

Unlocking the Timeless Dynamics of Creative Insight: An In-Depth Exploration from Psychological and Phenomenological Standpoints

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ABSTRACT

The predominant research on creative insight has predominantly focused on the cognitive and neurological aspects during problem-solving scenarios, contributing significantly to our scientific understanding of insight. However, investigators contend that a comprehensive understanding of insight necessitates augmenting cognitive and neuroscientific investigations with a descriptive, first-person, phenomenological exploration of the experiential dimension of creative insight. In this paper, researchers advocate adopting this first-person perspective while giving particular consideration to the temporal dimensions inherent in the creative insight experience. By adopting this first-person viewpoint, researchers can discern a fundamental interplay between the past and the future at the core of the creative insight experience. This temporal structure aligns with both biological and biographical evidence, bridging the gap between biological and psychological perspectives. Furthermore, researchers contend that creative insight, owing to its spontaneous yet recurrent occurrence, offers a valuable focal point for the phenomenological examination of the continuous flow of human experience.

Keywords: *Creative Insight, Creativity, Psychological perspective, phenomenological perspective, Imagination*

In the context of cognitive processes associated with creative problem-solving, the occurrence of a profound insight, commonly referred to as the "Aha! Experience" or "Eureka Moment," represents a pivotal juncture in the cognitive reorganization of a given problem (Sidiropoulos, 2022). This paper endeavors to elucidate the multifaceted nature of creative insights by delving into the cognitive and emotional dimensions underlying the transformative moments during problem contemplation.

The essence of an epiphany lies in its capacity to evoke a profound cognitive shift, often accompanied by a distinct surge of emotion. The researcher reflects upon a recent instance of encountering such an epiphany and subsequently experiencing the Aha! Moment. These

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occurrences are characterized by an abrupt sense of resolution, providing clarity to the nature of the problem at hand (Sidiropoulos, 2022). The researcher aims to elucidate the cognitive processes associated with this phenomenon, exploring whether a physical manifestation of surprise and familiarity accompanies the creative insight.

The interplay between novelty and familiarity is a central facet of creative insights, wherein the mind grapples with reconciling elements that are both fresh and well-known simultaneously. This cognitive reconciliation encompasses a dual temporal orientation, integrating futuristic novelty with past-oriented familiarity. The researcher posits that the coexistence of these seemingly disparate elements contributes to the unique and transformative nature of creative insights, creating a cognitive synthesis that transcends conventional problem-solving approaches.

This paper delves into the intricate dynamics of creative cognition, shedding light on the interwoven threads of surprise and familiarity inherent in the Aha! Experience. By examining the cognitive and emotional underpinnings of these moments, the research seeks to contribute to a deeper understanding of the mechanisms driving creative problem-solving processes.

Research on insight and creativity is extremely active (Kounios and Beeman, 2014). Despite the fact that we consider ourselves to be part of the broader socio-cultural approach, researchers will concentrate on one specific component of creativity in this article, namely the experience of creative insight (Sternberg and Davidson, 1995).

It is important to note that a more descriptive, phenomenological approach to how creative insight is experienced is still quite restricted, despite the vast growth of research on the psychological, cognitive, neuroscientific, and social elements of creativity (Nelson, 2005). Here, researchers shall contend that, when such a phenomenological approach is considered, the temporal complexities of the experience of insight are brought to the fore in a way that has ramifications that go beyond the study of creativity. These temporal quirks emphasize the past- and future-focused aspects of insight. A further benefit of paying attention to the phenomenological structure of insight is that it may aid in understanding the relationships between neurobiological accounts derived from cognitive neuroscience and more biographical and psychological accounts gathered by sociocultural and systems approaches to creativity (Sawyer, 2012).

Creativity and Insight: Psychological Studies

Psychologists didn't begin to take the idea of creativity carefully as a topic of scientific study until Guilford's 1950 APA presentation (Sternberg and Grigorenko, 2001). Guilford had a major influence on the psychometric method-based study of creativity in real-world scenarios. Since then, assessments that encourage divergent thought, such as the Torrance assessments of Creative Thinking (Torrance, 1972), have been widely employed. These assessments were based on work by Guilford (1967). These assessments include open-ended questions, such as "List things that would happen if we lived in a world without gravity," to the participants. While some of these tests are focused on visual stimuli, such as the completion of a painting, others are figurative and rely more heavily on verbal cues.

The answers are graded on a variety of criteria, including originality (how distinctive the comments are) and fluency (how many responses are provided). Divergent thinking tests

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have been criticized of trivializing the idea of "creativity," which we agree with, notwithstanding its effect (Sternberg and Grigorenko, 2001). In particular, the divergent thinking construct limits the idea of creativity to a problem-solving method that is only applicable to a certain job and period of time. However, as demonstrated by both descriptive research on the creative process (Bindeman, 1998) and biographical analysis through case studies (Gruber and Wallace, 1999) or in-depth interviews (Csikszentmihalyi, 1996), the production of a creative product in a relevant cultural domain is neither an instantaneous event nor merely a matter of purely reflective problem solving.

It is widely accepted that in order to fully explain creative activity in the real world, one has to acquire and master the relevant domain-specific information, which involves a complex interaction between convergent and divergent psychological processes (Goel, 2014). Darwin is a prime example, who, according to Gruber and Wallace (1999), evolved his theory of evolution over the course of four or five stages between the years of 1831 and 1838. This development is shown by the record of Darwin's observations and thoughts, which contains both verbal and visual graphics. The analysis of examples like Darwin's demonstrates that "constructing the narrative of a case study using only one period would be challenging, if not impossible. Longer episodes contain short-term events and activities, and so on.

The study of insight as an event, which is more limited in time than creativity as a whole, has a longer history, dating back to the contributions of the Gestalt movement, in comparison to the more all-encompassing challenge of creativity as a whole. It is interesting to note that while the concept of insight was initially associated with the observation of problem-solving behavior in open-ended situations, such as those observed by Kohler (1925 with chimpanzees), by the end of the 20th century it was primarily assessed in experimental contexts through closed-ended problems. Consequently, creative insight was primarily conceptualized as a particular kind of problem-solving process, particularly, one that is not lived sequentially but is instead distinguished by an impasse and a quick, unexpected, and unpredictable reconfiguration of the problem. Insight has been seen as a key component of creative problem solving because it entails a non-analytical method that stimulates both explicit and implicit processes to deliver often unexpected answers. This has frequently resulted in the societal equating of insight with creativity itself.

There is broad agreement that is coming up with creative solutions, despite typically being marked by an abrupt and holistic "Aha!" is not exhausted by this local, more overwhelming aspect of the experience. This is supported by Wallas' four-stage model of preparation, incubation, illumination, and verification (Hélie and Sun, 2010), as well as recent work in psychology of insight and intuition. As was already noted, it is widely recognised that systematic participation and knowledge in the relevant field are essential components of successful insight-based solutions (Sawyer, 2012). Additionally, it has been repeatedly observed that incubation durations have a facilitative impact when the question is resolved (Baird et al., 2012).

Furthermore, it is interesting that in many insight-type problem-solving activities, participants formulate potential answers back and forth repeatedly, which is linked to smaller, partial discoveries (Hélie and Sun, 2010).

By supplying the necessary circumstances and the (mostly implicit) interpretative context where the Aha!- experience makes sense, these studies demonstrate that the period

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preceding the moment of insight can be just as significant as the insight experience itself (see Elements for A Phenomenology of Creative Insight). This is in line with research in the cognitive neuroscience of insight that demonstrates how resting-state brain activity can be utilized to predict whether an issue will be handled using insight-based or non-insight-based solutions (Kounios et al. 2008).

Additionally, it has been demonstrated that internal factors like mood and attentional focus might influence the chance of coming up with insightful solutions (Subramaniam et al., 2009).

Although the aforementioned methods have helped process-based psychological and sociological approaches gain a more thorough understanding of creative insight, a descriptive, phenomenological investigation into how insight is experienced subjectively is still surprisingly underdeveloped (Nelson, 2005). One can only guess as to the causes of this neglect, some of which are presumably connected to the disadvantage first-person data has historically had in the cognitive sciences (Varela and Shear, 1999).

The tide is gradually changing, though, as more and more research is being published in reputable journals using systematic, exacting first-person accounts to direct empirical queries and analysis (Christoff et al., 2009). Even if a phenomenological account ultimately fails to unite the biological, behavioral, and psychological viewpoints (Schwartz and Metcalfe, 2011), it may still be able to offer useful analogies or heuristics that help us better comprehend this extraordinarily important experience (Sass, 2001).

Essentials of a Creative Insight Phenomenology

Think about the "Aha!" moment that occurs after creative revelation once again. This time is frequently marked by a good emotional sensation of something "coming together," "making sense," or otherwise "falling into place." According to a cognitive psychology perspective, this sensation is based on an unexpected increase in processing fluency (Topolinski and Reber, 2010). This particular instance demonstrates two complimentary facets of how the experience develops through time from a phenomenological point of view. On the one hand, the perceived relevance of an insight-based solution (regardless of whether it is ultimately accurate) is always connected in a co-generative fashion to a previous "wanting" or "lacking" context to which such solution answers. As a result, insight solutions are frequently viewed as "gap-filling."

Since both sides of the gap must be available at some point throughout the process, insight solutions are frequently perceived as "gap-filling" for a convergent understanding about imagination. The moment of revelation is accompanied with a very clear and crisp connection to what was happening just before because of this gap filling. A creative discovery, in Runco's words, "is not a quick "aha!" but rather is protracted" (Runco, 2004). In this way, the resolution of the tip-of-the-tongue sensation and the moment of understanding are strikingly similar. This has been suggested to be related to instances where phonological information is successful in emerging to fit a context of previously activated but incomplete semantic information.

The past context is completely accessible and apparent during linear, incremental thinking in a way that is independent of later phases in the thought process.

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In contrast, the solution that comes to light through insight sheds light on the problem's earlier murky background and justifies itself by making use of something that wasn't available just then. In doing so, it draws attention to the intricate relationships between the present and recent past in the creation of new meaning. However, the experience of creative insight does more than only resolve or closure a previously presented issue.

It is crucial to distinguish another component of its temporality, one that has got far less attention, notably from the cognitive neurosciences, both in controlled problem-solving contexts and during spontaneous discoveries (those unconnected to a specific contextual problem). Thoughtful solutions are original not just because they provide a fresh approach to a pre-existing issue. They may (and frequently do) transform how the problem is seen or represented, which makes them innovative in its own right. As a result, creative insight might create a possible set of new challenges by altering how the existing problem is seen in relation to its potential outcomes.

In contrast to the gap-filling, past-oriented side, this future-oriented aspect is best illustrated through biographical accounts of spontaneous insight and interviews with people—oftentimes famous scientists—who find a new way to approach an old problem or create a theoretical synthesis of previously unrelated phenomena. The following passage from Poincaré's account of the results of inferring the order presented by a mathematical demonstration is instructive: "A mathematical demonstration is not just the simple juxtaposition of syllogisms; it is the syllogisms placed in a particular order, and the order in which these elements are placed is much more important than the elements themselves." I no longer need to worry that I will forget one of the elements because each one will take its proper position in the array without any memory effort on my side if I have the feeling, the intuition, so to say, of this order, allowing me to understand the reasoning as a whole at a glance. Speaking of individual differences in mathematical ability, he continues, "Others, finally, will possess in a less or greater degree the special intuition referred to, and then not only can they understand mathematics even if their memory is nothing extraordinary, but they may become creators and try to invent with more or less developed in them."

This generative, forward-looking part of the experience highlights the direction (or rather prospective directions) toward which one is left facing, so to speak, as a result of one's insight into the nature of the problem, phenomenologically speaking, more so than the knowledge that has just been received. This component of creative insight can be highly potent when it arises spontaneously since one's experience gets suddenly directed toward the implications of the discovery. It is important to keep in mind that other organizational levels have an equivalent two-sided past-closing/future opening structure.

For example, it is in line with the theory that the brain and body function as a unit that is primarily driven by endogenous, historically dependent dynamics that enable action perception cycles by continuously reducing prediction mistakes (Clark, 2013).

It makes no sense to analyze brain activity solely as happening instantly or just as a reaction to impinging inputs, while disregarding its continuing, predictive aspect, as neurodynamicists dating back to Karl Lashley have argued (Cosmelli et al., 2007). In other words, continual brain activity continuously brings our past of interactions into the present "now," creatively prefiguring virtual, motor, and perceptual possibilities (Varela, 2000). Or

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think about the patterns of biological evolution, which have been compared to creativity and insight in the past (Simonton, 2013).

For instance, it may be argued that, evolutionarily, flying is not merely a previous problem waiting to be solved with wings or membranous forelimbs (Sears et al., 2006). This is similar to what happens during reorganization. Due to the availability of wings or membranous forelimbs, flying is also conceivable as a set of new challenges. The development of innovation within boundary circumstances, conditions that are specifically altered by that which emerges, is what drives evolution and does not end with pure random variation. It is alluring to believe that these comparisons could indicate underlying universal biological system processes.

Implications and Future Directions

The above analysis, in our opinion, has a number of repercussions that are pertinent to research on creative insight as well as a phenomenology of the flow of experience. Consider the past-focused, gap-filling component. The personal relationship that occurs between the present and the recent past in experience is brought to the fore in a very tactile way, as we described before (James, 2007). The phenomenological philosophy tradition has repeatedly highlighted this backward-looking, retentive feature that is always present in the perception of the present "now" and has suggested that it may play a role in bringing coherence to the flow of experience (Varela, 2000).

The fact that it becomes so clear during the "Aha!" moment is what we want to draw attention to here since it shows that spontaneous occurrences of insight circumstances might be a perfect focus for the phenomenological investigation into the continuous flow of experience. Identification of the object of description, particularly when its presentation is uncertain, is one of the challenges addressed by phenomenological research. Creative insight can make it easier to adopt a phenomenological attitude towards a clearly defined aim while preserving the spontaneity of the experience flow by offering a recognizable, readily relevant, "anchor point."

It may function in a manner akin to that suggested by Schwartz and Metcalfe (2011) for tip-of-the-tongue sensations, providing a perfect candidate for phenomenological inquiry that can be contrasted with psychological, cognitive or neuroscientific accounts.

For the purpose of comprehending creative insight itself, it is still unclear whether a more thorough analysis of the moments preceding the experience of sudden insight may be the focus of phenomenological research. Studies conducted after the original work of Metcalfe and Metcalfe and Wiebe (1987) have demonstrated that a significant portion of what occurs during the incubation period before the subject has a "Aha!" moment is not visible to them. As a result, the usefulness of phenomenological descriptions of this particular experience moment would be in question.

The phenomenological method does not, however, have to be used solely. The possibility of a probable solution is suggested by the fact that resting state activity before facing an issue can, in theory, predict whether a problem will be solved through insight or not. In the context of developing brain-computer interfaces, take into account the abundance of signal analysis methods that are already accessible for ongoing EEG decomposition (Carpenter, 2020).

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When the characteristic features of brain activity linked to insight solutions (i.e., changes in peak frequency in the low alpha band or drop in alpha band power over mid frontal and left anterior temporal regions, see Kounios et al., 2006) are seen, subjects may be asked to describe their ongoing experience. As it has been suggested that a diffuse distribution of visual attention may be a distinguishing quality of insight-based solutions (Subramaniam et al., 2009), the location of attention in particular may be a pertinent target. This would be a more advanced version of the Metcalfe and Wiebe (1987) method that involved asking individuals to rate their feelings of nearing a solution at various points before the Aha! event.

On the other hand, the more forward-looking, proactive side of insight very clearly emphasizes the self-affecting element of experience. Restructuring indicates that the problem doesn't fully manifest (in terms of its significance, effects, etc.) until the solution is found. As a result, it implies that the less explored restructuring element may be an important area of emphasis, for instance, when seen in an environment that is more focused on learning. The majority of studies in cognitive neuroscience and psychology have focused on the mental or biological processes that precede or facilitate the time of reorganization. The effects of restructuring for potential future recurrence of problems of a similar nature are, however, considerably less well understood. For instance, it would be fascinating to research if and under what circumstances repeated exposure to particular types of insight issues might result in generalizations or the development of methods to deal with them (Eubanks et al., 2010). If this restructuring component, which is more readily apparent in understanding-type insights (Gruber, 1995), is a hallmark of creative insight generally, one may anticipate that every case of closed-problem insightful resolution would alter the problem's assessment to some extent. If such a change exists, it might be small and difficult to notice for each individual event, but if it does, it would be reasonable to anticipate that the person would eventually gain some sort of meta-insight into the underlying logic after repeatedly encountering a particular type of such problems. In terms of behavioral and brain changes, this expertise-related prediction ought to, in theory, be testable experimentally using the most recent problem-solving techniques. Any phenomenological project has an apparent restriction in that it deals, by definition, with experience as reported by the same subject as that experience. Here, we used this as a starting point, but we made an effort to correlate our findings with findings from psychology research and cognitive neuroscience experiments. The triangulation's findings, in our opinion, are encouraging and provide possible directions for more research. We are unable to conduct a thorough phenomenological inquiry of creative insight in the constrained space of this article. Researchers have, however, concentrated on two lingering issues that demand more study from a phenomenological viewpoint as well as from the perspectives of psychological and biological methods. These descriptions are subject to comparison with the experiences of other researchers on the one hand, and with upcoming findings from experimental methods on the other. Phenomenological research must by definition begin with the individual and seek intersubjective comparison, refinement, and ultimately confirmation (Cosmelli and Preiss, 2014).

Researchers have argued that the study of the temporal structure of human experience presents a hard research environment and that creativity in general—and insight in particular—offers an unusually rich situation, phenomenologically speaking. Creative insight does, in fact, quite explicitly present and embody the future past polarity of

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experience. As a result, it is both the feeling of something remarkably unique and intensely familiar.

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Conflict of Interest

No conflicts of interest were disclosed by the authors.

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