as when creators are asked to produce solutions to a problem that could take on many forms (e.g., Diehl & Stroebe, 1987; Harvey & Kou, 2013;).

Our review suggests that attending to differences in forms may be insightful for understanding ideas and their development, and provides a way to understand differences between forms as combinations of the defining features of ideas. For instance, a mental representation that is interpretable and communicated through action may be considered a perspective or a domain knowledge (e.g., Majchrzack et al., 2012), whereas an embodied representation that is not yet elaborated or final and can be shown to others is a move or performance (e.g., Harrison & Rouse, 2015). Further research may explore those differences. One way to extend our attention to form in research is to consider whether the form of the final idea is known or not, as suggested above. For example, research may consider how not knowing the final form of an idea shapes the way creators engage with it. A further opportunity is to consider when, why, and how forms change over time. It may be useful to recast elaborative activity as changes or shifts in form.

Expanding the phenomena of creativity and innovation. Creativity research has been dominated by a firm consensus that creativity is the production of ideas that are both novel and useful (Amabile, 1988; George, 2007; Woodman et al., 1993). While that definition has

provided a strong foundation for the progress of organizational creativity research, paradoxically, it also excludes a large set of roles and activities that researchers would struggle to justify as creative, yet that are clearly in the domain of the creative industries (e.g., Caves, 2000); that people choose to engage in to express their creativity (e.g., McNiff, 2015); or that lay people would consider to be creative (e.g., Glăveanu, 2014). Consider, for example, actors, singers, orchestra musicians, chefs, artisan bakers, choir members, and hobby knitters. Although all of these professions involve some novelty – such as to interpret and act out a role or choose how to season a recipe one is reproducing – the dominant creativity paradigm would consider these to be incremental changes that may be uninteresting to study, and would likely search for further justification for considering them as creative, such as building a new culinary paradigm (e.g., Svejenova, 2005) or improvisational acting (e.g. Fisher & Barrett, 2019).

The wave-particle duality broadens the scope of where we may look for ideas, demonstrating that creative endeavors revolving around creative expression rather than creative production involve ideas. A key insight of our review is that all of those involved in the activities described above trade in ideas. When someone acts out a scene from Shakespeare, they embody a representation of a character and an action that is open to interpretation as it is communicated to the audience; while knitting, one not only develops a material representation of a pattern that is unfinished until the final stitch is made but also interacts with the physical materials in a way that may change the perception of the task and its outcome. These activities are therefore all legitimate phenomena of study for understanding how ideas emerge, develop and change, where they are located, and who develops them. A core finding of our work, then, is that ideas need not be novel – in fact, for most of history, novelty was not considered to be an important feature of ideas. Novelty has

primarily been considered important because only novel ideas are thought to have economic value. Our review therefore suggests a shift from studying creativity to studying ideas.

CONCLUSION

In this review, we have explored the wide variety of ways in which ideas have been conceptualized and operationalized across multiple disciplines and literatures. The wave-particle duality framework we developed, based on our review, aims to contribute to researchers' further theorizing and research about ideas, as well as to sound practices regarding their generation and reception. Creative ideas remain essential to any change process, be it a process of organizational change, personal change, or societal change. Just as builders need extensive knowledge of the kinds of bricks they are working with (to take a very particle-oriented metaphor), those involved in creative change will benefit from a deeper understanding of the "units of ideation" they hope to encounter, elicit, encourage, and – ultimately – build upon. We hope that this review provides this foundation and helps to integrate research on ideas across different fields.

3. ELABORATIVE PLAY AS A PROCESS OF DEVELOPING IDEAS

In organizations, small groups are increasingly charged with work that requires creativity and innovation (Hargadon and Bechky, 2006; Harrison and Rouse, 2015). These groups often confront the open-ended and ambiguous nature of many of these creative projects (Long-Lingo and O'Mahony, 2010; Obstfeld, 2012; Unsworth, 2001), where they must develop new ideas without having a clear sense of how to assess whether they are on the right track (Harvey and Kou, 2013; Long-Lingo and O'Mahony, 2010). Ed Catmull, co-founder of Pixar Animation, described this challenge of collaboratively working on open-ended projects in the context of making animated movies as follows:

> When we are making a movie, the movie doesn't exist yet. We are not uncovering it or discovering it… in a fundamental way, the movie is hidden from us. There is a reason that writers talk about the terror of the blank page… It's extremely difficult to create something out of nothing… navigating between the known and the unknown. (Catmull & Wallace, 2014: 2762)

Echoing Catmull's description, the initial step in the creative process is often represented as a writer facing the terror of the blank page (e.g., Joyce, 2009), or a painter standing with a brush at the ready in front of a blank canvas (e.g., Otto Scharmer and Kaeufer, 2010). When developing new ideas, there is little way to know whether the initial steps – the first sentence or brush stroke – are leading down a better path than any of the nearly infinite alternatives. There is no practical way to develop every new idea to learn its full potential because developing ideas can require significant investments, including time, attention, and money (Mainemelis, 2010). Despite these challenges, the idea development process must occur for creative groups to bring their ideas to fruition. Therefore, figuring out how this development process unfolds in groups when creative projects are open-ended is an important puzzle for organizational researchers to consider.

Organizational scholars have only begun to examine idea development as a critical part of the creative process. Conventionally, creativity research has emphasized the

generation and selection of new ideas, while innovation research has focused on the implementation of selected ideas and their consequences (Amabile and Pratt, 2016; Anderson et al., 2014; Garud et al., 2013). Recently, however, scholars have suggested that there is little theory on the messy middle, during which ideas develop beyond initial generation prior to implementation (Harvey & Mueller, 2021). Specifically, organizational research has seldom examined *idea elaboration*, defined as the process of systematically evaluating an initial idea's potential and further clarifying and developing it (Perry-Smith & Mannucci, 2017: 56). When first conceived, new ideas are embryonic, representing only the vague and *incomplete* beginnings of the eventual creative output (Csikszentmihalyi & Sawyer, 2014; Salter, Criscuolo, & Ter Wal, 2014). Whether an idea is worth pursuing may become clear only after it has been developed (Berg, 2019). As a result, when selecting new ideas for further development, "picking a direction [feels] arbitrary" (Harrison & Rouse, 2015: 396). Idea elaboration may thus be the only viable way to evaluate an idea's potential, making it a critical step from creativity to innovation (Perry-Smith & Mannucci, 2017).

However, there are two important issues from existing research on collective creativity that suggest the need for new theory. First, creativity research has focused on tasks and problems that were externally determined by the client or researcher; situations in which groups define a task or problem for themselves (as opposed to being assigned one) are under-studied (Harrison & Rouse, 2014; Unsworth, 2001). These situations, characterized by open-endedness and ambiguity, are extremely challenging yet common in practice (e.g., Catmull & Wallace, 2014; Schmidt & Rosenberg, 2014). Second, the limited research on idea elaboration has focused on individual cognitive processes. In this view, tasks or problems requiring creativity are identified at the beginning of the process and are used as a guide to generate, evaluate, and select ideas (Mumford, Baughman, Threlfall, Supinski, & Costanza, 1996; Reiter-Palmon & Robinson, 2009). However, research shows that groups can take off

along different paths as unexpected insights and integrations emerge from their ongoing, moment-to-moment interactions (Harvey, 2014; Harvey & Kou, 2013; Long-Lingo & O'Mahony, 2010), casting doubt on the extent to which this individualistic view of idea elaboration might apply to creative groups.

To address these issues and build new theory on collaborative idea elaboration in open-ended creative projects, we conducted an inductive qualitative study of experimental circus groups in the early phases of creating new shows (R&D) using field observations of nine circus groups over 10 months (approximately 360 hours of total observation time). We found that these creative groups developed new ideas through *elaborative play* – intentionally engaging in play to develop ideas in the absence of clear criteria for evaluating them. Through multiple episodes of elaborative play, groups were able to both develop new ideas and clarify the open-ended aspects of their project. We build a theoretical model of elaborative play that has three noteworthy features. First, it details how the evaluation and selection of developing ideas are driven by improvisation and shared emotion (i.e., momentum) as opposed to deliberation and analysis. Second, it details how the process of developing ideas gradually alters the overall task framework for the project. Third, it clarifies the role of play in collaborative creativity, which helps to resolve the puzzle of how groups develop ideas without clear task frameworks (i.e., shared perceptions of goals, problems, and success criteria). These insights challenge our understanding of the role of idea elaboration in the group creative process, offer an alternative view of play as integral to creative work rather than as a diversion from work, and suggest a different conceptualization of the nature of ideas in creative work.

THEORETICAL BACKGROUND

Idea Elaboration in the Creative Process

While elaboration is recognized as critical for developing ideas, its place and role in the creative process remain unclear. The creative process in both groups and individuals is typically conceptualized as a series of stages: (1) task presentation, (2) idea generation, (3) idea selection, and (4) idea evaluation (e.g., Amabile, 1988; Amabile and Pratt, 2016). Task presentation (e.g., Amabile, 1988; Osborn, 1963), defined as "identifying the goal or problem," ranges from "an intriguing opportunity" to a formal assignment from a manager or client (Amabile & Pratt, 2016: 163). In the idea-generation phase, creative workers search for novel possibilities in response to the task that was presented. The most promising ideas are then selected (i.e., idea selection) and assessed for how well they solve the problem or accomplish the task (i.e., idea evaluation). If the outcome is satisfactory, the process proceeds to implementation; if not, more ideas are generated.

There is some disagreement in the literature as to where idea elaboration occurs within this framework. Early theorists viewed idea elaboration as a feature of ideas when they are generated – some ideas are simply more elaborate than others. For instance, in the Torrance Test of Creative Thinking, idea elaboration (i.e., the "amount of detail used to describe how ideas would be executed") is one of four[1] criteria used to assess idea quality, with more elaborated ideas considered better than less detailed ideas (Torrance, 1972: 255). In this view, idea elaboration must occur after task presentation, either before or during idea generation.

Subsequent scholars, however, have noted that creators select particular ideas as worthy of further elaboration – they evaluate generated ideas and select only those with high potential for further development (Berg, 2016, 2019). This view positions idea elaboration as

[1] The other indications were fluency, flexibility, and originality.

an intentional process following the generation and selection of an idea (Perry-Smith & Mannucci, 2017), in that one must generate an idea in order to develop it, but not all generated ideas are developed. Creativity research has seldom examined this phase empirically, instead viewing what follows idea generation through the lens of idea selection, asking: Do creators correctly select the most novel and useful idea from the pool of ideas that they have generated? This research found that they do not; people tend to select more feasible ideas over more original ones (Rietzschel et al., 2006) and to misperceive which of their ideas others will judge as most creative (Berg, 2019).

In open-ended projects, however, creators face challenges beyond selecting and evaluating ideas. First, the criteria for evaluating and selecting ideas are likely ambiguous when the creative project is open-ended (Dillon, 1982; Long-Lingo & O'Mahony, 2010; Stark, 2009). Often, there is no clear task or problem but rather an "evolving vision or projection of a new end state" (Obstfeld, 2012: 1572). Past research has either viewed evaluation as (a) the province of clients or external judges (e.g., Criscuolo, Dahlander, Grohsjean, & Salter, 2017; Rietzschel et al., 2006; Salter et al., 2014), such as the expert raters used in the widely used consensual assessment technique (Amabile, 1982); or (b) self-evident from comparing the ideas to criteria implied in a problem statement. For instance, in Sutton and Hargadon's (1996) study of group creativity, brainstorming groups were given specific prompts for ideation, such as "What can a computer be used for when it is off?" or how to make a tool less noisy (p. 693). When rendered, it is assumed that it will be evident whether the goal is achieved – if the computer is performing its proposed function or the tool is less noisy.

Overall, research has mostly examined creativity when tasks or problems are given and there are relatively clear evaluation criteria when generating, selecting, and validating new ideas (Diehl & Stroebe, 1987; Rietzschel et al., 2014; Runco & Charles, 1993). But how

creators select ideas for development in open-ended projects, when external evaluators are not yet involved and the nature of the project is still being defined, is unclear.

Collaborating on Open-ended Projects

Open-ended creative projects also present challenges specific to creative groups. The ambiguity around evaluation criteria in creative projects means that these elements may not be understood similarly by all group members (Long-Lingo & O'Mahony, 2010). Research suggests that creative workers benefit from a process of problem construction – spending time on defining and structuring the task they are seeking to complete or the problem they are trying to solve before idea generation (e.g., Reiter-Palmon & Murugavel, 2018; Reiter-Palmon & Robinson, 2009). Though research suggests that it is beneficial for groups, the process by which creative groups autonomously construct problems is still unexplored (Reiter-Palmon, 2017; Reiter-Palmon & Murugavel, 2018). In particular, clarifying open-ended tasks at the outset may be particularly challenging for groups because members may hold multiple, competing representations of the problem and the desirable characteristics of a solution, which leads to conflicts that are difficult to reconcile (Cronin & Weingart, 2007; Weingart, Todorova, & Cronin, 2010).

Though problem construction is clearly beneficial, group research has examined this as an antecedent to idea generation rather than an ongoing effort throughout creative projects. However, collaboration complexifies the traditional stage models of the creative process, such that collaborative creativity is often emergent and serendipitous (Fisher and Barrett, 2019; Hargadon & Bechky, 2006). Notably, Harvey and Kou (2013) found that groups often use evaluation as part of the idea-generation process, which helps group members to clarify evaluation criteria as part of generating ideas. This is consistent with theory that posits creativity must involve ongoing social construction of both tasks and ideas (Drazin et al., 1999; Ingold, 2014; Tsoukas, 2009), though the process by which it occurs is not yet known.

Further, unlike individuals, groups cannot develop new ideas without either articulating them or rendering them observable to other members. Research on design and innovation has highlighted the importance of concretely representing provisional ideas with prototypes. The presence of a physical prototype allows a more nuanced understanding of desirable qualities of the final ideas than through abstract mental representations or verbal depictions alone (Sutton & Hargadon, 1996; Stigliani & Ravasi, 2018). As such, members must use provisional representations of ideas, such as prototypes or metaphors to share knowledge and build shared understandings (Majchrzak et al., 2012; Nicolini et al., 2012; Seidel & O'Mahony, 2014). For example, design teams often use "mood boards" where designers can each add inspirational images to avoid the need to concretely articulate or agree on desired attributes, while still communicating their intuitions about what might be relevant to ideation (Stigliani & Ravasi, 2018: 758). As in this example, new ideas are not initially communicated as complete entities that can be selected or evaluated. Instead, the act of communicating an idea to collaborators is a critical part of the idea development process.

In sum, the literature implies that groups must likely engage in some form of problem construction for open-ended tasks requiring creativity, though it is unclear how they do so. While problem construction typically precedes idea generation, collective creativity is often circuitous and does not proceed linearly from task presentation to idea generation, selection, and evaluation. In addition, groups render their ideas observable and use those renderings to develop shared understandings about the task.

Play at Work

Play is a concept that emerged in our findings as critical to understanding how groups develop ideas when what they are creating is unclear. To situate our findings and contributions, we briefly review relevant research on play (for comprehensive reviews of play in creativity and play at work, see Mainemelis & Ronson, 2006; Petelczyc, Capezio, Wang,

Restubog, & Aquino, 2018). Though play has many definitions, the following definition best conceptualizes adult play in organizational research (Petelczyc et al., 2018): "An activity or behavior that (a) is carried out with the goal of amusement and fun, (b) involves an enthusiastic and in-the-moment attitude or approach, and (c) is highly interactive among play partners or with the activity itself" (Van Vleet & Feeney, 2015: 640). These three facets of play help explain why it has been theorized to stimulate creativity in organizations (Mainemelis & Ronson, 2006).

First, play is intended to be enjoyable. Play has often been examined as a diversion from work (e.g., Roy, 1959). For instance, some organizations allow employees to play video games to recharge their energy during the workday (Petelczyc et al., 2018); others begin meetings with games to make the team climate more enjoyable (West, Hoff, & Carlsson, 2016). Because the goal of play is to have fun, people are intrinsically motivated to participate (Petelczyc et al., 2018; Statler, Heracleous, & Jacobs, 2011). Therefore, play is typically a voluntary activity (Caillois, 2001; Huizinga, 1949; Petelczyc et al., 2018), such that people would not participate in it if fun and amusement were absent. Though play can simultaneously pursue multiple goals (Petelczyc et al., 2018), most instances of adult play thus use emotional indicators like fun, amusement, and enjoyment as the main criteria for assessing the value of play.

Second, play involves an enthusiastic, in-the-moment approach to an activity. This has led some scholars to posit that play is an orientation toward an activity, rather than an inherent property of the activity itself (Bateson, 1955; Glynn, 1994; Mainemelis & Ronson, 2006; Miller, 1973). For instance, creative groups might adopt a playful or serious orientation toward idea generation. Playful orientations effectively separate play from normal behavior, making it "a free activity standing quite consciously outside 'ordinary' life as being 'not serious,' but at the same time absorbing the player intensely and… proceeds within its own

proper boundaries of time and space" (Huizinga, 1949: 13). This separation from the ordinary allows people to engage in behaviors within play that they would be unwilling to do outside of it, such as the kinds of movements and gestures one makes during a game of charades. Introducing behaviors that are beyond the ordinary tends to make play a setting in which novel, surprising behaviors are permitted and valued.

Third, play is interactive and engaging. Many leisure activities are enjoyable and off-set from normal life, such as reading a book or watching television; but these activities are not considered play (Petelczyc et al., 2018). When one passively watches others' activities or does not interact with the activity, it is not play. Play is a call to action, such that people must follow the implicit rules of the game and act and interact when called. Thus, when groups are playing, they must engage with each other's actions.

Although scholars have noted that play has theoretical links with creativity at work (Mainemelis & Ronson, 2006), empirical research on play as an activity has been rare. Extant research on play and creativity has conceptualized play as an individual difference (e.g., play orientation as a trait; Glynn, 1994; Glynn & Webster, 1992) or as an antecedent to normal work (West et al., 2016). Thus, the role of play activities at work requires further investigation (Petelczyc et al., 2018), particularly within the creative process.

Taken together, our review of the literature suggests that idea elaboration is critical for idea development, but its place and role in the creative process is not theoretically developed. Extant research suggests that creative groups likely need to communicate or render their ideas observable to one another to elaborate them. However, is it unclear how they do this when task frameworks, and thus criteria for evaluating and converging on promising ideas, are still emerging. As such, our study investigates: How do groups collaboratively elaborate ideas when creative projects are open-ended?

METHODS

Context: Experimental Circus Groups

Given our research question around how groups elaborate ideas when creative projects are open-ended, we conducted an inductive qualitative study using elements of grounded theory (Charmaz, 2014; Strauss & Corbin, 1990) and process analysis (Langley, 1999). Qualitative research is well suited to studying processes that are not yet thoroughly understood (Edmondson & McManus, 2007). We searched for a context that could serve as an extreme case where the dynamics being studied are clearly visible (Pettigrew, 1990). In particular, we were concerned with finding a context that prioritized creativity and involved collaboration, and in which groups had the autonomy to pursue projects in which the end products were not externally determined. Our initial interest in experimental circus as a potential context arose from the first author's personal experience as an acrobatics hobbyist, which led to informal conversations with creative workers at a prominent experimental circus institution.

Through these conversations, we realized that experimental circus provides a compelling setting to observe creativity because there is a premium on innovation (Berg, 2016; Chan Kim & Mauborgne, 2014). One example of an experimental circus creation is a show in which 3D motion-tracking suits are used to capture and transmit the artists' live movements to a single audience member, who experiences the performance inside a separate 2x2-meter physical space. We highlight that our sample comprises *experimental* circus groups to distinguish it from the traditional circus companies that relied on animal acts or freak shows (e.g., Ringling Brothers), as well as from modern circus companies such as *Cirque du Soleil*, which increasingly use a "tried-and-true formula" (Vincent, 2015). Echoing this assessment, a *Cirque* executive shared with the first author that the company had attempted to define the "7 pillars of a Cirque show" as a template for future shows. This

contrasts with experimental circus groups, who describe themselves as testing and pushing the limits of the genre.

***Organizational structure*.** Experimental circus companies tend to be small, with two to five people forming the core of the company. Circus artists typically have some level of formal training, either through a degree program (e.g., National Centre for Circus Arts in the UK) or vocational training. As is typical in the industry, core members of the companies both create and perform in new shows for the company. Companies create and develop one new show at a time, while simultaneously touring a show or shows that they have already created. Touring a show means putting on temporary performances of it in venues that are known to program experimental circus shows, and these venues are collectively known as the touring circuit.

***R&D in experimental circus*.** Devising and creating a new experimental circus show involves two major phases: (1) a *research and development* (R&D) phase that is meant specifically for groups to generate and develop ideas, and (2) a *creation* phase for rehearsing and refining the show. An informant described this difference: "In R&D, you don't know exactly where you're going and it's impossible to formulate what exactly you're going to do. In creation, we have a fairly good idea of where we need to go. I think that's the big difference between R&D and creation, they're different processes." These categorizations are commonly used by industry insiders (e.g., on grant applications, on institution websites, in conversation).

Given our research question of how groups collaboratively elaborate ideas when projects are open-ended, we focused data collection on the R&D phase. This phase is particularly suited for our study because groups know they want to create a new show but do not yet know what will be created, and thus groups have to confront the proverbial blank page. R&D is explicitly meant for collectively developing some ideas and is also where the

dynamics are drawn out, which makes it more likely for us to observe the process. In addition, groups are largely able to devise their own performances from scratch and have a relatively high degree of control over the process. Groups are also collaborative, typically without formal leaders (e.g., a choreographer or a director), which means we are more likely to observe moments of collective creativity (Hargadon & Bechky, 2006). Finally, given that ideas are developed tangibly, experimental circus groups in R&D provide an extreme setting where the phenomenon of interest is "transparently observable" (Pettigrew, 1990: 275).

Sample and Access

We gained access to the groups for this project by contacting well-known performing arts institutions that offer funding programs specifically for experimental circus R&D. We also identified groups through other avenues, such as industry showcases and festivals that gather companies across Europe, and contacted them through emails and calls. Most experimental circus companies are supported by public arts funding, through one-off grants or recurring stipends, and are relatively autonomous.

We searched for groups that varied in experience and commercial success because we wanted to capture dynamics that related to how groups elaborate ideas when creative projects are open-ended but wanted to avoid a situation where the findings are bounded by group characteristics such as group tenure or industry experience. We excluded three groups who were already in or moving into the rehearsal phase where the emphasis is on repetition rather than ideation, and also those who self-reported that they had significantly less autonomy in their current project than is typical (e.g., if they were commissioned to create a site-specific show with detailed requirements). This yielded a final sample of nine groups.

Exploratory Data Collection

Familiarization with the context. We conducted exploratory pilot interviews to better understand group dynamics in experimental circus R&D[2]. We interviewed five prominent artists in a large European city where we intended to begin collecting data for the main study. Interviews were semi-structured and lasted between 45 minutes and two hours, allowing us to gain a deeper understanding of the norms of the context and informants' experiences of R&D work. We observed the day-to-day work of personnel in two prominent funding institutions, where we conducted real-time, ad-hoc interviews in the course of work or through informal conversations (Barley & Kunda, 2001; Tan, 2015). During this time, we also observed a panel meeting where gatekeepers decided which group projects to award seed-stage funding to. We reviewed archival data (i.e., 1–2-page grant proposals) submitted to these funding bodies describing the project, collaborators, and expected costs. These proposals helped us further understand the open-ended nature of creative projects when groups began R&D. These additional sources of data allowed us to triangulate our understanding of the setting from several perspectives.

Data Collection

***Observations and interviews*.** Following initial interviews, we conducted observations with groups and arranged our visits to coincide with R&D periods. We spent over 350 hours over a 10-month period (approximately five working weeks of 14-hour days) observing these groups in the course of their work. The bulk of our analyses focused on observational data because collaboratively elaborating ideas is inherently interactive. In addition, relying too heavily on participants' retrospective reconstruction of the process would likely be less useful for understanding their behavioral processes (Pettigrew, 1979).

[2] The first author was immersed in the context and conducted field work during data collection while discussing methodological decisions and emerging themes with the second author. The second author provided an outsider perspective that complemented the first author's in-depth knowledge of the context (Louis and Bartunek, 1992).

While on site, we took photographs and kept short-form notes as well as detailed, verbatim transcriptions of group discussions whenever possible. We interviewed groups in an informal, ad-hoc manner during R&D (e.g., asking questions about their process while they were rigging equipment) and audio-recorded the resulting conversations where possible (Barley & Kunda, 2001; Tan, 2015). The first author expanded these short-form notes and audio recordings into long-form notes at the end of each day in the field. Where available, we were also allowed access to groups' shared resources, such as online depositories where groups stored images or storyboarded ideas, and informants' personal notebooks where they recorded or sketched ideas.

Follow-up interviews. To ensure that we had not done "violence to experience" (Pratt, 2008: 499), we followed up with members of three out of the nine groups several months after R&D observations were completed, to explain the themes and interaction patterns we abstracted in lay terms and give informants an opportunity to correct us if they felt that their experiences were mischaracterized. The first author attended these groups' performances of their work in progress of the same shows that we had observed them developing in R&D. We also conducted informal interviews with the group immediately after these showings, as well as semi-structured interviews (lasting between one and two hours) with one member from each group.

Analytical Approach

Rough contour of themes. Throughout data collection, in addition to short-form notes and long-form field notes, the first author kept a methodological journal and analytical memos in a similar form to that of Emerson, Fretz, and Shaw (2011). Through our regular data reviews and preliminary theorizing, initial themes began to emerge (Harrison and Rouse, 2014; Reay, Golden-Biddle, & Germann, 2006). We noticed that the R&D unfolded in patterns of interactions and that groups' understanding of the creative project changed over

time. In addition, we were also surprised by how much they relied on emotions and interaction dynamics to figure out if they were making progress.

***Phase I: Producing idea elaboration episodes*.** Early in the analytic process, we encountered a difficulty that led us to theorize ideas differently: we were struggling to identify the introduction of ideas. We noticed that our informants were using the term ideas very loosely in both their own discussions and in their conversations with us (e.g., using it interchangeably to refer to everything from the purpose of the show to a specific movement). In keeping with the literature, we initially intended to use ideas as focal events (Harvey & Kou, 2013) and thus sought to follow the introduction of an idea through its selection for elaboration and subsequent evaluation. We soon found that the boundaries around what constituted an idea were extremely blurry. We rarely observed group members suggesting ideas explicitly or comparing ideas in their discussions. As we did not want to impose arbitrary judgements on what constituted an idea, this led us to abandon our search for the introduction of a focal idea as the beginning of an episode.

Instead, we looked for sets of interactions or discussions where group members engaged actively with one another and maintained a mutual focus of attention. To elaborate an idea, groups need to engage with what was being developed as well as with one another. Thus, to understand how groups make collective progress toward developing ideas, we adopted "interaction episodes" as the key level of analysis (Metiu & Rothbard, 2013: 456). Specifically, we defined the beginning of an episode as a project-relevant comment, suggestion, or action that attracts and maintains attention from other group members. The comment or action need not be intended to produce engagement. For example, someone may make an off-hand comment that is then picked up by another member as something potentially interesting to be further explored. We defined an episode as ending when group members disengaged from their collective, mutual focus of attention. This can happen

explicitly, such as when group members agreed to take a break, or implicitly, such as when group members stopped moving or physically moved apart. For instance, in an episode of elaborative play where Group Memory[3] developed an idea of balancing on the tightwire beam, we defined the beginning of the case as when Memory-A first stepped onto the beam and the ending as when the group stepped away from and stopped interacting with the beam.

***Phase II: Identifying interaction patterns*.** We conducted formal coding of the field notes and transcripts for each episode, using open coding to identify first-order codes, and grouped those first-order codes into meaningful patterns of second-order concepts (Van Maanen, 1979). The first author shared her field notes with the second author, and we met weekly to discuss coding and initial data structures. Over the course of these meetings, we discussed cases in order to group second-order concepts into aggregate dimensions that captured theoretically important concepts. We then used the emergent structure to revisit other episodes to test if it captured the important dynamics. If the data did not fit well with our second-order themes, we revised the themes, refining the data structure numerous times over several months, iterating between data and theory. We identified the interaction patterns and how they unfolded within an episode over time (Langley, 1999). We also examined how these interaction patterns unfolded across different episodes because, with observational data, looking at the sequence of events is often more meaningful than breaking the unit of analysis down into words or lines within an event (Charmaz, 2014). In particular, we examined the interaction episodes over time because research on group creativity has increasingly emphasized the importance of momentary group interactions and the cyclical way these interactions unfold (Hargadon & Bechky, 2006; Harrison & Rouse, 2014). This phase

[3] Groups are identified by pseudonyms (e.g., Memory). Individual informants are identified by their pseudonyms in descriptive field notes (e.g., Anna from Group Memory), and by their group and initial (e.g., Memory-A) elsewhere for clarity. These identifiers are used throughout the manuscript and detailed in Table 1.

resulted in a set of interaction patterns that experimental circus groups engaged in to elaborate ideas when creative projects were open-ended.

Setting the Stage

To understand the relevance and significance of what we observed during R&D, we must first situate what happens there within the broader creative process that experimental circus groups engage in. Groups typically do two things before elaborating ideas in R&D: (1) decide that they want to create a show, and (2) generate broad directions for exploration during R&D. We briefly describe these two activities below.

Starting a new creative project. At their inception, projects existed as no more than a group of people committing to developing a show around a *concept* (the core, overarching idea of projects). For example, groups may begin a project to explore the experiences of memory loss or Icelandic folklore. These concepts are abstract, often encompassing entire topics within which groups plan to develop concrete ideas. From the groups we observed, creative projects arose mostly from past interactions or collaborations between current group members. For instance, the project to explore Icelandic folklore came about when members of Group Folklore were traveling together in Iceland and were inspired by the landscape and folk tales. Groups were explicit about how, prior to R&D, they had no way of knowing what exactly about the concept would be represented or what the concept even was. As Memory-H told us, when they set out to create a show that dealt with memory loss, they "[had] no idea what [they were] going to make," and could not say, more specifically, what the performance would entail.

Choosing broad directions for further exploration. After deciding to pursue a creative project and before beginning R&D, groups brainstorm and select a small set of what they call *broad directions* that will help set R&D in motion. For example, Group Memory, developing a show around memory loss, explored the broad direction of deconstructing the

tightwire as part of their R&D. While they agreed that this direction was intriguing, they were unconcerned with why it was intriguing, how it would work, what it could look like, or how it related to the theme of memory loss – those were issues to be dealt with during R&D. Generating and choosing broad directions resembled the conventional brainstorming process as described in the literature (e.g., Osborn, 1963; Sutton & Hargadon, 1996) – members sat in a room, suggested ideas, and eventually converged on the one they found most promising. Groups considered this process to be outside of the R&D process, as they could do it outside of the physical studio; funded R&D time is precious, and activities that could be done outside of it (e.g., sitting around a table and talking) should not compete with "*actually* researching and developing ideas" (Link-R). Although one might construe broad directions as ideas, they are not concrete candidates ready to be selected and implemented. For instance, it is unclear how deconstructing the tightwire might be manifested in the final show. The work that groups do in R&D develops broad directions into concrete ideas that can be put into the show.

FINDINGS: TOWARD A MODEL OF ELABORATIVE PLAY

To develop concrete ideas from these broad directions, members did not select which ideas to pursue by evaluative discussion as prior theory would predict. Instead, to select and develop promising ideas, experimental circus groups *played*. Informants, such as those from Group Family quoted below, were often explicit that play was their focus during R&D:

> Researcher: What are you going to do today?
> Family-A: Play, I guess (grins at Family-E).
> Family-E: Yeah, we're good at that (laughs).
> Family-A: Maybe we should start really low [on the harness] and just have a little play. We came up with some possibilities [of what to do] last time, but we didn't really jam. *(Group Family – Day 1)*

Family-A's response to the question of what the group was planning to do during a given day makes it clear that play was a common, expected part of R&D. For these groups, play was not only a source of fun and diversion but also a purposeful activity meant to further develop

ideas. We use the term *elaborative play* to describe this intentional use of play to develop ideas.

We focus the remainder of the findings on theorizing the elaborative play process. As depicted in Figure 3.1, we found three interaction patterns that constitute the broader elaborative play process: (1) exploring ideas, (2) sustaining collective attention, and (3) moving toward closure. We further discovered how actions between episodes of elaborative play allowed groups to both develop ideas and clarify the open-ended aspects of their project, thus illustrating how these groups managed to consistently develop new ideas without a fully developed task framework.

[Insert Figure 3.1 about here]

Interaction Pattern I: Exploring Ideas

The elaborative play process begins with exploring ideas, when members first *independently enact ideas* – individually acting them out based on their chosen broad directions. In Group Memory, for instance, members first agreed verbally to focus on the broad direction of deconstructing the tightwire. During R&D, they worked in a circus-dance studio with full-length mirrors, crashmats, and rigging points for circus apparatus. In this studio, they took the tightwire apart and laid its component parts around the studio floor. As we described in our field notes:

> They hung the wire (the piece that is normally walked or danced on) from the ceiling in a loop shape. Anna, being the aerialist, jumped on and tried using the wire as a makeshift aerial strap. Heather waited till she was done moving before getting on and trying it out for herself. They took turns doing this for about 20 minutes. *(Group Memory – Day 1)*

In this instance, even though they were sharing and using the same apparatus, they made little comment about what the other was doing. As such, they were acting relatively independently, though they remained aware of each other's actions.

At this stage of the R&D process, groups emphasized the importance of enacting ideas, rather than thinking or talking. As one informant emphasized:

> When you *do* something, as opposed to just saying the idea, you experience all the small details that is reality. For example, if you have an idea that you're going to take a sip of water on stage, that's just the idea, when you actually do it you're confronted by things like – where does the water come from, how much water do I have to put in the cup, what does it mean to have water onstage in this show, where do I put it after I've used it – and countless other things. When you start trying your abstract ideas, things get very specific very quickly. *(Space-T)*

This quotation shows that enacting the idea – physically trying it – is these groups' path toward developing it, in part because it clarifies the viability of the idea. Such enactment is not merely executing an idea one has already thought of. The same informant also told us, "I don't get an idea from doing nothing and just hanging out at home… I never have a specific idea that is ready [to be put into the show]". As he described, ideas are not fully conceptualized in thought and cannot be made ready without enactment – they are incomplete and require further development.

Enacting ideas independently also solved a critical issue for groups: they could convey under-developed ideas without needing to fully understand or explain them. Our field notes from observing Group Memory show the importance of this process:

> Bits of the tightwire lay on the studio floor where they had been taken apart earlier. Anna got up and walked over to the counterweight beam and started balancing on it. Heather noticed the movement and turned to observe Anna's reflection in the mirror. *(Group Memory – Day 3)*

In this example, Anna did not know where her action of balancing on the counterweight beam would lead – it was one of many ideas that they had enacted over the first two and a half days of R&D. As in this example, when groups explore ideas, members divide their attention between their own actions and those of others. However, working independently but in view of other members allowed each action to be met with subtle indications of curiosity and interest from other members, such as Heather stopping what she was doing and watching

Anna. These displays of curiosity initiated the next interaction pattern: sustaining collective attention.

Interaction Pattern II: Sustaining Collective Attention

Continuing the example of Group Memory described above where Anna had begun balancing on the beam herself, we observed that Heather moved to join her on the beam after watching her for a few moments. As our field notes describe:

> Without a word, Heather walked over to join Anna. For a few moments each concentrated on their feet, saying nothing. They looked up and, having caught each other's eyes in the mirror, started giggling. The giggles erupted into laughter. When they fell off, barely had their feet touched the ground before Anna asked, "Shall we try again? It's fun!" Heather suggested, "Maybe we can block our legs with something so it's not clear where the movement is coming from?" They balanced again with crashmats blocking their legs from view, and when they fell off the beam this time, Heather wondered aloud: "What can we add that'll be surprising?" Anna responded immediately, her body bobbing up and down with excitement: "Why don't we have a tea party? It'll look like we're having a tea party on a moving train!" Without a second's pause, Heather said they should grab some cups and saucers. They ran to the kitchen, got what they needed, and started balancing again. They kept balancing until Heather burst out laughing while taking a sip and spilled water everywhere. (*Group Memory – Day 3*)

This interaction pattern differed from what preceded it, in that Heather and Anna were playing with an idea together, rather than independently. Heather's curiosity about what Anna was doing led her to attend to Anna's actions more closely and eventually to join her. But the fuel that maintained their collective engagement with this idea was what they described as 'fun.' Anna explicitly used 'fun' as a rationale for continuing to work with this particular movement, and that continued engagement led Heather to add elements to Anna's original movement. Anna responded by continuing to add to the scene they were beginning to create. In sum, these instances were clearly elaborative, in that members developed and added to a single, focal idea, and were play, in that fun and positive affect propelled the process forward.

As shown in the middle of Figure 3.1, sustaining collective attention (the second interaction pattern) was composed of two parts: improvising collectively and gathering momentum.

***Improvising collectively*.** Groups converged implicitly on a particular idea by collectively improvising around an initial action from a group member – joining in to add their own spontaneous and novel actions. This happened absent of any discussion or deliberation about an idea, with group members performing new actions, in the moment. We observed this with Group Office, a group that was creating a show critiquing the modern workplace. At this point in the R&D, Group Office was exploring the broad direction around the physical office space being a living creature.

> The group was taking a break, with everyone sitting in different corners of the studio. Someone's phone, which had been plugged into the sound system earlier, started ringing out of the blue. Robert jumped up and pretended that he was inside an office and was trying to figure out where the ringing was coming from. Audrey grinned. She turned to exchange a quick glance with Nick, who had grabbed a waste basket from the back of the studio and was pretending to look under it for the ringing. They began to move around the room, exchanging puzzled looks, weaving around each other, trying to find the source of the ringing. *(Group Office – Day 4)*

In this episode, Robert had not said anything, but his action invited the other group members to respond to him and to one another. Robert's action and the subsequent interactions between the group happened spontaneously in response to an unplanned event – the phone ringing. By grinning and making eye contact, Audrey and Nick clearly acknowledged to each other and to Robert that they were now part of the improvised scene he initiated. Through improvisation, ideas take on contributions from multiple group members and change via in-the-moment engagement, thus elaborating them from their starting points as individual explorations.

Improvising collectively was enabled by mutual attention – even when the initial action was not clearly collaborative. Groups were aware that moments for collective

improvisation would emerge during the elaborative play process. During these moments, they built on others' ideas without knowing where they might lead. For example, members of Group Office went with the flow, adding their own novel actions to the interaction without asking Robert to explain what he was thinking or why he was doing what he was doing. By the end of improvisation, they would have anywhere from 10 seconds to 10 minutes of material (e.g., sequences of movement) that could potentially be used in the show. When group members did not have anything further to add that could extend the improvisation, they stepped out of the performing character they had improvised, reverted to more natural mannerisms, and made comments that referred to the improvisation in the past tense (e.g., "that was quite a workout" and "that was fun").

***Gathering momentum*.** During improvisation, the group fell into a rhythm of quick back and forth that was energizing and self-reinforcing, which we refer to as *momentum*. When group interactions gathered momentum, it fueled collective improvisation and further development of the idea; where they did not gather momentum, groups simply stopped or moved on and the idea was dropped. In the former case, group members expressed positive and affirmative reactions that created and maintained a sense of emotional energy between them. These reactions were often expressed nonverbally through behavioral cues (e.g., smiling, leaning in, maintaining eye contact). In the example of Group Office above, group members responded immediately and positively to one another, energizing them to continue elaborating a particular idea. Moving ahead when excitement or enthusiasm was shared minimized discussions and the potential for disagreement.

The sense that an interaction episode is gathering momentum is highly experiential and challenging to verbalize. We thus also illustrate an instance where momentum was missing to highlight the important role it plays in sustaining collective attention. In this

example, Group Memory was wrapping fishing line around the tightwire and experimenting with it:

> Heather put her weight against the dozens of fishing lines they had hooked up between two tightwire stands and slowly released more of her body weight against the lines. Anna made sounds of acknowledgement such as "mm" and "uh huh" but did not say more. They moved slowly, seeming lethargic and unenthusiastic about the session. Finally, Heather sighed. Anna laughed and nodded. Heather moved away from the tightwire and sat down beside Anna, facing away from her and looking blankly into space. For a few long moments, both were silent. *(Group Memory – Day 7)*

This example highlights how idea development stalls in the absence of momentum, as the lack of what informants sometimes described as "buzz" (Folklore-B) led interactions between group members to fade out. Group members were unanimated, responding minimally to each other, only to acknowledge what another person had done but not to take it further by adding to it. In this example, the body language and position of the group changed from being on the equipment and facing each other to everyone facing the equipment from a distance. As lapses in interactions and silence also became more prevalent, the idea was implicitly discarded. Groups did not make any effort to archive or store these fragments to be reviewed later; they appeared to simply forget about them. For example, when Group Folklore looked at a video we took of their R&D, they expressed surprise at what and how many things they had tried.

Finally, when they decided that they had enough material and there was nothing significant left to add, groups moved on to collectively reflect on their emotional responses through group discussion. This collective sharing of emotions signals that the activities around experimenting have concluded and creates the opportunity to move toward closure of the episode of elaborative play.

Interaction Pattern III: Moving Toward Closure

Groups moved episodes of elaborative play toward closure by sharing their emotional responses to the improvised actions, suffused with their assessment of whether or not the more developed idea worked for the show. Whether an idea was working went beyond

whether it was possible or functional and included whether it fit within the emerging show. For instance, in this exchange, members of Group Folklore discussed this notion of an idea working with us:

> Folklore-N: What we do is similar to other types of creative work such as writing code or designing chairs – you throw away so many things before you get to what *works*, but you need to do all that first.
> Folklore-B: Maybe for something like designing chairs there's more of a formula, almost, of working or not working?
> Folklore-N: I imagine code may be more straightforward. If the page loads it works, but if it doesn't load, then clearly it doesn't work. And a chair has to stand, right?
> Folklore-B: For us, we have to produce a show at the end of the day, but what does that even mean? Within that, nothing *has* to happen. It's more like finding one or two things that work and from there we learn things like "ok maybe it works well to have these types of movement in the show". It doesn't necessarily mean that we will use it [that particular idea], but you get a nugget from that. *(Group Folklore – Day 5)*

Because the parameters of what an initial concept can become are ambiguous and groups have a great deal of autonomy, it is difficult to evaluate ideas against established, clear criteria. Rather, groups use the concept of 'working' to clarify what ideas will be in the show and the characteristics of ideas that work for that show, and to solidify the boundaries of what kinds of ideas should not be part of the show. Groups thus needed to both bring closure to a particular episode and build consensus on the meaning of the episode, setting the stage for future actions.

***Agreeing an idea works*.** After improvising and generating momentum, groups created explicit agreement about whether an idea worked. This did not mean they discussed whether an idea has some objectively desirable qualities, judging if an idea was good. Instead, through dialogue, group members discussed whether their sense of whether an idea works were aligned. For instance, in this example from our field notes:

> Adam was playing on the loops of fabric hanging from the ceiling as though they were professional aerial straps. Emma observed him quietly for a few moments before suggesting, "Maybe you can use these [straps] to get in and out of your harness?" Adam attempted her suggestion and was visibly excited, exclaiming, "Oh wow, that works really well. It feels right, like it's the right

feeling in my body." To which Emma replied, "Yup that looks really right!" *(Group Family – Day 2)*

Here, the group interpreted the situation through a gestalt feeling they referred to as 'right', which they used as a synonym for worked. These expressions were used in the place of more evaluative words, such as good or bad, to convey a subjective sense of something being suitable, without claiming that it is good by any external or objective standards. Group members both elicited these responses by asking questions such as "How do we feel about it?" and verbalized their sense of whether something worked by using phrases like "That was cool!" (Family-E), "I'm getting really excited" (Home-M), or "That felt pretty shit" (Memory-H). Group members were not expected to explicate or justify rationally why they felt the way they felt. As an informant summarized, "It's difficult to explain in words because it's just something that you feel. I feel it here (resting her hand on her stomach), in my tummy (Folklore-B)." Saying things like "that felt pretty shit" (Memory-H) allow the speaker to simultaneously respond and hold the possibility that what had happened was good but they could not appreciate it. In other words, rather than converging the quality ideas as measured against objective, technical criteria, groups created agreement around a collectively shared sense of whether an idea works for their particular project.

Asserting an idea works helps groups clarify their concept for the overall project, making it less open-ended. First, groups can view future episodes of elaborative play in reference to one that works. For example, in the field notes above, we saw how Group Family developed a way of combining aerial straps and a harness that they agreed worked. This idea then shaped their subsequent R&D as they directed more time and energy toward similar types of ideas, such as combining different apparatus and finding interesting entries or exits. Having asserted that an idea works provides a point of reference for the rest of R&D, much like how making an initial mark on a blank canvas shapes what can or will follow. This does not, however, necessarily mean that the idea is selected for inclusion in the final project. For

instance, when the first author asked informants in the previous example if they were planning to choose some ideas to execute on, they responded:

> Family-E: It's not really like that… we're not trying to pick one. In fact, I think we're actively trying not to compare and pick any.
> Family-A: We're just trying to find everything that's possible and see how they fit together. *(Group Family – Day 2)*

The ideas that emerged here fed back into exploring ideas (Interaction Pattern I) by shaping what kinds of directions and ideas were seen as coherent with an emerging sense of what worked for that show. The notion of an idea working thus encompasses both its value in play (i.e., whether it was fun to work with) and its coherence within the emerging task framework.

Asserting an idea does not work. Groups also asserted that some ideas that they had elaborated through sustained collective attention did not work. In one such instance, Group Space had been exploring a sequence of movements on aerial straps:

> Ted and Gina took turns putting on the "space suit" costume they crafted to try classic aerial straps acrobatics in, exploring how or whether the costume changed their movement. Ted did a classic aerial trick and when he came back down on the ground, Gina commented that "the movements looked circus-y". *(Group Space – Day 2)*

After this comment, they talked about their shared sentiment that there was an archetype of bodies in circus – perfectly toned with beautiful lines – which they realized through this conversation that they both found boring and thus did not want to repeat in this show.

Even when groups asserted that ideas did not work, they still viewed episodes of elaborative play as valuable because they helped to construct boundaries for future ideation. For example, while Group Space did not continue to pursue this "circus-y" movement sequence, the pursuit itself helped them to define boundaries for viable ideas. Far from viewing the episode as useless, Ted said at the end of an episode where the group had to essentially start over:

> Just because something doesn't work does not mean that we've wasted our time. You need to try these things to know. Sometimes I find it useful to even go in the opposite direction when I want to create something. It gives you more space.

> It also gives you an understanding of what the [concept] is if you experiment with the opposite. *(Group Space – Day 8)*

In this way, many elaborated ideas are not retained in the final project output. An informant told us, "If you just look at R&D it seems like there's a lot of wasted time, of us doing things that aren't eventually used in the show. But that's all important, we couldn't create the show without those – that's the work you don't see" (Link-R). Like asserting an idea worked, asserting that an idea did not work marked boundaries that informed new episodes of elaborative play by indicating the negative space which groups wanted to avoid rather than the direction they wanted to head toward, thus clarifying their overall concept and gradually making the creative project less open-ended.

Overall, constructing what works goes beyond a focus on the current idea – it is also a core process by which groups refine their problem framework. The meaning of the concept may be altered and evaluation criteria may be introduced, establishing common understandings. This stands in contrast to prior theory, which examined task frameworks as an antecedent to the idea generation and selection process, rather than co-evolving with them.

Process Deviations: Going Down Rabbit Holes

Sometimes, the elaborative play process fails to work as intended. This occurs when groups *go down rabbit holes***.** In these instances, groups sustain collective attention on an idea, but attempts to move toward closure fail (e.g., groups do not converge on a sense that it works or does not work, so they keep going back to improvising collectively), eventually eliciting frustration and wasting time. Going down rabbit holes represents a deviation from the intended elaborative play process. This interaction pattern is depicted at the bottom of Figure 3.1. For example, Group Link spent two whole afternoons out of the four days they had booked in the studio exploring the broad direction of connections between bodies in the air. During this time, they experienced frustration and anxiety. For instance, the group had rigged three separate pieces of aerial apparatus to the ceiling so that everyone would be

moving on the apparatus simultaneously. They repeated this activity many times in one afternoon, without ever converging on anything specific or going beyond that initial notion of "everyone moving together". Link-R questioned at one point,

> What is it and why is it so hard? … I feel like this is just what research is like and we just need to keep trying. But I don't know what we're doing… My brain's a bit fried and I'm feeling a bit anxious. *(Group Link – Day 4)*

In this instance, Group Link's task behaviors did not appear to differ from other groups engaged in elaborative play. However, in failing to agree on whether it worked or not, they continued to develop ideas but lacked a clear sense of progress toward building out the show. In these instances of going down the rabbit holes, groups struggle to define whether their negative emotions stem from the idea or their execution of it. This leads groups to continue to play with an idea even when it is no longer fun or interesting. Such rabbit holes are seen as time-wasting and produce negative emotions, largely because groups fail to make sense of them as they do when agreeing that an idea does not work, allowing them to construct boundaries. Thus, episodes in which ambiguity about working is not resolved are seen as more costly than those that do not work.

Cycling Through Episodes of Elaborative Play

The process of developing a full show requires groups to cycle through episodes of elaborative play and connect them to each other, such that the overall show is coherent. While we focused on interactions that elaborate a concrete idea, we also observed that an important part of the R&D process involves constantly fitting elaborated ideas together and, in doing so, clarifying the nature of the overall project. When they have engaged in a few episodes of elaborative play, groups tried to surface connections through dialogue. Folklore-B and Folklore-N directed our attention to the importance of this practice:

> Folklore-B: We don't work on a bunch of things and then have this big talk at the end of R&D about what should go into the show and then, boom! The show's done! [laughs] It's not really like that.
> Folklore-N: It's more something we're doing constantly, throughout the R&D.

> Folklore-B: Like the idea that we were playing with today – does the waterfall open up to a wonderful or a sinister hidden world? We don't know yet, but that'll also tell us what we want to say about the Hidden People. *(Group Folklore – Day 6)*

This discussion highlights that the broad theme the group holds for their project and the final output at the end are not a mere collection of elaborated ideas. Rather, throughout R&D, groups are actively figuring out the relationship between ideas as well as between ideas and the overall project. As such, this practice plays the crucial functions of (a) providing concrete benchmarks to guide later episodes and (b) revising and clarifying the relationships between the ideas, broad directions, and overall concept for the show. We discuss these two aspects in more detail below.

First, an individual episode of elaborative play allowed the group to construct criteria and constraints for future episodes, such that ideas from multiple episodes would fit together. As Folklore-N told us:

> As we do R&D, we might find some things that work better and be like "yeah that's what we want let's do that". One example is like we used PVC pipes to create rock-like structures on stage. We didn't really know where that would go but from doing that, we learned that it works really well [for this show] to have big objects on stage. *(Group Folklore – Day 6)*

By developing the idea of using PVC pipes in the first place, Group Folklore saw the advantages of large structures on stage for their show. This led them to focus more on occupying a lot of space on stage in further episodes. As we documented in an episode two days later in our field notes:

> The group was testing out projections – Oliver drew vectors into an animation software that would make his drawings look like falling snow on the Icelandic "landscape" on stage. Nicole commented that the movements looked too confined. The group talked about how it would work much better if the projection occupied even more space on stage and started suggesting ways to make the images "pop out". Following this, Oliver adjusted the program so that there was more "vibration" to the projections and it now looked like a snowstorm. The group exclaimed that it worked great. *(Group Folklore – Day 5)*

In this example, the initial idea was just to project snow and, even though projections are not objects on stage, we see how the group applied an earlier understanding – that big objects work well for the landscape they want to create – to developing this new idea. Here, we saw them finding ways to make the projections more substantial and vivid, in line with their emerging understanding of what kind of show they wanted to create. While not an objective criterion, 'big objects' became a kind of guiding principle when they considered later ideas. Through such constructions of criteria and constraints, creative groups are able to build coherence between ideas across multiple episodes of elaborative play.

Second, besides directly influencing subsequent ideas, moving through episodes of elaborative play can also alter the concept for the overall project. Returning to the opening example in our findings of Group Memory balancing on the beam, the idea of having a tea party on a moving train emerged from that episode. So far in our observations, the show on memory loss had had a somber, serious tone, and the tea party was a departure in its lightheartedness. This prompted us to ask the group whether their concept for the show was a somber or lighthearted one. Our field notes go on to capture our conversation with Group Memory:

> Memory-A: We started out somber because we were sharing and exploring our own experiences living with a loved one who had amnesia, and that was obviously quite a serious thing.
> Memory-H: But when we create something in R&D, we don't know in advance what it's going to be.
> Memory-A: Yeah, and the mood comes from trying and doing things. It's not like you take [the beam] and say, "I'm going to be a funny person". It doesn't work that way.
> Memory-H: [The balancing] turned out to be funny, so now the mood is a bit of both. *(Group Memory – Day 3)*

Here, the elaborative play episode not only resulted in the emergence of a concrete working idea, but also led them to alter the serious tone they had initially associated with the theme of memory loss. The lightheartedness of this episode showed them that there could be a

different, perhaps unintuitive, way to approach the same themes. During conversations that attempt to make sense of the ideas they are elaborating, groups often asked "how is this related to the theme?" The question is not a literal one where the person posing the question is expecting other group members to provide an answer; rather it acts as a point of sensemaking. From the example above, we can see that asking these questions is not just a matter of deciding whether or how ideas are related to the overall concept, but that the concept itself can be changed or updated by working on ideas.

THEORETICAL CONTRIBUTIONS

Using a qualitative study of experimental circus groups creating new shows, we examined how groups collaboratively develop new ideas when projects are open-ended and ambiguous. We found that, in the absence of clear criteria, groups intentionally engaged in play to manage the proverbial terror of the blank page. They converged on ideas implicitly through improvisation and shared emotions (i.e., momentum) rather than deliberation and analysis. Over multiple episodes of elaborative play, the process of developing ideas shapes and clarifies the task framework, thus co-evolving with idea elaboration. These findings have key implications for research and theory on creativity and innovation in organizations, which we discuss below.

Idea Elaboration in the Creative Process

Our model of elaborative play offers a new perspective on the role of idea elaboration within the broader creative process. First, elaboration is not only an intermediate step between idea generation and implementation, as suggested by extant theory (Berg, 2019; Perry-Smith & Mannucci, 2017). It is also an important step in what has been thought of as the first stage of the process: developing a collective task framework (Mumford et al., 1996). Prior research has suggested that groups should attend to clarifying and agreeing on a task framework prior to generating ideas (Mumford, Reiter-Palmon, & Redmond, 1994; Reiter-

Palmon & Robinson, 2009). However, creators must often evaluate and pursue specific ideas before this ambiguity is resolved (Caves, 2000; Harvey & Kou, 2013; Long-Lingo & O'Mahony, 2010). Our model suggests that the task framework and new ideas develop in parallel through elaborative play. In this view, task frameworks are clarified through multiple episodes of idea elaboration, rather than as an initial step preceding idea generation.

In elaborative play, idea selection and evaluation also proceed quite differently than prior research would suggest. From the extant literature, one might expect that groups would generate a large number of possible ideas to choose from before explicitly evaluating them and choosing among them using largely rational, convergent decision-making processes (Girotra, Terwiesch, & Ulrich, 2010). The practices and subprocesses we observed that allowed groups to move forward with some ideas do not rely on the cognitive process of convergent decision-making that is typically thought to be involved in creative evaluation. Instead, groups implicitly move forward with ideas that garner shared positive responses while ignoring and dropping ideas that do not. Similarly, in developing and clarifying ideas, group members do not stop to consider and debate whether each other's suggestions deserve more attention but rather allow themselves to be swept away by the momentum of their interactions. As such, early on in the creative process, groups may rely on non-rational routes such as shared excitement as an alternative path to converge (Metiu & Rothbard, 2013; Stephens, 2020; Stigliani & Ravasi, 2018). Only after developing ideas do members construct a sense of what works, gradually reducing ambiguity by clarifying the theme and creating touchstones and boundaries to build around and within. These insights theorize the simultaneity and interrelatedness of developing and selecting ideas, which have typically been conceptualized as separate and sequential. Our study bridges creativity research to a separate literature (looking at similar phenomena) showing that groups rely on implicit

coordination mechanisms when perspectives are diverse (Majchrzak et al., 2012; Seidel & O'Mahony, 2014; Stephens, 2020; Stigliani & Ravasi, 2018).

Play Allows Creative Workers to Manage the Terror of the Blank Page

A second contribution of our study is to theorize the role of play in the collaborative creative process. This helps to resolve a puzzle for collaborative open-ended projects: How can groups elaborate ideas when tasks and problems are ambiguous, or criteria for evaluating and selecting ideas are unclear? Our model explains how and why creative groups can use play to "navigat[e] between the known and the unknown" (Catmull & Wallace, 2014). Play is critical to collaborative idea development in open-ended projects because it creates a provisional space between the known (concepts, broad directions) and the unknown (ideas, what works, the eventual output). This liminal quality of play – existing between the real and imagined (Turner, 1982) – allows it to foster surprise, unresolved possibility or unpredictable definitions of the situation (Caillois, 2001; Sandelands & Buckner, 1989). Elaborative play creates a liminal space in which practical considerations are muted and exploration is encouraged. This allows for a deliberately meandering path (Miller, 1973; Piaget, 2001) in which the process is interesting in itself and not merely the most efficient means to an end. This heightens the chances that people will introduce novel ideas, even if the practicality of those ideas or their fit with the overall goal is not immediately evident. These characteristics of play – that it creates a liminal space to suspend concerns about efficient goal achievement and to explore and experiment with novel or surprising behaviors – explain why groups use it to cope with the terror of the blank page.

The findings and model presented here explain how and why play is critical to collaborative creativity – not only an enjoyable diversion *outside* of work (Hunter, Jemielniak, & Postuła, 2010; West et al., 2016) but also operating *within* it (Schrage, 2000). We elaborate theory by explaining the specific role of play in idea development, providing

not only freedom to generate novel ideas (Mainemelis & Ronson, 2006) but a basis for the practical pursuit of initial ideas in open-ended tasks. We answer recent calls to examine the functions of play activities at work (Petelczyc et al., 2018), rather than as an individual difference (Glynn, 1994; Glynn & Webster, 1992) or antecedent to workplace creativity (West et al., 2016). This joins prior research showing that liminal space allows for experimentation and play as a way to explore new and ambiguous phenomena, such as professional identities or organizational changes (Ibarra & Petriglieri, 2010; McDonald & Eisenhardt, 2020; Sandelands, 2010).

Revisiting the Nature of Ideas in Organizational Research

Our insights reveal a new way to understand the nature and role of ideas in creativity and innovation. Existing research conceptualizes ideas as unitary entities, where a new idea is a distinct solution (to a creative problem) that maintains a relatively stable identity throughout the creative process. This is evident in research that adopts a brainstorming paradigm – for instance, where ideas are individually counted and coded (e.g., Guilford, 1950; Stroebe et al., 2010) – and studies that view ideas as things journeying through different stages in the creative process (e.g., Perry-Smith & Mannucci, 2017) or being stored for future creative projects (e.g., Gilson & Litchfield, 2017). However, our model shows that not only can ideas take on different forms and exist on multiple scales and levels within the same creative process (e.g., the concept behind a show, a broad direction for exploration, a specific movement), but ideas proliferate and serve different functions as groups develop and elaborate them, often simultaneously. Specifically, rather than ideas being a solution or cognition that people have (Fisher & Barrett, 2019) and which becomes more complex over time (Berg, 2019), our findings show that groups not only have to integrate ideas (Harrison & Rouse, 2014) but also that elaborating ideas at one level often has the secondary function of elaborating ideas at another level. Ideas in collective creativity are not one identifiable thing

that goes through a creative process, but rather they co-evolve with each other over the course of the creative process through the actions of and interactions between group members. In other words, ideas are emergent because they come together over time, where elaborations or additions to the idea cannot be understood in isolation, because they are reactions to the notions, suggestions, and interactions that came before them within the creative process (Cronin & Loewenstein, 2018; Tsoukas, 2009).

Limitations and Future Directions

Our model is designed to address the question of how groups elaborate ideas when creative projects are open-ended. The groups in our study were primarily involved in developing creative ideas during R&D. The experimental circus context provided a good setting for examining our research question but, as an extreme case suited for theory building (Bamberger & Pratt, 2010), it is important to also consider the boundaries and the transferability of our findings and theorizing (Lincoln & Guba, 1990).

First, the groups we studied interacted in a relatively intensive way, with many of the interactions around idea development taking place in person within a concentrated period. In addition to the live presence of group members, the medium of ideation is physical, involving both objects and bodily movements. This interactive way of ideating in a tangible medium echoes the design thinking approach used by industrial design firms where groups collectively generate and develop creative products with the aid of materials such as sketches, collages, and partial prototypes (Brown, 2008). We expect the model to also apply to contexts where ideation is not physical. For example, academic research collaborations do not involve bodily movements, but one can imagine groups exploring broad directions and converging on specific threads that everyone is excited about – even when the design or results of a study are unknown. Given that the model captures moment-to-moment interactions and experiential processes, we speculate that, in contexts where interactions are asynchronous, groups may

follow a more conventional sequence of idea generation and evaluation. At the same time, as remote working and cross-time-zone collaborations are increasingly common and groups move toward virtual or even asynchronous formats, understanding the role of interaction dynamics for creative work in these settings is a promising direction for future research.

Second, the groups we studied were highly autonomous as they had the freedom to undertake creative projects of their choice and develop ideas independently. This is connected to the phenomenon of open-ended projects that we are studying, where groups necessarily require a high degree of autonomy to discover tasks through their internal volition as opposed to being assigned a project by a manager. We thus expect that the practices in elaborative play are more prevalent and useful as creative projects are more open-ended. As the context moves toward the other end of the spectrum, where tasks are given and there are clear leaders or external clients, groups may engage in a more conventional process of re-stating or re-formulating problems and clarifying evaluation criteria up front. Nonetheless, all creative work is inherently uncertain and requires creators to have at least some autonomy to think in novel ways (Amabile, 1993), no matter whether developing new pharmaceuticals, research papers, or breakthrough movies. One can imagine similar dynamics playing out in more hierarchical groups with formal or informal leaders, but we expect these leaders to exert more influence on some aspects of the process, such as how and when groups move toward closure. Future research should explore the roles of such relationships in the elaborative play process.

Finally, the groups we observed were particularly skillful at employing play in their creative process because the experimental circus setting is one where playing is the expected way of doing things. We could say that these groups were practiced at playing – they were familiar with experiences and challenges associated with play. Perhaps as a result, we did not observe any groups being stuck for an extended period. However, it is conceivable that

groups could waste a lot of time if they emphasize play and exploration but were not able to converge. As scholars have noted, there may be an underexplored "dark side of play" (Petelczyc et al., 2018: 176). Thus, we do not mean to suggest that play is universally beneficial. For instance, while we did not set out to collect systematic data on the potential pitfalls of play, we observed several cases in which groups deviated and went down rabbit holes. The possible strategies groups can adopt to buffer against these downsides or whether factors such as group tenure or industry norm shape how groups engage in elaborative play are all promising avenues for future research.

CONCLUSION

When creative groups are faced with the proverbial terror of the blank page, they need not shrink away in fear. Instead, by engaging in elaborative play, they can rely on emotional and intuitive cues to converge on which ideas are worth developing. In doing so, groups can overcome the challenge of stepping into the unknown without a clear sense of where they are going or the criteria for assessing whether a direction is promising. For these creative groups, elaborative play is not the opposite of work but rather an essential part of work.

4. HOW PERSONAL EXPERIENCES SHAPES CREATIVITY

There is often an element of personal experiences to creative work. When interviewed, creatives routinely point to examples where personal experiences influenced their creative process and work. For instance, Steve Jobs recounts how his experience with calligraphy in college shaped his perspective on the value of typography and design, which was later pivotal in developing Apple computers into beautiful and intuitive machines, an innovation that stood out within an industry then fixated on function (Jobs, 2005). Similarly, the award-winning box office hit *Dirty Dancing* drew so heavily on Eleanor Bergstein's own experiences of going dirty dancing in the Catskills resort (where the movie is set) that she gave her own nickname from that period to the movie's main character. The script writer's personal experiences thus allowed her to create a visual "metaphor for America in the summer of 1963" that struck a chord with millions of viewers (Freedman, 1987).

Scholars have acknowledged the importance of personal experiences in creativity since the inception of creativity as an area of scientific research. Early creativity research in psychology emphasized the "uniqueness of the individual" (Feist, 1998: 290) and the innate characteristics of individuals, such as personality and cognitive styles, which are associated with variation in creative ability and output (Feist, 1998; Guilford, 1950; Simonton, 1991). From this perspective, personal experiences shape creativity by influencing individuals' cognition and motivation in specific ways. For instance, having prior experience in a field alters one's cognitive associative hierarchy, making it easier to think about common or familiar responses but harder to make more unusual or remote mental associations (Mednick, 1962). Personal experiences also influence what people find to be enjoyable and therefore their choice of creative activity or which tasks they take on (Amabile, 1988, 1993; Liu, Jiang, Shalley, Keem, & Zhou, 2016). As such, this literature largely treats personal experiences as

inputs to cognitive structures and processes which then shape the output (ideas) in a mechanistic way at specific points in doing creative work (Campbell, 1960; Simonton, 1999).

As the field has developed, however, research attention has moved away from identifying innate characteristics of creative persons to viewing creativity as something that everyone has the potential to develop (Feist & Runco, 1993). One important implication of this shift away from the individual is an emphasis on identifying generalizable processes, such as the stage-based models of creativity that often form the basis for understanding organizational creativity (for a review, see Lubart, 2001). The creative process has been theorized as consisting of several phases, starting with the identification of a task or problem. Tasks and problems, while broadly conceived as any task an individual seeks to accomplish, are typically understood as externally determined or existing "out there" to be recognized. For example, participants in a study might be assigned the task of generating ideas to improve a university's psychology department (Rietzschel et al., 2006), asked to think of new ideas for fitness equipment (Berg, 2019), or asked to restate a given problem statement in new ways (Mumford et al., 1994; Reiter-Palmon, 2017). Over time, the dominant view of creativity in organizational research has become relatively depersonalized where the creative process is triggered by something in the environment and shaped by process antecedents outside of the creator.

An emerging body of organizational studies suggests, however, that personal experience is more important for organizational creativity than previously thought and may shape the creative process in a more holistic way than psychology research suggests. For example, toy car designers interject their "signature style" into their designs – this style is an amalgamation of their experiences, characteristics, and visions and is applied to and influences their design as a whole (Elsbach, 2009). In addition, ideas are not only developed in response to external problems but can involve creators personally, in that ideas are

reflections of their personal situation, emotional experience, and how they understand and relate to the world (Endrissat & Noppeney, 2013; Grimes, 2018). Personal experiences can also be used as metaphors and analogies to develop ideas by providing possible forms that nascent ideas can take (Harrison & Rouse, 2015). This thus raises a question: How do creators engage with personal experiences in the course of creative work?

To answer this question, I explore the role of personal experiences in doing creative work by conducting an inductive analysis of three settings: experimental circus (primary data), artists and designers (archival data), and scientific researchers (archival data). I conducted 30 in-depth interviews with circus artists and drew on archival data of 31 podcast interviews with creative workers across artistic and scientific domains. I found that creative workers engaged with personal experiences in two distinct but related ways: (i) directly in the creative process, and (ii) indirectly and more holistically. Importantly, not only does experience shape creative work, as research suggests, but doing creative work in turn shapes how creators understand and interpret their experiences.

THEORETICAL BACKGROUND

Research has long recognized the role of the creator when it comes to creativity and generating creative output (Feist & Runco, 1993). Scholars have argued, for instance, that creativity is "intrinsic to human nature" (Runco, 2007: 91) and that the "uniqueness of individuals" plays an important role (Feist, 1998: 290). While early research focused on understanding how individuals' inherent characteristics are associated with creative performance, research attention in recent years has shifted to generalizable processes of creativity. As such, comprehensive theories of organizational creativity typically view the creative process as composed of defined stages: (1) problem presentation (or task identification); (2) preparation – building up or activating a store of task-relevant information; (3) idea generation – searching memory and the immediate environment to

generate possible responses or solutions; and (4) idea validation – testing ideas generated against factual knowledge or task criteria (Amabile, 1988; Ford, 1996; Wallas, 1926).

Even though recent studies suggest that creative workers' experiences shape both how they do creative work and the kinds of output they produce (Elsbach, 2009; Farrell, 2001; Lingo & O'Mahony, 2010), precisely how individuals engage with their personal experiences in doing creative work remains unclear. In the sections below, I consider the ways extant theories have viewed the relationship between the creator (and their personal experiences) and the creative process – as creative personality, through changing cognitive structures, and by directing individuals' attention. I also review recent studies that hint at how individuals may engage with personal experiences in more holistic ways, to lay the foundations for my study.

Personal Experiences and Personality

One way that early creativity research understood the role of personal experiences was through a strong focus on innate characteristics of creative persons, although recent research has moved in the opposite direction to emphasize generalizable process – so much so that current theories have a relatively depersonalized view of the creative process. The earliest research on creativity focused on creative genius or the so-called "great person" theories, suggesting that there is something special about creative individuals, and this view later translated into a search for creative personalities that could be cultivated or developed in everyone. Since Guilford (1950) called for more scientific research on creativity during his inaugural address at the 58th congress of the American Psychological Association, studies on creativity have seen unprecedented growth and have become particularly important for organizational research (Glăveanu & Kaufman, 2019). Guilford (1950) framed creativity as a cognitive capacity for problem-solving, on the model of the scientist and the inventor, and argued that psychological research should devote more attention to creativity as a standalone

topic of study. As such, early research on creativity focused on the structure of the intellect (to conceptualize creativity as distinct from general intelligence, as a unique capability) and on personality (Feist & Runco, 1993). For instance, the Five-Factor Model dimensions of neuroticism, extraversion, openness, agreeableness, and conscientiousness were frequently used to identify relationships between personality and creativity. In a meta-analysis, Feist (1998) concluded that creative people are more open to new experiences, less conventional, and less conscientious, among other traits.

Research attention since the late 1970s has moved increasingly away from the study of creative personalities and exceptional creativity (Simonton, 1997) to emphasize that people all have the potential to be creative (Lubart, 2001). From there, researchers have introduced a stage or phase-based model of creativity and focused on identifying the antecedents and contextual factors relating to creative outcomes (Amabile, 1988; Amabile & Pratt, 2016; Lubart, 2001). Shifting away from the individual has thus meant a focus on identifying generalizable processes. For instance, brainstorming has received significant attention as a mechanism for generating ideas, with most studies focusing on idea fluency – i.e., what contextual factors allow individuals and groups to generate the largest number of ideas (e.g., Gallupe et al., 1991; Nijstad, Stroebe, & Lodewijkx, 2002; Rietzschel et al., 2014).

The first stage of the creative process is assumed to involve a problem or task that exists outside of the creator – for example, a task assigned by a manager, instructions from an experimenter, or a problem in one's environment (Amabile, 1988; Amabile & Pratt, 2016). Even if it is the creative worker who identifies or notices a problem, their task is to gather and organize information in order to elucidate what this problem is (Mumford et al., 1996; Mumford, Whetzel, & Reiter-Palmon, 1997). While a small number of scholars have found that constructing problems can be internally driven (e.g., Getzels, 1975), the task or problem is typically expected to come from an external source. For example, in studies of problem

finding or problem construction, participants are not asked to invent problems or come up with their own but rather to reformulate a problem statement given by the experimenter (e.g., Reiter-Palmon & Murugavel, 2018). In this view, the influence of the individuals acts on the creative process primarily through affecting levels of intrinsic motivation, with higher intrinsic motivation thought to enhance creative outcomes (Amabile, 1988; de Jesus, Rus, Lens, & Imaginário, 2013). While motivation can be internal, in that individuals may want to engage in a task for its own sake, the task or problem itself comes from an external source (Fisher & Amabile, 2008).

Personal Experiences and Divergent Thinking

The role of personal experiences is also understood in extant research as shaping the creative process by shaping individuals' cognitive structures. Guilford (1950) introduced a distinction between "convergent" and "divergent" thinking, with the latter – the ability to develop unconventional points of view – being central to creative thought. From this cognitivist perspective, individuals' experience is seen to play a role in the creative process through divergent thinking, specifically by simulating novel connections in one's associate hierarchy. An associative hierarchy is a mental representation of relationships between concepts (Mednick, 1962). The more diverse one's experiences, the more novel the responses can be to a particular stimulus (Simonton, 1999). In addition, ideas are seen as the result of recombination, and personal experiences likely shape the kinds of ideas one can have by acting as a kind of constraint on the kind of "raw materials" that are available for recombination (Ward, 2001; Welch, 1946). Consistent with this idea, creative cognition research has shown that original ideas often result from combining two seemingly non-overlapping concepts (e.g., affordable luxury) (Ward, Smith, & Vaid, 1997). In this vein, individuals occupying advantageous network positions where they are more likely to be exposed to good ideas or useful information, and thus have more raw materials for

recombination, are likely to have more good ideas themselves (Burt, 1992). As such, personal experiences influence creativity by shaping what information people are exposed to over time and therefore the mental associations they can make.

Personal Experiences and Attention

Another way in which experience is understood to influence creativity is when immediate experiences shape which stimulus, ideas, or concepts individuals attend to in the moment. For example, in experiments where participants were asked to imagine and draw aliens, those who were given information that these aliens lived in water were more likely to draw creatures with fins and gills compared to those who were told that the creatures were furry or were given no specific information (Ward, 1994). This suggests that when faced with a problem whose solution requires creativity, how people retrieve information is influenced by the exemplar or other domain-relevant information (Finke et al., 1992). As such, because the representation of a category can be influenced by recent events and the current context, prior experiences can limit creative thinking by biasing the production of ideas in new categories (in less novel ways) (Smith, Ward, & Schumacher, 1993). This can happen even unconsciously, where an individual may compose a melody or solve a pressing problem using melodies or solutions that they have previously encountered and then forgotten, sometimes leading them to inadvertently plagiarize others or even themselves (Marsh & Bower, 1993).

Personal Experiences in the Creative Process

While prior research suggests that personal experiences influence the creative process at specific points, mostly through mechanistic influences on cognitive processes, a recent stream of research that examines the creative process in-situ (George, 2007) offers some hints on personal experiences playing a more holistic role in the creative process than extant theory suggests. This work suggests that the creative worker shapes the outputs of a creative process beyond simply having different levels of intrinsic motivation. Rather, they bring personal

influences to bear on the process. For example, in a study of toy car designers, Elsbach (2009) found that designers do not simply follow pragmatic business requirements or task parameters in their design process but instead also prioritize their unique style. Style affects not just a moment of mental association or the cognitive process involved in idea generation, but its influence pervades throughout the creative process and is identifiable in the final output. One informant remarked: "I like to think of my designs as sophisticated and ultra cool… It's important that this cool style comes across in my cars, because that's sort of who I am as a designer" (Elsbach, 2009: 1060). For this designer and many others, the style elements they inject into designs are not designated by the task or any external demands or problems, but they still take great pains to make sure they are not only able to add these elements but also that the elements remain unmodified by others.

Second, some studies have hinted at how novel or divergent ideas that seem to appear out of nowhere may be more connected or embedded in individuals' personal histories than previously thought. For example, Weisberg (2006) used the case of Jackson Pollock's influential poured paintings to illustrate how an idea or style that seems to appear out of the blue and is completely divergent or disconnected from both his own work and the work of the field is actually rooted in his experience in earlier workshops and hints of it can be seen in multiple of his earlier works. The seeming disconnection stems from a lack of familiarity with Pollock's "history" (Weisberg, 2006: 28). Similarly, in a study of the dynamics of creative groups such as the French Impressionists and the Fugitive poets, Farrell (2001) shows how individual creators' work, be it paintings or poems, is deeply influenced by their peers, particularly by the nature of the friendship and interaction much more than any informational exchange or specific cognitive process.

Finally, research has found that certain types of longer-term life experiences influence creativity. For instance, studies have shown that people who have experiences of living

abroad or who have multicultural backgrounds tend to perform better on creative tasks (Maddux & Galinsky, 2009). Empirical evidence suggests a general relationship between diverse experiences and enhanced creativity; these experiences include different educational backgrounds or function experience in an organization in diverse groups (Harrison, Price, & Bell, 1998). But how these experiences shape the creative process and the way that creative workers engage with these experiences is still unknown (Leung & Chiu, 2010; Leung, Maddux, Galinsky, & Chiu, 2008; Maddux & Galinsky, 2009). Taken together, this recent stream of research suggests that personal experiences can shape the creative process throughout and influence output beyond changing individuals' cognitive structures or attention and may influence the creative process in more holistic ways. Thus, in this study, I consider how creative workers engage with their personal experiences in the process of doing creative work.

METHODS

To build theory on how individuals engage with their personal experiences in the course of doing creative work, I used an inductive qualitative approach (Charmaz, 2014; Strauss & Corbin, 1990). Existing research suggests that personal experiences shape creativity in some specific way but still little is known about how creative workers engage with it more holistically and an inductive approach is appropriate in this case for the purpose of extending the theory (Edmondson & McManus, 2007).

Research Settings

To answer my research question, I drew on data across three research settings: experimental circus, art and design, and scientific research. In the experimental circus context, I conducted 30 in-depth interviews with working circus artists and was additionally

informed by access to archival materials (e.g., storyboards of projects and ideas). [4] In addition to primary interview data, I used archival data in the form of in-depth interviews from three podcasts: *The Creative Process*, *Overshare*, and *The Life Scientific*. In selecting these contexts, I was motivated by theoretical sampling to find settings where informants were not only doing creative work but also most likely to be engaging in some way with their personal experiences (Pettigrew, 1990; Yin, 2009).

***Experimental circus*.** My initial interest in experimental circus as a potential context arose from my personal experiences as an acrobatics hobbyist, which led to informal conversations with creative workers at a prominent experimental circus institution in Europe. Through these conversations, I realized that experimental circus not only places a premium on creativity (Berg, 2016; Chan Kim & Mauborgne, 2014) but also that artists creating new shows have a great deal of autonomy in deciding what kinds of projects to pursue and how to pursue them. One example of an experimental circus creation is a show in which 3D motion-tracking suits are used to capture and transmit the artists' live movements to a single audience member, who experiences the performance inside a separate 2x2-meter physical space. The fact that creative workers have high levels of autonomy makes it more likely that they can engage with personal experiences, especially in more direct and observable ways. Even when tasks are more defined, people are known to engage in personal experiences (e.g., Elsbach & Kramer, 2003), but experimental circus represents an extreme context well suited for my research questions because the phenomenon of interest is "transparently observable" (Pettigrew, 1990: 275).

***Archival interviews with creative workers*.** While experimental circus is an extreme case, for theory building (Bamberger & Pratt, 2010), I was motivated to search for additional

[4] While this study and the first study of this dissertation draw on the same research context of experimental circus, I conducted two separate data collections and there is no overlap between the informants in the two studies.

contexts to ensure the transferability of my findings and theorizing (Lincoln & Guba, 1990) to more common types of organizational work. Initially, I was interested in entrepreneurship as a potential context where creativity is important and autonomy is high, but after conducting some exploratory interviews I quickly realized that informants tended to internalize a stylized narrative involving their personal experiences. For example, entrepreneurs I interviewed tended to have a standardized way of describing the "origin story" of their businesses. In such instances, it usually takes repeated interviews over time to be confident that informants are willing and able to report fully (Weiss, 1995). Thus, to avoid the risk of reproducing these industry narratives in my research, I decided to search instead for contexts where creative workers were not primarily responsible for marketing and where their public personas were not as intertwined with their creative products. I was particularly interested to complement my primary data in experimental circus with other settings where people likely have the freedom to engage with their personal experiences but belong to more established segments of the creative industries (Caves, 2000). I initially became aware of podcast interviews with creative workers as a potential context because of a personal interest in long-form interviews with prominent novelists who discuss their creative process. This led to an exploration of podcasts that have a long-form interview format with creative workers more broadly, ranging from novelists to designers and composers.

Given that experimental circus is the main context where I collected primary interview data, the role of additional contexts is to ascertain if similar dynamics are observed. The use of multiple sources of evidence also enhances my understanding of the phenomenon of interest and triangulates the data (Yin, 2009). Podcast interviews serve as an ideal context for this purpose because they allow for the perspectives of individuals from a wide variety of creative experiences that are not possible to get in a single context. The lay perception of creative work tends to be synonymous with artistic work (Weiner, 2000) and these creative

workers parallel those in organizations, such as designers of new products or artists who produce animations or scores for film (Catmull & Wallace, 2014). I also included scientific researchers, as this context reflects organizationally relevant creative or innovative efforts such as developing new pharmaceuticals or new projects (e.g., Ben-Menahem, Von Krogh, Erden, & Schneider, 2016; Obstfeld, 2012).

Sample and Data Collection

I gained access to the experimental circus informants for this project by contacting well-known performing arts institutions that offer funding programs specifically for experimental circus R&D. I also identified informants through other avenues, such as industry showcases and festivals that gather companies across Europe, and contacted them through emails and calls. Most experimental circus artists are supported by public arts funding, through one-off grants or recurring stipends, and are relatively autonomous. I conducted 30 semi-structured interviews via Zoom, with interviews lasting between 60 and 120 minutes, recorded with permission from informants, and transcribed verbatim. I decided to conduct video interviews for three reasons: first, that data collection was conducted during the COVID-19 pandemic and in-person data collection would have been unsafe for all parties; second, I had previously collected a large amount of observational data in the experimental circus context (for a separate research question) and was thus familiar with the context and therefore confident that I could build rapport with informants even in a virtual format; finally, video interview was more effective than telephone interview as it was possible to observe informants' body language and communicate non-verbal cues (e.g., nodding to indicate active listening). I asked broader questions throughout but started focusing on narrower areas as data collection and preliminary analysis progressed, modifying the interview protocol to address emerging themes (Spradley, 2016).

The secondary, archival data for the study were collected from three publicly available podcasts, namely the *Overshare* podcast created by Working Not Working (a platform for booking creative workers), *The Creative Process* podcast created by The Creative Process (an international educational initiative for creativity and critical thinking), and *The Life Scientific* podcast created by the British Broadcasting Corporation (BBC). I selected these based on two criteria. First, the podcasts were one-to-one in-depth interviews with creative workers about their work and process (as opposed to group interviews or interviews about one specific project, which tend to have more of a marketing focus). Second, the goal and intention of the podcasts are to uncover personal processes and they often explicitly dive in-depth into unique individual experiences. The host of the *Overshar*e podcast, for example, explains that the "whole point of *Overshare* is to get past the highlights that people talk about on stage at conferences and get past those perfectly curated Instagram feeds". From these three podcasts, I transcribed 31 interviews, comprising approximately 30 hours of interview time.

Analytical Strategy

I followed a three-stage process of coding the data to build theory (Pratt, Lepisto, & Dane, 2019; Pratt, Rockmann, & Kaufmann, 2006).

***Stage 1: Developing first-order concepts*.** I began with open coding (Charmaz, 2014; Strauss & Corbin, 1990). Following earlier qualitative studies across multiple contexts (Harrison & Rouse, 2015), I decided to code across primary and archival interview data, looking at each context in parallel. I quickly found that informants described doing creative work in highly personal terms. For instance, an informant said: "my work… isn't there just for a superficial function… it's not just decoration, it is actually born of [me]". During this phase, I relied heavily on informants' vocabulary and perspectives, using emic terms as in-vivo codes to capture dynamics or themes related to engaging with personal experiences. For

example, I coded “Creating is often autobiographical… I was writing from my past” as “describing their work as autobiographical”. In a similar vein, I coded the statement “I didn’t know what the common factor amongst them is, except maybe how they made me feel” as “not needing to articulate logical relationships”. Once I reached a point of theoretical saturation (Corbin & Strauss, 2008), where additional cycles of open coding revealed no new codes, I moved to the next stage of analysis.

Stage 2: Discovering second-order themes. After open coding revealed concepts, I shifted to axial coding to uncover connections between concepts and abstract higher-level categories (Strauss & Corbin, 1990). The underlying logic of linking and developing concepts into higher-level categories is based on the process of compare-and-contrast. I did this by comparing concepts to understand their relationships with one another. For example, I posed the question: Is the concept of “describing their work as autobiographical” related to that of “connecting experiences based on feelings”. I realized these seem to suggest a processual relationship where personal experiences are perhaps the antecedent to particular ways of engaging with the creative process.

Stage 3: Aggregating theoretical dimension. In this stage, I began iterating between data and theory to better inform and ground the patterns I was beginning to see in the data. Following the procedure in Strauss and Corbin (1990), I began with a descriptive storyline of how creative workers engage with personal experiences in their creative work and looked for a “core category” that encompasses all that has been described in the story, which, in this case, is that creative workers “experience creativity as engagement-driven”. In this vein, I continued to associate categories to the descriptive storyline in a way that developed the core category, arranging and re-arranging them to provide an analytical version of the story. From this process, two main theoretical dimensions emerged: direct and indirect engagement with

personal experiences. I summarize the emergent structure of my data in Figure 4.1 (Corley & Gioia, 2004).

FINDINGS: CREATIVITY AS ENGAGEMENT DRIVEN

My data confirms that personal experience is fundamental to creators, as they described their process and experiences of doing creative work in deeply personal terms. For many, engaging in creative work felt intensely personal, both because the process itself allowed them to express what they considered their authentic selves, and the work revealed (implicitly or explicitly) intimate aspects of themselves. As one circus artist put it, "Making work is incredibly personal. It really feels like I'm cutting up my heart and putting it out there (EL)[5]." For this informant, producing creative output was not experienced as the relatively unemotional, detached process of solving a problem or achieving a task. Instead, it was deeply personal and creators often felt exposed or vulnerable – the way one would after revealing something personal to another person. These experiences are not necessarily a result of the output being of a personal nature or containing private information. This creator, for example, was referring to creating a circus performance that combined acrobatics and folk music, but she still felt that the engagement was a very emotionally involved process and, regardless of the content, her work revealed something deeply personal about her as a person.

As expected, my analysis revealed that creative workers engaged directly with personal experiences as it became the input for specific creative products, to determine what they worked on (from an internal, intrinsic place), and informed the kinds of mental associations they make. But I found that personal experiences played a more significant role than previously thought, acting more indirectly and holistically. Finally, there was a reciprocal relationship between creator and creative work where a creator not only used

[5] Circus artists are identified by their initials e.g., EL. Podcast interviews are identified by the podcast acronym and a number that denotes an individual e.g., TLS-1 is the first interview from *The Life Scientific*.

creativity to express themselves and their personal experiences but doing creative work in turn allowed them to make sense of and understand their personal experiences. These findings suggest that creativity is an engagement-driven process that centers on expression rather than a process of producing creative outputs. In the sections below, I first describe how informants engaged directly with personal experiences before discussing how they engaged more holistically and finally showing the aforementioned reciprocity.

Engaging Directly with Personal Experiences

Using experience as raw material. Creative workers used their personal experiences by translating events and encounters into the basic building blocks for their creative projects. Doing this led many to describe their work as "autobiographical" (CP-1) because it was built out of not abstract ideas but real experiences they had had. As one composer described:

> *Every piece of music I've written is in some way linked to something that's happened to me. (CP-3)*

While actual life events and encounters are used explicitly, drawing on life stories does not mean that creative outputs are literal retellings of a creative worker's life. Rather, they are used as facts, information, and ideas that inform the creative process. A multimedia artist described how his father's passing became the starting point for a creative project:

> *When my father passed away, I started documenting the life stories of people around him and painting portraits based on those life stories. (OS-4)*

In this example, the creative worker recorded the memories of encounters people had had with his father and was explicit about using these lived experiences as the foundation of his creative work (in this case paintings). But the function of drawing on these encounters was not only to insert them into the work – it also provided a backdrop to contextualize and informed his creative choices. This was further illustrated by an author:

> *The book started off as a short story in which I was trying to explain bits of my childhood. But I'm not trying to explain the facts as much as what it was like to be seven. (CP-1)*

The creative worker emphasized how even though the creative product was fashioned out of pieces of memories he had of his childhood, the work of writing the books was about translating or explaining the personal experience of being a child at a particular age and time. What is translated then resonates with others who have had similar experiences.

While drawing on life stories as raw material is prominent when creative workers have a great deal of autonomy in their creative project, it is also applicable in creative work where there are more parameters or clear tasks. For instance, a composer illustrated how he draws on his life stories when creating scores for movies:

> *I try to identify with what's going on in the film as a person and find something from my experiences to create music with. I'm writing from my past. (CP-3)*

Here, even though there was a clear task (i.e., create music for a particular movie), this creative worker did not approach the task by generating abstract ideas about what best suited the movie. Rather, he searched through his own experiences for memories or encounters that resonated and used those as the building blocks out of which he shaped his music.

Working through internal tensions. Another way that creative workers use their personal experiences involves dealing with an internal conflict or puzzle by exploring it through creative work. For many, a common starting point for creative projects is thematic experiences that feel personally salient and relevant. For instance, a circus artist described how her personal tensions featured in and influenced her creative work:

> *I started exploring themes of motherhood because the people around me are around that age where they're having babies, and I want to become a mother as well. (GA)*

Here, the creative worker described how she embarked on a particular project because of an internal desire for motherhood she had observed in herself. In addition, while we conventionally think about creativity as triggered by something external (e.g., a problem or a task), my informants described feeling a compulsion to create constantly, regardless of the external circumstances. Unsurprisingly, creative workers often discussed intrinsic motivation, with those pursuing artistic endeavors describing creative work as "making [them] feel alive" (MI) and those pursuing scientific endeavors similarly describing it as their "life's work". However, while intrinsic motivation is usually about enjoyment or a sense of fulfillment that motivates creative workers to seek out or persist with creative tasks, the compulsion to be creative is evident in the continued pursuit of creative work even when it is clearly not enjoyable, fun, or fulfilling. For instance, here a paleontologist described her fieldwork:

> *To excavate the dinosaur, I will dig very gently and very slowly, a centimeter at a time down through the mud using a tool that resembles a screwdriver. This is what I did for most of this summer. Often, I would've been in an area where there's absolutely no bone whatsoever... it can be extremely boring sitting digging through loads and loads and loads of mud and literally finding nothing all day. (TLS-9)*

As described, the work of bringing about new discoveries in paleontology is often grueling. Creative workers are aware of this, often emphasizing that much of the creative work is "not glamorous", and that they do it not because it is fun but because they feel deeply drawn to it and compelled to continue.

Finally, while producing creative outputs necessarily involves a process of doing, creative workers often described creativity as a state of being. For instance: "When I create, I can relax and just be" (MI). Interestingly, their sense of being "creative" is not as tied to output as we may believe. For them, being creative is a fundamental aspect of who they are. This does not mean that they believe there are creative personality types or that some people are creative while others are not. Rather, they described creating as actualizing themselves

and therefore that they were the most creative when they were the most themselves. For instance: “Creating is a ton of work, but I don’t think of it as a job that I do, I create because this *is* me” (MI).

Opening new paths of interest. Creative workers often become aware of and pursue new areas or topics through experiences that open new paths to them or bring topics, tools, and themes to their attention that they were previously unaware of. One way that this happens is through engaging in creative work and these projects opening up new trajectories of exploration. For instance, a marketing creative recounts how working on one project opened up new paths later:

> *I got to work on the Obama campaign in 2008 and that was an amazing experience. But it made me pay a lot more attention to politics in America. That was when the racists came out of the woodwork and the ugliness of American politics was on full display. It stirred up a lot in me and pushed me to do a whole body of work that was legal and aggressive in message. (OS-4)*

In this quote, the creator highlighted the importance of the experience of engaging with and doing work on the Obama campaign, which directed his attention to political issues. This experience was what allowed him to pay attention differently to issues and information that were always “out there”, seeing new opportunities and integrations that were not salient before.

Engaging with Personal Experiences Holistically

Initially, I was surprised by how much informants emphasized that novelty is not their goal. For instance, one circus artist said, “There is nothing new under the sun. Every [idea] has been done before” (GR). Even though their work and livelihood depend on producing new and useful ideas, they described using creative work for expression and how their experiences are relevant in a holistic way. While we may assume that trying to be novel is the de facto starting point in generating ideas and the yardstick for deciding which ideas to

develop, this was seemingly not an active consideration for many experienced creative workers. For instance:

> *I don't start a project thinking: 'I want to be original or have my own new ideas'. That's just a given when I create new work. Otherwise, isn't it just plagiarizing? (TH)*

For this creative worker, every project or idea was new to him. This aspect of novelty was a given and faded into the background of his creative process because a creative project that was not novel to him was unthinkable – it would mean just copying ideas that he had seen elsewhere.

Finding one's voice. Instead of focusing on the objective originality of their ideas, creative workers focused on what they referred to as finding their voice. As one informant described:

> *I wouldn't be too concerned about whether people are liking or responding to your work – it comes with finding your own voice in your work. (OS-7)*

This quote suggests that creating work that is valued by others is a result of finding one's own way of doing things. Creative workers face a tension between using personal experiences in their work and making their work more universal to be relevant to the receivers or audience or to meet the need to be viewed as creative by others. Negotiating this tension between internal and external demands is an important aspect of how creative workers engage with personal experiences holistically. To do so, they emphasized the counterintuitive importance of letting go of the intention to be original. For instance:

> *You get in front of yourself all the time, you trip over your own feet because you are doing more denying than accepting. (CP-3)*

This quote illustrates a common sentiment that many creative workers discussed – that, paradoxically, you need to "try not to try" or get out of your own way to find your unique contribution. As an artist described:

> *Trying to be original sets up barriers for yourself. If you don't set yourself the requirement to not be the same as everybody else, you won't be, you will be yourself and be very interesting. It's a paradoxical state you're in. (CP-3)*

Here the creative worker is referring to originality relative to "everybody else" – i.e., creating work that is not only new to oneself but also new to the world. Many creators pointed out how intentionally trying to create work that is novel to the world created roadblocks in the creative process that prevented them from being true to their own experiences.

One way to engage holistically and let go of the intention to be objectively original is to focus on the interpretation one brings to a creative project rather than one's skill or expertise. For many creative workers, to be an expert is not an end in itself but a means of reducing friction, of making some aspects of the creative process automatic so they can disengage from intentional control. A graffiti artist described how finding the tools that suited him allowed him to express what was inside him more directly, with less being lost in translation:

> *I had to figure out what medium is going to open me up like a faucet, for there to be no speed bumps between me and the tools I'm using and the final product. Nothing has done that for me more than spray paint, it's a tool that has made me more of myself than anything. (OS-8)*

This quote shows that letting go or trying not to get in one's own way is neither passive nor easy. Psychological research has shown that trying to "control" what our mind does not do often has ironic results. For instance, trying not to think of something results in thinking more about it (e.g., Wegner, 1994). Thus, doing something seemingly simple like letting go of the intention to be original actually involves a lot of work mastering one's medium such that the technicalities and self-doubt or self-criticism fade into the background. This is reminiscent of entering a state of flow but has an element of intentionality that flow does not usually have, to master tools to avoid having to think about them. An experienced filmmaker further illustrated this:

> *A lot of people think about cameras or techniques when it comes to filmmaking. But technique in itself is not that important. I'm always forgetting how I did certain things, even if they were not too long ago – it's just not that important. What is important is what you bring with the images, not the lenses or the tools. (CP-4)*

This quote shows how technique is necessary to communicate certain ideas or indeed create high-quality output, but creators think and dwell less on the specifics of those things as they master their tools. When they have gained skills or expertise over time, they describe feeling liberated in a way – here, forgetting altogether about how to do some things and not being bothered with them – because the barrier between themselves and the creative output is largely gone.

Experience as an interpretative lens. Creative workers engage with experience holistically with experience acting as a lens to figure out and make sense of both how an individual creative project will unfold as well as how different projects may be connected. Because creative workers are working through unresolved inner tensions, it is often hard for them to envision or forecast what form the final creative output will take. It is hard for them, for example, to determine upfront which are the "best" ideas to pursue because they are still very much exploring what "best" or "right" means for themselves in a given project. For instance:

> *I had been doing a lot of reading about American folklore, but I didn't yet know how that was going to fit into the story I was writing. I was feeling very weird, my experience as an immigrant in America didn't seem to be reflected in the fiction I read. This sense of dealing with this big, weird country that seems to have no interest or respect for the way you were before. (CP-1)*

Here the author talked about how he had some ideas for what the creative product should look like (i.e., involving American folklore in some way) but that he could not yet choose which ideas to include or how to develop them. He was clear that the source of this ambivalence was his unresolved feelings about the topic, where he did not yet know what the

"message" or theme of the final book would be. Indeed, informants often talked about how things they "know" are connected to something that seems bizarre to others. For instance:

> *It's really tricky to show work in progress at the very early stages because it's all connected, and I know that given time they will cohere and make sense. But for someone else who's not me it just looks like a mess. I can understand though, I imagine myself in their shoes seeing something like that and thinking "what the hell is going on" [laughs]. (G11)*

Here, this creative worker pointed out how she, with her unique set of experiences and perspectives, is the key that provides coherence between a set of information or ideas that would seem disparate to anyone else. She highlighted how, at least in the initial stages of a creative project, the connection between ideas can be more implicit or intuitive and emerge through the lens of her personal experiences.

While we conventionally think about creativity as triggered by something external (e.g., a problem or a task), creative workers describe their work as revolving around a core topic or area that often continues to be generative for them over time. For this reason, a creative worker's repertoire is often connected by some common thread or theme and is rarely a disparate collection of solutions to unrelated problems. For instance:

> *All my ideas have this consistent thread through it, and for a long time I didn't even realize it. When I look back at my marketing campaigns, my senior thesis and now my venture idea, I was always trying to pair impact with simplicity, trying to combine big scale with a really simple idea. (OS-1)*

Here the creative worker suggested that even though her work has been across different domains, from marketing to entrepreneurship, and has taken on very different formats, it was different renditions and facets of her exploring a common thread. Even though her creative projects were not all in response to the same external project, they were all connected by the underlying thread: pairing impact with simplicity. Connections arise between projects as creative workers explore multiple facets or aspects of the same question or issue over time. For instance:

> *I was really interested in ecology and then over the years as I started to understand that I headed down into the biochemistry and the biophysics side of things. (TLS-5)*

In this example, the researcher pointed out how he was driven by an interest in a broader topic throughout his career and that this spawned many creative projects studying different questions related to it. In another example, an autism researcher described something similar:

> *I found autism incredibly interesting… [early in my career] I went around the country to schools and institutions studying children with autism. The reality of it is so puzzling and intriguing. And recently I also began to look at autism in older adults and trying to understand the differences between those experiences. (TLS-2)*

In this example, the researcher had explored the puzzling and little understood phenomenon of autism, which she found deeply intriguing, throughout her career, and different projects (in this case resulting in academic papers) had explored different types, facets, or questions relating to the topic.

Using emotions as a filter. Creative workers use their emotional responses to label and identify things they encounter as relevant for their creative work. They often do this without any initial intention to produce a creative output. For instance, a circus informant explained:

> *When I first read this book years ago, it touched something in me. I was moved, but I didn't think at that time I was going to make a show with it. Over the years, I saw things and people that moved me in the same way. I didn't know what the common factor amongst them is, except maybe how they made me feel. Only now am I beginning to integrate them and create something, but I still can't say for sure what it is. (GL)*

As this creative worker described, using emotional responses to almost tag the objects and people she encountered allowed her to accumulate a set of things that would eventually form the basis of a creative project. But because she did not need to precisely articulate the connections between them, she was able to link together things that were not logically

connected at first glance. In another example, a composer talked about how his "emotional memories" influence his process:

> *When I'm trying to compose, memories of music and my feelings about them, my emotional memories, are constantly flooding my head. Whether or not I consciously remember something as being important to writing music, composing is the channeling and filtering of the things I love in all the music I've ever heard. (CP-3)*

Here the composer described how, when creating new music, his mind is filled with not necessarily new ideas of his own but the emotionally charged memories of the things he loved from countless pieces of music he has heard before. Importantly, he highlighted how it is largely irrelevant whether or not he consciously categorized them as important or good or what the rationale behind that judgement is. Rather he is guided by his emotions, which filter his experiences, which are then fed back into his creative work. As the connections are based on the emotions they evoke in a creative worker and are not necessarily a response to a problem or cognitively searching for relevant ideas, how different pieces of information and ideas are connected is often not immediately apparent but rather emerges over time.

Developing person-specific criteria. Engaging holistically also involves using a set of standards to select and develop ideas that are person-specific, in addition to or in place of project-specific criteria. Because these standards are person-specific, they are applied (consciously or unconsciously) to every creative endeavor the creative worker engages with, no matter what the parameters of the problem or task are. For instance, a circus informant described what she wants to achieve in her creations:

> *Circus isn't just like a load of tricks, it's what the tricks tell us about ourselves, about each other, and about the world. I definitely don't always succeed in doing those things but that's always been the point. (EL)*

For this creative worker, no matter the subject matter of her creation or if she were commissioned to create a piece, all her decisions and choices are informed by the notion that

circus is supposed to reveal a deeper understanding of society. Because it is internal and specific to her, it pervades all her work and gives it the look and feel of her distinctive style.

Importantly, unlike using task- or problem-specific evaluation criteria that are seen as objective or unchanging, creative workers are clear that what is creative and what is a good piece of creative work is highly subjective. This was summarized by a circus informant:

> *There isn't a universal truth. You develop a qualitative approach that comes from experience. (GW)*

Here the creative worker was pointing out that making creative output involves not the selection and development of ideas based on some external, universal standards but that each creative worker develops their own approach and understanding of what quality work is and applies that across their projects.

Specifically, creative workers do this by learning about the community for which they create. As one street artist illustrated:

> *When you're painting a mural in a city, you're changing the face of that city, and there's a lot of responsibility that comes with that. You have to know what that city's like and how it's going to matter and how it's going to affect that community. (OS-4)*

In this example, the creative worker explained that figuring out how to produce work that is valued involves not only what he wants to see or what he would enjoy but a process of learning, of figuring out how to fit in with the community. Doing so often requires taking the perspective of the "receiver of creativity" (Zhou et al., 2019). For instance, a circus informant described how he takes the perspective of the audience:

> *I think the intuition to know what works and what doesn't is putting yourself in the audience's shoes, becoming the audience. (GW)*

Here the creative worker pointed out how understanding what strikes a chord with a broader audience, which allows him to produce personal work that is still valued by others, is based on repeated experiences of looking at his own work from an external perspective. This

suggests that personal experience is so fundamental that creative workers cannot figure out what is good until they have the experience and perspective of the audience as well. Whereas we typically think about separate subsets of people generating and evaluating creative work with the same criteria of novelty and usefulness, what these creative workers said is that there are actually different sets of criteria and to produce good work requires one to learn and integrate these different sets.

Besides taking a different perspective, another way that this happens is through feedback. A composer described the benefit of having first-hand experience of people's reactions to his work:

> *One of my favorite things to do is to sit in an audience and feel their reactions. For any [creator], it is very much part of their creative process. (CP-6)*

Even though this creative worker was referring to reactions that the audience gives to a finished project, he still talked about it as part of the creative process because it allows him to learn what works or does not work and this influences subsequent projects. Interestingly, this type of reaction from the receivers of creative work is different from "feedback", which is typically within a project (given, for example, by a manager) and meant to help creators develop ideas. Instead, these types of feedback actually help creators refine their work between projects and over time.

Reciprocity Between Creator and Creative Work

We discussed how personal experiences shape the creative process in how creative workers find ideas and raw materials that they later make sense of as well as in how their personal experiences drive them to explore certain broad themes in the beginning. These influences are reciprocal rather than sequential or parallel, often unfolding in cycles of activities.

Using the creative process to understand personal experiences. Most creators described their relationship with the creative process as a reciprocal one where they not only shape the creative work but the very process of producing creative work also shapes and reshapes them. For instance, here a creator described how the creative process is not just a detached from of producing output but a journey of self-discovery:

> *For me, writing is in some way a voyage of discovery. You assume that the writing part of yourself is smarter and bigger than the human part of yourself. And the writing part of yourself actually is competent to deal with everything and we'll find out what the things are that you are saying. And for me, that's the difference between your first draft and your second draft. Your first draft, you're figuring it out. Oh, and the second draft, you read the first draft and you go, OK, actually, these are the beans. This is what I'm saying. (CP-1)*

In this example, we see how the creative process is not just the generation, development, and execution of an idea but producing work (e.g., a first draft) and examining it provokes insights and understandings for the creator that were not present before.

In another example, a circus artist making a show about motherhood described how the creative process involved her making sense of and coming to terms with the tension she experienced around her desire to become a mother. As she described:

> *But I also struggle with that thought and the state of the world scares me as it is… And I don't know how exactly I feel or what exactly I think, this project is me trying to figure it out. (GA)*

This creative worker engaged in creative work not to solve an external problem or task but to work out a personal dilemma (the tension she experienced between the desire to become a mother and bringing a baby into what she saw as a dire world). Here, the creative worker not only expressed herself through her work but also used her work to understand and make sense of her life and emotions.

Changing values over time. Another way we observe this reciprocal relationship is that the concerns of creative workers relating to their creative work change over the course of

their careers. Their understanding of what is valuable or what is good work shifts over time. For instance, an experienced circus informant described this shift in his values from early in his career to the later stages:

> *When I was first starting out, I was just producing and producing, I had all this frantic creative energy and I wanted to prove myself. As I grow older in my life and in my career, I find that energy changing. Now I'm slower, I take more care, I want more to create things with lasting value. (DD)*

Here the informant described how early in his career, his idea of creating new work was to express every idea and thought and to put out as much as possible in terms of volume. Over time, he shifted his focus from volume to quality and came to a different understanding of what quality and value mean. Interestingly, experienced creative workers in my sample described changes in the format of work they produced as they gained such experience. For instance, a circus informant described how she grew in confidence through experience:

> *I feel much more secure in the kind of language I use. This show for instance, I don't even know if it's going to be a clown show. But it definitely is meant to make people smile and feel very subtly and very gently lifted. (GA)*

Here the informant shared how after 20 years of creating shows in the clown format, she felt like she had a good enough grasp of the form and what is considered good work in the domain that she could execute across different domains. The ideas she wanted to convey had become more salient than the form of the performance.

Not only does working out personal dilemmas drive engagement in creative work, engagement and the processes of creating in turn change informants' interpretation of their experiences and the lens through which they see the world. For instance, a circus informant said that doing creative work is not a unidirectional process – it fundamentally changes her:

> *There's a process in which everything breaks, and nothing makes sense. It can hurt and when you put the pieces [of yourself] back together it'll be in a different form and shape of how you were before. (GA)*

The informant described how creating something new and artistic involves not only the work she does on ideas but also on herself. While developing ideas and tangible outputs, informants are simultaneously developing and changing themselves. This is because the raw materials and ideas are intertwined with their personal experiences, and restructuring, shaping, and developing ideas means not only work on an impersonal mental representation but on some aspects of who they are. As such, as the creative product morphs and grows, creators feel that they are undergoing the very same changes.

This case related to the creative output, and some other cases related to the creator themselves in a way that lay beyond the scope of a particular project. For instance, a researcher described how his work helped him make sense of changes in his own life:

> *The big difference between animals and plants is that plants can't move, you know, so to survive, they have to be able to take advantage of whatever comes their way. So, they've developed a huge range of responses to the environment. It has to be adaptive to the environment…… [just slightly strange being back in a place where, you know, I'd been, you know, just the undergraduate student there was now coming back as a fully fledged colleague]. (TLS-5)*

Here, the researcher's work on plant adaptations became a metaphor for understanding his personal circumstances. Through this metaphor, he identified his difficulties and a particular way of responding to them.

THEORETICAL CONTRIBUTIONS

Using a qualitative study of circus artists and inductive analysis of archival interviews with artists and scientists, I examined how creative workers engage with their personal experiences during creative work. I found that creative workers engaged with personal experiences (i) directly in the creative process in specific ways and (ii) indirectly and more holistically. In addition, not only does experience shape creative work, as research suggests, but doing creative work in turn shapes how creators understand and interpret their experiences. Taken together, my emergent findings suggest a new way of understanding

creativity, not as a response to a problem or task situation but as a way of engaging with tasks that creators experience as being about expression (rather than production), and that they often bring to bear throughout the creative process rather than through a specific, cognitive aspect. These findings have implications for theory and research on creativity and innovation in organizations.

Reconsidering the Relationship Between Creator and Creative Process

Organizational research conceptualizes creativity as generalizable processes that are triggered by problems or tasks (Amabile, 1988; Amabile & Pratt, 2016). Variants of the stage-based models tend to serve as the basis for understanding the creative process (Fisher & Amabile, 2008; Lubart, 2001). In these models, the *subject* is typically the output of the creative process they describe – ideas – rather than creators or groups of creators. As such, the creative process is increasingly understood as how to generate as many ideas as possible and to then winnow them down to a smaller set until finally one best idea exits as the output of the process. While research acknowledges and studies the social elements of creativity (Perry-Smith & Mannucci, 2017) and emphasizes that creative output is not the work of lone geniuses (Csikszentmihalyi, 1999), our theories of creativity have become increasingly depersonalized when it comes to the creators. For example, it is not clear how two different creators with similar motivations and expertise would arrive at different creative outputs or take different paths in the creative journey.

In contrast to extant research, my findings suggest that the creator cannot be extracted from the creative process. For many creators, for instance, creative ideas and products develop out of a process of working through internal tensions or conflicts rather than being prompted by a task or a problem that exists out there. In addition, while existing research focuses on cognitive structures and how they shape the way individuals combine information or ideas, my findings suggest that creators rely heavily on emotionally charged memories and

intuition when it comes to making connections between ideas. While prior research acknowledges that affect is important for creativity, it views it as peripheral to the creative process, typically as an antecedent but not integral to the particular creative task or project (Amabile, Barsade, Mueller, & Staw, 2005). In contrast, my findings suggest that the content of the emotion is tied directly to the creative work as emotions may play an important role in determining or filtering which experiences become relevant for particular creative tasks. These insights suggest that creators and their unique experiences shape creative output in a way that existing theories cannot fully explain – the creator cannot be extracted from the creative process, and we cannot understand the process without also understanding the creator at the heart of it.

Alternative Conceptualizations of Creativity

Organizational creativity has traditionally adopted a product-oriented definition of creativity and creative work because product (i.e., ideas) measures are relatively straightforward measures of creativity (Amabile, 1988). However, organizations today have evolved to encompass a much larger area of concern beyond productivity and production to humanistic, environmental concerns. This study suggests a more integrated, person-oriented understanding of creativity and creative work in organizations. Such a perspective of creativity is not entirely new – Carl Rogers, one of the founders of humanistic psychology, defines creativity as the "emergence in action of a novel relationship product, growing out of the uniqueness of the individual on the one hand, and the materials, events, people, or circumstances of his life on the other" (Rogers, 1954: 350). Similarly, writing about play and creativity, Winnicott (1971: 93) argues that "the creation stands between the observer and [a person's] creativity", suggesting that looking at the products rather than the creative impulse is the wrong direction of inquiry. These more humanistic perspectives of creativity are held in psychotherapy and continue to be present in the study of positive psychology but are not well

integrated into organizational studies, where the study of creativity is more often motivated by its economic value (Nakamura & Csikszentmihalyi, 2014).

This study investigates how the process of doing creative work is deeply intertwined with an inward engagement and exploration of the self and individuals' experiences and how creative workers experience this over time as a building or growing of themselves. These findings suggest that creativity and creative work are central to well-being (Belfiore, 2016) and intersect with the literatures on job crafting, meaningful work, and calling (Berg, Dutton, & Wrzesniewski, 2013; Duffy & Dik, 2013; Schabram & Maitlis, 2017). For instance, my findings suggest that working out internal tension should help to bring psychological resolution to people, which may improve their mental health and sense of well-being. Similarly, creators described a sense of self-growth and discovery through doing creative work, which suggests that being creative can be experienced as self-actualizing or an opportunity to be authentic. This is not to say that there are no downsides – for instance, individuals may feel that they have to experience internal tensions continuously to sustain a creative career. And just as deeply meaningful work has been shown to be a double-edged sword (e.g., Bunderson & Thompson, 2009; Kreiner, Hollensbe & Sheep, 2006), engaging with personal experiences continually in creative work could erode any distinction between work and life and lead to sacrifices in pay and personal time, among other things. While creativity can be important in creating and crafting fulfilling careers (Ibarra & Petriglieri, 2010; Svejenova, 2005), more research is needed to understand how engaging with personal experiences shapes creative work and creative careers.

Creativity Over Time

Existing research has put forth several theoretical models of the creative process and these theoretical conceptualizations tend to assume that creativity is a single, distinct process that occurs in response to a specific task or problem. As such, research is concerned with how

personal experience is input into the idea-generation phase of the creative process, such as how diverse personal experiences are useful for divergent thinking and helping individuals make more unusual mental associations (Mednick, 1962; Simonton, 1999; Ward et al., 1997). In contrast, this study suggests that personal experiences can exert an influence throughout a creative project, or even across creative projects, and the way creative workers engage with experience can also change over time. My findings suggest that there is a reciprocal relationship between creators and creative work that mutually reinforces and influences each other, which expands our understanding of how creativity occurs over time.

This may bear on the inconsistent findings about how creativity changes with the age of creators; career age has been demonstrated to have a curvilinear effect on creativity (for a review, see Simonton, 1988) but these effects come into question when studies account for the continuous nature of creativity where quantity and quality of work are related (Dennis, 1958, 1966; Simonton, 1997). Instead of looking at cognitive factors such as idea generation or rate of idea elaboration, an alternative explanation could be a different way of engaging with experiences over time or prior creative engagement shaping what kinds of work creators then view as worth doing. For example, extant research focuses on intrapersonal characteristics such as personality and curiosity but does not consider how creators perceive, frame, and make sense of their own career and creative work over time (for an exception, see Fetzer, Harrison, Rouse, & Innis, 2019). My findings suggest that the way creators make sense of their career changes, with early career being understood as a period of establishing oneself and later career as creating more lasting values – these changes likely affect the type, if not the quality, of creative output. In sum, existing research tends to focus either on a single creative project or the overall impact of creative output (e.g, Simonton, 1994), but studying the reciprocal influence of creative work and creator may yield new perspectives on creative careers over time.

CONCLUSION

In this paper, I examined how creative workers engage with their personal experiences in the process of creative work and found that they engaged both directly and indirectly. The former involves using experience directly in the creative process in various specific ways – as inputs to specific products, influencing what individuals choose to work on, and shaping the kinds of connections people formed. The latter, indirect engagement with experience unfolds more holistically and often affects not just specific ideas or projects but spans projects and time. In addition, findings suggest a reciprocal relationship between creative work and creative workers. These findings suggest an alternative conceptualization of creativity as engagement rather than product-oriented and extend theory by reconsidering the relationship between creators and the creative process.

APPENDICES

Table 2.1. Selective Summary of Idea Definitions Used in Current Research

Source	Idea definition (emphasis added)
Brem & Voigt (2009)	"In general, the company differs between a 'trend' and an 'idea': A trend identifies 'something new' and distinguishes it from 'something existing;' an idea is **a proposal for an action**, which either reacts to recent developments or proactively utilizes them."
Cray & Schroeder (2015)	"ideas are systems of **causal-historically related token mental states** of the same type. An idea is generated when a person (or group of people) comes to have a novel token (contentful) mental state."
Glier, Tsenn, Linsey, & McAdams (2014)	"The ideation metrics are designed to measure either 'ideas' or 'solutions.' Formally, the definition of an "idea" is a **component that fulfills at least one function of the functional basis**. A "solution" is defined as a full concept that is developed by a designer and is commonly composed of multiple ideas."
Gurteen (1998)	"What is an idea? An idea is **simply 'something' that is unrealized, unproven or untested**. It can take many subtle forms. It could be an unrealized goal: 'Let's go to Mars'. It could be an unrealized product: 'Let's build a Mars ship'. It could be an unrealized service: 'Let's lay on charter flights to Mars'. It could be an unproven insight into the nature of things: 'Maybe there is a stream of particles flowing out from the sun'. Or it could be a new unproven concept of how something might work based on new knowledge of a natural, social or business phenomenon: 'The solar wind could power the ship'."
Howard, Dekoninck, & Culley (2010)	"It is worth noting that in this work, 'an idea' is defined as **a generative proposition of function, behaviour or structure**, whilst 'a concept' is defined as a semi-detailed or partially unknown solution (…) comprising of functional, behavioural and structural ideas."
Knudsen (2007)	"In defining the idea stage, the respondent was instructed that ideas are **general concepts of what might be technically or economically feasible.**"

Source	Idea definition (emphasis added)
Lehtovaara, Karvonen, Tuunanen, Pyrhönen, & Kässi (2012)	"An idea is defined as **a specific way of doing something that can be implemented in concrete**. A concept above the idea, on the other hand, is a more general approach that cannot be implemented alone as such."
Maier et al., 2012	"An idea is defined as '**any conception existing in the mind as a result of a mental understanding, of awareness or activity**' (…). This new idea can be a recombination of old ideas, a new pattern which represents a challenge for the actual order, a formula or a unique approach that is perceived as new by the stakeholders (…). Since an invention is something new and original by definition, an idea could be the usage of an invention in a new environment."
Montoya-Weiss & O'Driscoll (2000)	"An idea is defined as **the initial, most embryonic form of a new product or service idea – typically a one-line description accompanied by a high-level technical diagram**. A concept, on the other hand, is defined as a form, technology, plus a clear statement of customer benefit."
Proctor (1991)	"One might, indeed, think of ideas as '**the sentence of thought**'. Ideas are **mental phenomena** which somehow drift into the mind, wander through and often vanish into obscurity, never to be recalled again."
Rhodes (1961)	"The word idea refers to **a thought which has been communicated to other people** in the form of words, paint, clay, metal, stone, fabric, or other material."
Riedl et al. (2009)	"We informally define ideas as **an explicit description of an invention or problem solution with the intention of implementation** as a new or improved product, service, or process within an organization."
Rothberg (2004)	"An idea is **an object of thought**... intangible, and evidenced indirectly. While an idea cannot be seen, it can be represented, discussed and symbolised."
Rubenstein (1964)	"**suggestions or recommendations** for work which have not yet been formally designated as projects or programs."
Rubenstein (1994)	"…his 'idea' did not seem to fit the definition of an idea that we have been working with for many years - that is: a **suggestion, recommendation or proposal** that includes both a *need* and a technical *means* of addressing that need."

Source	Idea definition (emphasis added)
Srinivasan & Chakrabarti (2010)	"An idea is defined here as an entity at a particular level of abstraction. An idea is **a solution that satisfies requirements at a particular level of abstraction only**. An idea is a constituent of a concept."
Sukhov et al. (2019)	"Based on the existing literature, we define an idea for innovation as **a scenario in a specific context that is deemed unsatisfactory by an actor who explains how this scenario can be improved by applying appropriate resources**. In the early stages of an innovation process, an idea is thus a combination of a problem and solution that is communicated as a narrative between the idea creator and the idea assessor."
Thorleuchter & Van den Poel (2015)	"Idea mining is based on technique philosophy where an idea is defined as a means together with a corresponding end. Means and ends are seen as textual patterns that consist of several technical terms (words) occurring together. Thus, an idea is defined as **a textual pattern where terms describing a means and a corresponding end co-occur**."
Thorleuchter et al. (2010)	"An idea is **an image existing or formed in the mind but it can be written down as textual information**. (…) our idea definition is taken over from technique philosophy (…). There, an idea is defined as **a combination of two things: a mean and an appertaining purpose**. An example for an idea is a transistor. A transistor is a semiconductor device. It can be used to amplify or switch electronic signals. Here, we have a mean (a semiconductor device) and an appertaining purpose (to amplify or switch electronic signals). In general, we talk about a new idea if a known mean is related to an unknown purpose or if a known purpose is related to an unknown mean."

FIGURES

Figure 3.1. Emergent Model of Elaborative Play

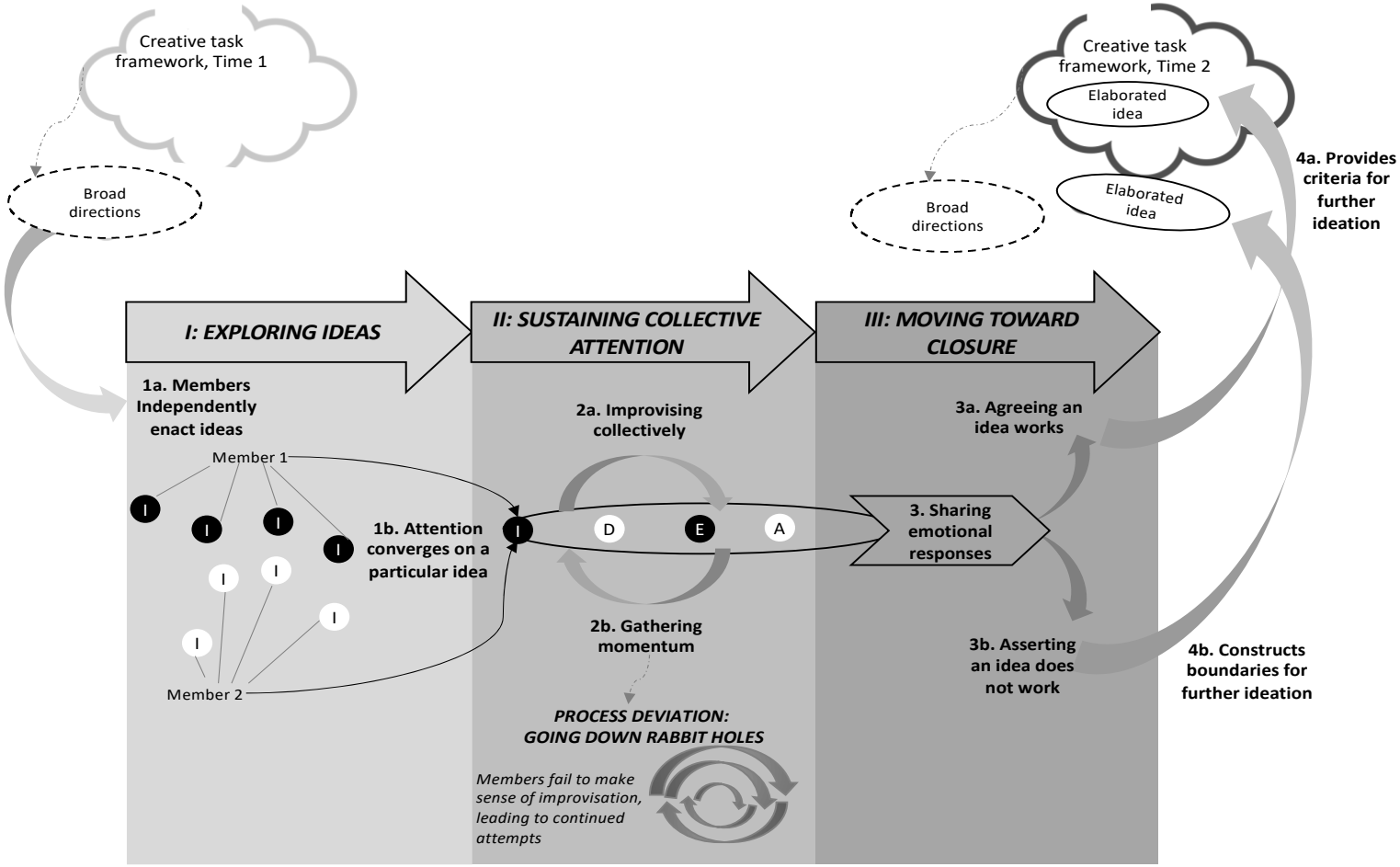
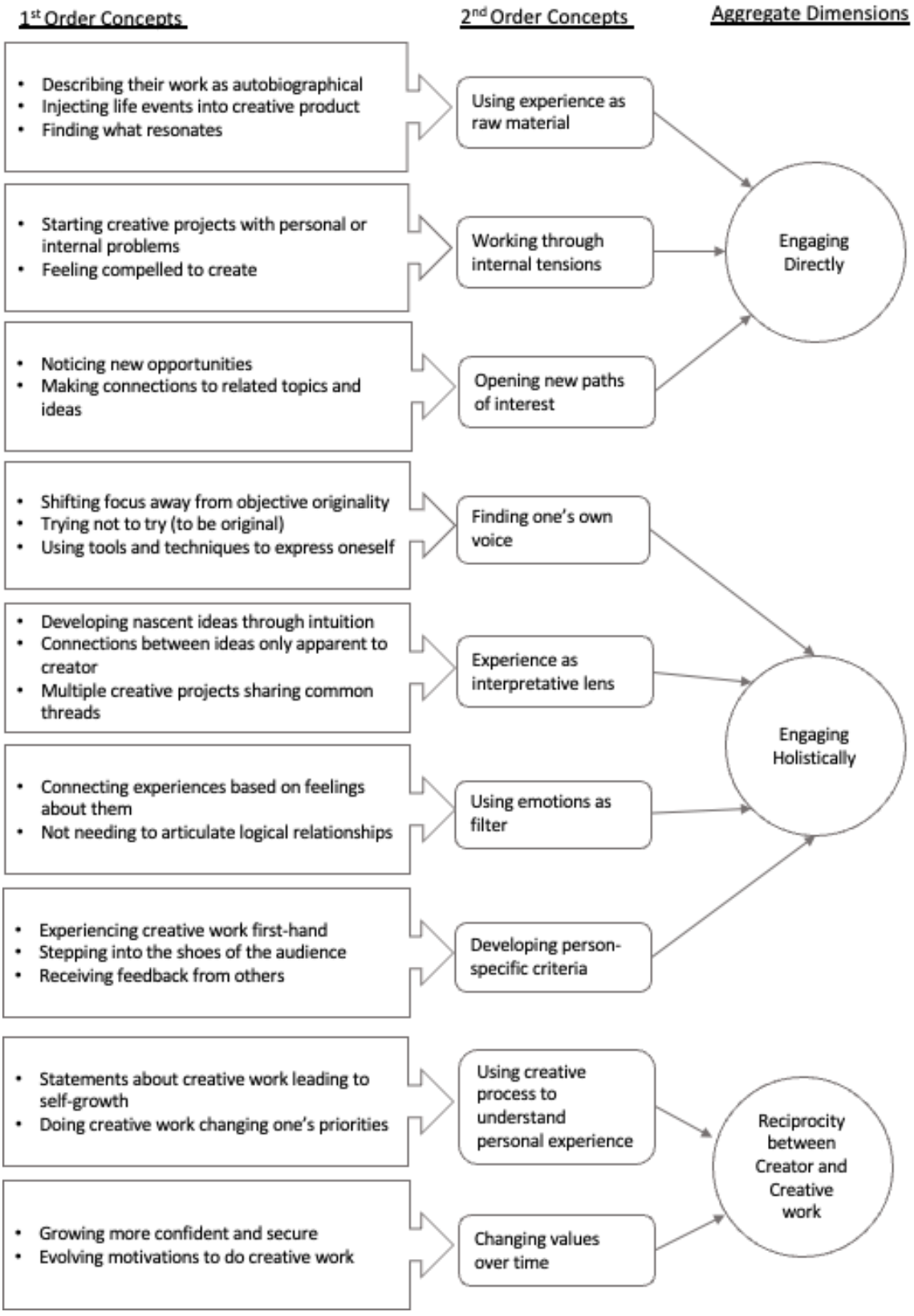


Figure 4.1. Data Structure for How Creators Engage with Personal Experiences



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