

# **The Nature of Creative Development**

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Picture a tree. It starts from a seed that takes root in the soil. As the tree grows, its roots extend out through the ground, invisible, soaking in nutrients and water, providing a base. Its trunk extends upward, splits into a hundred branches, unfurling leaves, opening up to the sky. And, in the spring, beautiful blossoms flower on it.

That is my image of the creative process. Creativity emerges out of a rich, nurturing process of development. In my book *The Nature of Creative Development* (Stanford University Press, Stanford Business Books) I have described how this process works, drawing on case studies and interviews of many individuals engaged in creative work in diverse fields, including the arts, sciences, and business.

## **Creative Development: 2 Steps**

In the simplest terms, creative development unfolds in two main steps. In step one an individual forms a creative interest. In step two she explores her interest and develops it creatively – her interest spawns ideas, projects, and, ultimately, creative contributions.

Defining a creative interest is a key step in forging a path of creativity. When a person first enters a field, he learns many things – facts, techniques, open questions and challenges, ideas, hypotheses, current “hot” topics, and the work others are currently doing, including supervisors and peers. At some point – often in my experience a year or two after first seriously beginning to engage with the field, he focuses: He defines his own personal focus of interest in the field, his creative interest.

What is striking about creative interests is that, even within a single field, each individual forms a distinctive creative interest (or interests – often a person has a cluster of interests). As an example, I studied the creative development of approximately twenty neuroscientists. All had studied in one of the top graduate programs in the United States, at approximately the same time – they were all in the same cohort. Every one described to me a creative interest he or she formed. And every one of those creative interests was different from the creative interest defined by each other person. And I could trace how each person’s creative interest guided her creative development and was the root of her ideas and contributions, in some cases made years later.

Thomas Edison was originally a telegraph operator. His earliest focus for invention was the development of a multiplex system so that a single telegraph wire could carry multiple messages, a topic that many other inventors were also focusing on. But as he learned and gained experience he formed a far more distinctive creative interest: Inventing peripheral devices that could be connected to telegraph systems, especially for automated reading and transcribing of messages (what today we call “Input/Output”). This interest was the basis for his important early inventions, notably the electric pen and stock ticker, and led to his work on the telephone and invention of the phonograph.

Alexander Calder said that his creative interest, the basis of his artistic creativity, was the universe – the solar system. In his *Autobiography* he describes an experience early in the morning while on the deck of a boat at sea: “I saw the beginning of a fiery red sunrise on one side and the moon looking like a silver dollar on the other...It left me with a lasting sensation of the solar system.” He told an art critic, “The basis of everything for me is the universe. The simplest forms in the universe are the sphere and the circle. I represent them by discs and then I vary them.” Calder also was interested in the idea of motion as art. Ultimately, he combined his two interests in his invention of his famous mobiles.

The second step of creative development involves exploring a creative interest and developing it creatively. There are multiple pathways for creativity generation. Here I describe two that I have found to be especially important.

One pathway is a creative response. When a person encounters a stimulus that connects in some way with his creative interest, the zone of intersection between his interest and the stimulus can be a place of great creativity.

One day while living in Paris Alexander Calder made a visit to Mondrian’s studio. Mondrian had arranged his studio with great care, so it would reflect his values of modern art, with bright, vivid colors, and simple clean objects. He had decorated the walls with colored cut-out rectangles, had few objects, and these were carefully arranged to create a three-dimensional art space. Surrounded by these simple colored shapes, Calder made the connection with his interest. In his *Autobiography* he writes: “It was a very exciting room.” “This one visit gave me a shock that started things.” He was inspired to take up modern art, and soon began to fashion sculptures that were inspired by his interest in the universe as the basis for art: Spheres, discs, and rectangles placed on wire rods in various spatial arrangements, some resembling orbits, others counterbalanced like two planets on opposite sides of the sky, reminiscent of the powerful, lasting image of the sunrise and the moon he had seen on the boat.

A second pathway of creativity is internalizing elements that lie within the domain of one's interest, and then connecting these elements in a creative way. In his *Autobiographical Notes* Albert Einstein states that he hit on a paradox at the age of sixteen: "If I pursue a beam of light with the velocity  $c$  (velocity of light in a vacuum) I should observe such a beam of light as a spatially oscillatory electromagnetic field at rest [since he will be moving at the same speed, according to classical physics the beam should not appear to be moving from his perspective]." Starting from this paradox, he developed a creative interest that expanded in two branches: one exploring the physics of electrodynamics and related topics; and the second branch exploring philosophical conceptions of space and time. While working in the Swiss Patent Office at Bern, exploring this second branch, he read a series of works in philosophy, including David Hume's *Treatise of Human Nature*. Hume argues that we construct our sense of time based on definite series of events – there is no absolute time beyond. Some months after reading Hume, Einstein was able to connect Hume's ideas (and others he had read) with physics and the paradox. The result was his invention of the theory of relativity.

Of course creative development is richer, and has more complex patterns than this simple description. Individuals form multiple interests, their interests evolve, projects and ideas develop into new interests, and they pursue their interests in series of projects.

### **Implications: The Management of Creativity**

Perceiving creative development as like a tree, as a process unfolding over time, in these two main steps, has important implications for the management of creativity.

Managers should encourage their employees to describe their creative interests, perhaps write them down, an exercise that I have done with many students that works well. Knowing the creative interests of your employees can help you allocate them to projects – someone will be more motivated and develop more fully if he is enabled to work on projects that fit with his own interests. Collaborative creativity can be sparked by pairing up individuals whose interests overlap or are complementary.

Individuals should be given some autonomy and time to pursue their creative interests. For many years 3M has given its employees time – 15% - to pursue their own, self-generated projects and activities. Recently, Google has gained recognition for a similar approach. Allowing employees open time to pursue their creative interests is a great way to help them foster and develop their interests, which can spawn innovations. An employee may have an intuition about the importance of a particular topic, which is a creative interest he has, that a supervisor simply doesn't have. Let your employees be free to define and pursue these interests and you may be surprised and pleased by the results.

Consider brainstorming with clients in which they and you share your creative interests and you look for overlaps that can generate collaborative projects.

Finally, following the logic of creative development, a manager needs to be sensitive to the fact that creative development takes time: He must give his employees the time and space they need to develop their interests. It took Albert Einstein 10 years to develop an intuition he had into the theory of relativity. Likewise, it took Alexander Calder and Thomas Edison years to develop their interests. While there are inevitable time pressures in organizations, and one should establish some milestones and get regular progress reports about learning and ideas, remember that time is essential for creativity to flower.

## **Conclusion**

Creativity emerges and flowers out of a process of creative development – unfolding like the growth of a tree. By understanding the process of creative development, we can help ourselves and those around us become more creative. Ultimately, being creative is one of the most fulfilling elements of human life, and ideally our society should be a place where everyone can develop his or her distinctive creative interests, combined with his unique life experiences, to make contributions everyone benefits from.