

THE PSYCHOLOGY OF CREATIVITY

“People should be more creative if they would be informed what is creativity”
(A. Haven)

1. OVERVIEW

Theories of creativity (particularly investigation of why some people are more creative than others) have focused on a variety of aspects. „Creator must be aware of the psychological nature of human creativity, to understand how creativity works, to know how to intervene when necessary in its creativity, and its operation in progress by using stimulation techniques” [1]. The dominant factors are usually identified as "the four Ps" - process, product, person and place (according to Mel Rhodes) [2]. A focus on *process* is shown in cognitive approaches that try to describe thought mechanisms and techniques for creative thinking. Theories invoking divergent rather than convergent thinking (such as Guilford), or those describing the staging of the creative process (such as Wallas) are primarily theories of creative process.

A focus on creative *product* usually appears in attempts to measure creativity (psychometrics, see below) and in creative ideas framed as successful memes [3]. The psychometric approach to creativity reveals that it also involves the ability to produce more [4]. A focus on the nature of the creative *person* considers more general intellectual habits, such as openness, levels of ideation, autonomy, expertise, exploratory behaviour and so on. A focus on *place* considers the circumstances in which creativity flourishes, such as degrees of autonomy, access to resources and the nature of gatekeepers. Creative lifestyles are characterized by nonconforming attitudes and behaviours as well as flexibility [4].

Most ancient cultures, including thinkers of Ancient Greece [5], Ancient China, and Ancient India [6] lacked the concept of creativity, seeing art as a form of discovery and not creation. The ancient Greeks had no terms corresponding to "to create" or "creator" except for the expression "*poiein*" ("to make"), which only applied to *poiesis* (poetry) and to the *poietes* (poet, or "maker") who made it. Plato did not believe in art as a form of creation. It is commonly argued that the notion of "creativity" originated in Western culture through Christianity, as a matter of divine inspiration [6]. According to the historian Daniel J. Boorstin, "the early Western conception of creativity was the Biblical story of creation given in the *Genesis* [6]. However, this is not creativity in the modern sense, which did not arise until the Renaissance. In the Judaeo-Christian

tradition, creativity was the sole province of God; humans were not considered to have the ability to create something new except as an expression of God's work. A concept similar to that of Christianity existed in Greek culture, for instance, Muses were seen as mediating inspiration from the Gods [8]. Romans and Greeks invoked the concept of an external creative "*daemon*" (Greek) or "*genius*" (Latin), linked to the sacred or the divine. However, none of these views are similar to the modern concept of creativity, and the individual was not seen as the cause of creation until the Renaissance. It was during the Renaissance that creativity was first seen, not as a conduit for the divine, but from the abilities of "*great men*" [9].

The rejection of creativity in favour of discovery and the belief that individual creation was a conduit of the divine would dominate the West probably until the Renaissance and even later. The development of the modern concept of creativity begins in the Renaissance, when creation began to be perceived as having originated from the abilities of the individual, and not God. However, this shift was gradual and would not become immediately apparent until the Enlightenment [7]. By the 18th century and the Age of Enlightenment, mention of creativity (notably in art theory), linked with the concept of imagination, became more frequent [8]. In the writing of Thomas Hobbes, imagination became a key element of human cognition [6]; William Duff was one of the first to identify imagination as a quality of genius, typifying the separation being made between talent (productive, but breaking no new ground) and genius [7]. As a direct and independent topic of study, creativity effectively received no attention until the 19th century [7]. Runco and Albert argue that creativity as the subject of proper study began seriously to emerge in the late 19th century with the increased interest in individual differences inspired by the arrival of Darwinism. In particular they refer to the work of Francis Galton, who through his eugenicist

Outlook took a keen interest in the heritability of intelligence, with creativity taken as an aspect of genius [6].

In the late 19th and early 20th centuries, leading mathematicians and scientists such as Hermann von Helmholtz (1896) and Henri Poincaré (1908) began to reflect on and publicly discuss their creative processes.

Creativity is a central source of meaning in our lives. Most of the things that are interesting, important, and human are the result of creativity. What makes us different from apes—our language, values, artistic expression, scientific understanding, and technology—is the result of individual ingenuity that was recognized, rewarded, and transmitted through learning.

When we're creative, we feel we are living more fully than during the rest of life. The excitement of the artist at the easel or the scientist in the lab comes close to the ideal fulfillment we all hope to get from life, and so rarely do. Perhaps only sex, sports, music, and religious ecstasy—even when these experiences remain fleeting and leave no trace—provide a profound sense of being part of an entity greater than ourselves. But creativity also leaves an outcome that adds to the richness and complexity of the future.

Creative individuals are remarkable for their ability to adapt to almost any situation and to make do with whatever is at hand to reach their goals. If I had to express in one word what makes their personalities different from others, it's *complexity*. They show tendencies of thought and action that in most people are segregated. They contain contradictory extremes: instead of being an "*individual*," each of them is a "*multitude*."

Here are the 10 antithetical traits often present in creative people that are integrated with each other in a dialectical tension [9].

1. Creative people have a great deal of physical energy, but they're also often quiet and at rest. They work long hours, with great concentration, while projecting an aura of freshness and enthusiasm. This suggests a superior physical endowment, a genetic advantage. Yet it is surprising how often individuals who in their seventies and eighties exude energy and health remember childhoods plagued by illness. It seems that their energy is internally generated, due more to their focused minds than to the superiority of their genes.

This does not mean that creative people are hyperactive, always "*on*." In fact, they rest often and sleep a lot. The important thing is that they control their energy; it's not ruled by the calendar, the dock, an external schedule. When necessary, they can focus it like a laser beam; when not, creative types immediately recharge their batteries. They consider the rhythm of activity followed by idleness or reflection very important for the success of their work. This is not a bio-rhythm inherited with their genes; it was learned by trial and error as a strategy for achieving their goals.

2. Creative people tend to be smart yet naive at the same time. How smart they actually are is open to question. It is probably true that what psychologists call the "*g factor*," meaning a core of general intelligence, is high among people who make important creative contributions.

The earliest longitudinal study of superior mental abilities, initiated at Stanford University by the psychologist Lewis Terman in 1921, shows rather conclusively that children with very high IQs do well in life, but after a certain point IQ does not seem to be correlated any longer with superior performance in real life. Later studies suggest that the cutoff point is around 120; it might be difficult to do creative work with a lower IQ, but an IQ beyond 120 does not necessarily imply higher creativity.

Another way of expressing this dialectic is the contrasting poles of wisdom and childishness. As Howard Gardner remarked in his study of the major creative geniuses of this century, a certain immaturity, both emotional and mental, can go hand in hand with deepest insights. Mozart comes immediately to mind.

Furthermore, people who bring about an acceptable novelty in a domain seem able to use well two opposite ways of thinking: the convergent and the divergent. Convergent thinking is measured by IQ tests, and it involves solving well-defined, rational problems that have one correct answer. Divergent thinking leads to no agreed-upon solution. It involves fluency, or the ability to generate a great quantity of ideas; flexibility, or the ability to switch from one perspective to another; and originality in picking unusual associations of ideas. These are the dimensions of thinking that most creativity tests measure and that most workshops try to enhance.

Yet there remains the nagging suspicion that at the highest levels of creative achievement the generation of novelty is not the main issue. People often claimed to have had only two or three good ideas in their entire career, but each idea was so generative that it kept them busy for a lifetime of testing, filling out, elaborating, and applying.

Divergent thinking is not much use without the ability to tell a good idea from a bad one, and this selectivity involves convergent thinking.

3. Creative people combine playfulness and discipline, or responsibility and irresponsibility. There is no question that a playfully light attitude is typical of creative individuals. But this playfulness doesn't go very far without its antithesis, a quality of doggedness, endurance, perseverance.

Nina Holton, whose playfully wild germs of ideas are the genesis of her sculpture, is very firm about the importance of hard work: "*Tell anybody you're a*

sculptor and they'll say, 'Oh, how exciting, how wonderful.' And I tend to say, 'What's so wonderful?' It's like being a mason, or a carpenter, half the time. But they don't wish to hear that because they really only imagine the first part, the exciting part. But, as Khrushchev once said, that doesn't fry pancakes, you see. That germ of an idea does not make a sculpture which stands up. It just sits there. So the next stage is the hard work. Can you really translate it into a piece of sculpture?"

Jacob Rabinow, an electrical engineer, uses an interesting mental technique to slow himself down when work on an invention requires more endurance than intuition: "When I have a job that takes a lot of effort, slowly, I pretend I'm in jail. If I'm in jail, time is of no consequence. In other words, if it takes a week to cut this, it'll take a week. What else have I got to do? I'm going to be here for twenty years. See? This is a kind of mental trick. Otherwise you say, 'My God, it's not working,' and then you make mistakes. My way, you say time is of absolutely no consequence."

Despite the carefree air that many creative people affect, most of them work late into the night and persist when less driven individuals would not. Vasari wrote in 1550 that when Renaissance painter Paolo Uccello was working out the laws of visual perspective, he would walk back and forth all night, muttering to himself: "What a beautiful thing is this perspective!" while his wife called him back to bed with no success.

4. Creative people alternate between imagination and fantasy, and a rooted sense of reality. Great art and great science involve a leap of imagination into a world that is different from the present. The rest of society often views these new ideas as fantasies without relevance to current reality. And they are right. But the whole point of art and science is to go beyond what we now consider real and create a new reality. At the same time, this "escape" is not into a never-never land. What makes a novel idea creative is that once we see it, sooner or later we recognize that, strange as it is, it is true.

Most of us assume that artists—musicians, writers, poets, painters—are strong on the fantasy side, whereas scientists, politicians, and businesspeople are realists. This may be true in terms of day-to-day routine activities. But when a person begins to work creatively, all bets are off.

5. Creative people tend to be both extroverted and introverted. We're usually one or the other, either preferring to be in the thick of crowds or sitting on the sidelines and observing the passing show. In fact, in psychological research, extroversion and introversion are considered the most stable

personality traits that differentiate people from each other and that can be reliably measured. Creative individuals, on the other hand, seem to exhibit both traits simultaneously.

6. Creative people are humble and proud at the same time. It is remarkable to meet a famous person who you expect to be arrogant or supercilious, only to encounter self-deprecation and shyness instead. Yet there are good reasons why this should be so. These individuals are well aware that they stand, in Newton's words, "on the shoulders of giants." Their respect for the area in which they work makes them aware of the long line of previous contributions to it, putting their own in perspective. They're also aware of the role that luck played in their own achievements. And they're usually so focused on future projects and current challenges that past accomplishments, no matter how outstanding, are no longer very interesting to them. At the same time, they know that in comparison with others, they have accomplished a great deal. And this knowledge provides a sense of security, even pride.

7. Creative people, to an extent, escape rigid gender role stereotyping. When tests of masculinity/femininity are given to young people, over and over one finds that creative and talented girls are more dominant and tough than other girls, and creative boys are more sensitive and less aggressive than their male peers.

This tendency toward androgyny is sometimes understood in purely sexual terms, and therefore it gets confused with homosexuality. But psychological androgyny is a much wider concept referring to a person's ability to be at the same time aggressive and nurturant, sensitive and rigid, dominant and submissive, regardless of gender. A psychologically androgynous person in effect doubles his or her repertoire of responses. Creative individuals are more likely to have not only the strengths of their own gender but those of the other one, too.

8. Creative people are both rebellious and conservative. It is impossible to be creative without having first internalized an area of culture. So it's difficult to see how a person can be creative without being both traditional and conservative and at the same time rebellious and iconoclastic. Being only traditional leaves an area unchanged; constantly taking chances without regard to what has been valued in the past rarely leads to novelty that is accepted as an improvement. The artist Eva Zeisel, who says that the folk tradition in which she works is "her home," nevertheless produces ceramics that were recognized by the Museum of Modern Art as

masterpieces of contemporary design. This is what she says about innovation for its own sake:

"This idea to create something is not my aim. To be different is a negative motive, and no creative thought or created thing grows out of a negative impulse. A negative impulse is always frustrating. And to be different means 'not like this' and 'not like that.' And the 'not like'—that's why postmodernism, with the prefix of 'post,' couldn't work. No negative impulse can work, can produce any happy creation. Only a positive one."

But the willingness to take risks, to break with the safety of tradition, is also necessary. The economist George Stigler is very emphatic in this regard: *"I'd say one of the most common failures of able people is a lack of nerve. They'll play safe games. In innovation, you have to play a less safe game, if it's going to be interesting. It's not predictable that it'll go well."*

9. Most creative people are very passionate about their work, yet they can be extremely objective about it as well. Without the passion, we soon lose interest in a difficult task. Yet without being objective about it, our work is not very good and lacks credibility. Here is how the historian Natalie Davis puts it:

"I think it is very important to find a way to be detached from what you write, so that you can't be so identified with your work that you can't accept criticism and response, and that is the danger of having as much affect as I do. But I am aware of that and of when I think it is particularly important to detach oneself from the work, and that is something where age really does help."

10. Creative people's openness and sensitivity often exposes them to suffering and pain, yet also to a great deal of enjoyment. Most would agree with Rabinow's words: *"Inventors have a low threshold of pain. Things bother them."* A badly designed machine causes pain to an inventive engineer, just as the creative writer is hurt when reading bad prose.

Being alone at the forefront of a discipline also leaves you exposed and vulnerable. Eminence invites criticism and often vicious attacks. When an artist has invested years in making a sculpture, or a scientist in developing a theory, it is devastating if nobody cares.

Deep interest and involvement in obscure subjects often goes unrewarded, or even brings on ridicule. Divergent thinking is often perceived as deviant by the majority, and so the creative person may feel isolated and misunderstood.

Perhaps the most difficult thing for creative individuals to bear is the sense of loss and emptiness they experience when, for some reason, they cannot

work. This is especially painful when a person feels his or her creativity drying out.

Yet when a person is working in the area of his or her expertise, worries and cares fall away, replaced by a sense of bliss. Perhaps the most important quality, the one that is most consistently present in all creative individuals, is the ability to enjoy the process of creation for its own sake. Without this trait, poets would give up striving for perfection and would write commercial jingles, economists would work for banks where they would earn at least twice as much as they do at universities, and physicists would stop doing basic research and join industrial laboratories where the conditions are better and the expectations more predictable.

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