

---

# IMAGINATION

---

Imagination is the ability to see things other than as they are. It is the capacity to transcend the actual and to construct the possible ... and the impossible. It is a habit of mind that is marked by the joint conditions of the actual and the possible, the usual and the novel, the cognitive and the emotional, the logical and the extra-logical. It is a source of creativity and invention. And it is a quality that is highly desired, if not for ourselves, for our children.

To understand the imagination we need to experience the imagination. Thus we begin with a thought experiment. Imagine, for an instant, an animal that lives on a distant planet – a planet with an atmosphere, a day and a night, water, and vegetation. What does it look like? Is it unique? Is it unusual? Is it conceivable? Most likely the creature of your imagination is rooted in some experience you've had (a real animal or a movie creature) along with some standard modifications (fangs, extra limbs, etc.). Perhaps it is a giant winged lizard with horns and colourful stripes or a horse-like creature with a lion's mane and three tails. Regardless of your animal, however, some things are likely true. Although it may be unique and unusual, it will likely have some even number of limbs, or wings, or both. It will propel itself by walking or flying or swimming. In essence, it will be recognizable as an animal. You can't avoid it. This is because when we imagine we reach out from where we are, not blindly or randomly, but along conceivable trajectories. That is, we build our animal from a repertoire of features and characteristics of things that are animal-like. The combinations and permutations of such features allows for endless possibilities of

animals that we can conceive, but they will all be animal-like. Thus, while our imagination may be limitless, it is not unbounded.

This is not to say that the imagination can be reduced to a variation on a theme – a twisting of some recalled experience. What is explored above is meant to be a description of the imagination *in* action not a prescription *for* action. When we imagine we are constrained by what we can conceive. This constraint is real and undeniable. It limits and guides our imagination, but the imagination is still free to seek out unique and unusual possibilities within these bounds. To reduce this process to a prescription of intentionally making a slight variation to an old idea – a blue cow, a striped giraffe, etc. – is an oversimplification of the imagination, at best, and a perversion of the imagination, at worst. The imagination is constrained by the conceivable, not controlled by it. To be otherwise, reduces the imagination to the mundane and the predictable. Although there are constraints and intentionality exercised over it, the imagination still possesses a quality of autonomy to it. It is the mechanism that allows us to construct not only the unique and the unusual, but also the implausible and the impossible.

Thus, as a generative tool, the imagination has the unique capability of forging new ideas while staying within the confines of what is useful. This same quality is preserved when the imagination is used as a problem solving tool.

In a general sense, *design* is defined as the algorithmic and deductive approach to solving a problem. The process begins with a clearly defined goal or objective from which point there is a great reliance on relevant past experience, referred to as repertoire, to produce possible options that will lead towards a solution of the problem.

These options are then examined through a process of conscious evaluations to determine their suitability for advancing the problem towards the final goal. In very simple terms, problem solving by design is the process of deducing the solution from that which is already known. This is very similar to the imagination. In both cases, possible solutions are generated by reaching out from a repertoire of past experiences. There are three main differences, however.

The first is what is meant by experiences. In the case of design a personal relevant experience refers to an actual similar situation that the solver has experienced. In the case of imagination, on the other hand, the experience need not be real; it need only be imagined. Thus, the repertoire of past experienced is expanded to include all things imagined. The second characteristic that distinguishes imagination from design lies in the nature of the possible solutions that are generated. In problem solving by design, possible solutions are reasonable extensions of existing ideas or experiences. The imagination, however, is not hampered by the need to be reasonable. As mentioned above, the imagination is constrained by the limits of conceivability, but not controlled by them. As such, the possible solutions that are generated through the imagination are not necessarily reasonable extensions of existing ideas. They may be unreasonable, unusual, or implausible. The final distinction between problem solving by design and the imagination is the mechanism by which plausibility is evaluated. In design, feasibility is evaluated at the conscious level while in imagination it is evaluated at the unconscious level. As such, the imagination is capable of evaluating plausibility much faster than its more reasonable and ponderous counterpart. Together, these three distinctions increase the likelihood that a solution that is unusual, even seemingly implausible, may be found.

This is not to imply that the imagination is necessarily whimsical. Although the imagination does afford the problem solver the freedom to explore possible solutions that lay outside of the immediate vicinity of familiarity it does not have to go on a willy-nilly sojourn. The problem solver can exercise a great deal of control over the imagination. However, if too much control is exercised, as is often the temptation, then the affordances of the imagination are lost and the problem solver is left to rely on the process of design to solve the problem. This is especially troublesome if the problem is one that cannot be solved by such a method, as many problems are apt to be.

Most often, the term 'imagination' is used vaguely to signify originality and creativity during instances of generativity and problem solving. But it is not to be confused with either originality or creativity. Originality of ideas or solutions has more to do with the relationship to the repertoire of past experiences, real or imagined, than to the mechanism by which that idea or solution came to be. Furthermore, when an idea or solution is judged to be imaginative the judgement is often made by someone external to the generative process. Thus, the declaration of originality is based on the relationship of the idea to the external person's repertoire of past experiences – removing it even further from the generative process.

Creativity, on the other hand, is much more focused on the generative process. According to John Dewey both the imagination and creativity lay outside of the logical forms – they are extra-logical processes. This is not to imply that they are to be cast in opposition to logic and reason, although some scholars have done just that. Rather, these processes are capable of producing ideas and solutions that lie

beyond what could normally be produced by reason alone. This has already been discussed in regards to the imagination's ability to generate unique, yet conceivable, ideas. Creativity, on the other hand, is not constrained by the conceivable. It is capable of producing ideas and solutions that go beyond, not only reason, but also the conceivable. This is because the creative process, although relying on a repertoire of past experiences, is not bounded by this repertoire. Through creativity, ideas can be generated that are qualitatively different and not linearly attributable to any one prior notion.

The imagination is not to be viewed as the poor second cousin to creativity, however. The imagination is the source of creativity. It is from the limits of the imagination that creativity takes off; leaping over boundaries of conceivability to explore what lies beyond. Once there, however, the imagination is once again free to explore the bounds of the newly constructed possibility. It is as if creativity carries the imagination across these boundaries, these barriers of conceivability. This is why a creative experience is often referred to as a leap of the imagination.

Likewise, there is a strong relationship between invention and creativity and imagination. Both creativity and the imagination are generative sources for invention, but they are not synonymous with invention. Invention has an aspect of finish to it, a realization of ideas. That is, while imagination and creativity are concerned with the generation of new ideas and solutions, invention requires that these ideas and solutions be fully worked out and transformed into some concrete form. So, while the imagination and creativity are necessary aspects, precursors if you will, of invention they are not sufficient aspect. Invention is not just about the finding of an idea, it is also the realization that the idea is

significant and useful, and the unlocking of that significance and utility.

Given all that has been stated about the imagination thus far, it would be easy to conclude that the imagination is strictly a cognitive phenomenon. This would be an incorrect conclusion. Although the imagination is closely linked to the cognition it is also strongly linked to the emotions. In fact, within the imagination, cognition and emotion are inseparable and complementary domains. When we imagine we reach out, not only with our thoughts but also with our emotions. We feel our way forward into new realities, and once there, we navigate the possibilities with our feelings. It is these emotions that engage us, that inspire us to imagine and to keep imagining. It is the emotional engagement that sustains the cognitive engagement. Without these the imagination would be not much more than novel musings.

*Peter Liljedahl*

#### **Further Readings:**

- Csikszentmihalyi, C. (1996). *Creativity: Flow and the psychology of discovery and invention*. New York, NY: HarperCollins Publishers.
- Dewey, J. (1938). *Logic: The theory of inquiry*. New York, NY: Henry Holt and Company.
- Egan, K. (1992). *Imagination in teaching and learning: The middle school years*. Chicago, IL: Chicago University Press.
- Greene, M. (2000). *Releasing the imagination: Essays on education, the arts, and social change*. San Francisco, CA: Jossey-Bass Publishers.
- Koestler, A. (1964). *The act of creation*. New York, NY: The Macmillan Company.

- Root-Bernstein, R. & Root-Bernstein, M. (1999). *Sparks of genius: The 13 thinking tools of the world's most creative people*. Boston, MA: Mariner Books.
- Resnick, L. B. (Ed.). (1976). *The nature of intelligence*. Hillsdale, NJ: Lawrence Erlbaum Associates, Publishers.
- White, A. R. (1990). *The language of the imagination*. Oxford: Blackwell.