



Solitude and Detachment

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Abstract

Despite the fact that science is becoming an increasingly mass activity and an increasingly technologized activity, the role of each individual scientist is becoming more and more important. One of the most important conditions for scientific work is the solitude, ad hoc and detachment of the scientist. This should be taken into account by scientific producers and managers of science.

Keywords: Scientific producing; Ad hoc; Solitude; Detachment

Special Aspects of Science as a Collective Mental Activity

The concept "collective mental activity" was developed and introduced into scientific, philosophical, and methodological usage by G. P. Shchedrovitsky and his followers. Science is a complexly organized collective activity characterized by a number of features:

- Scientific technologies are quite flexible even in the most rigorous academic disciplines;
- Science is based not on facts and practice, but on theoretical grounds, which is often expressed in the idea "if the facts contradict my theory, it is so much worse for the facts" [1];
- Science represents two most important processes: search (literary, bibliographic, informational, statistical, expeditionary, etc.) and reflection (theoretical, typological, notional, conceptual, etc.) - of search or research; since both processes are usually carried out by the same person, there is no hope that search can be redirected to robots, cyborgs and computers;
- The role of a scientist, his personality and talent; this role is noticeable and expressive even in very large and crowded developments;
- The role of chance is very important in science; it is normal when search and all the intellectual efforts of a group of scientists, conducted sometimes for many years, turn out to be in vain and fruitless – this should be treated coolly and calmly, since these efforts make up the most part of the research work; everything happens by chance, but special

conditions are needed for this chance to happen: solitude and detachment [2].

Ad Hoc – An Effect of Chance

Science producing differs from any other producing and entrepreneurship in that, in addition to the standard toolkit of production functions (financial, organizational, PR, etc.), it must provide conditions for the emergence of ad hoc [3]. P. Feyerabend described ad hoc (for a particular purpose) most fully as a phenomenon of scientific life [4,5]. Archimedes' ad hoc happened when he was taking a bath alone and realized how to measure the volume of a complex piece of jewelry made of pure gold with the help of the law discovered by him: "anybody completely or partially submerged in water [gas or liquid] is equal to the weight of the fluid displaced by the body". Undoubtedly, Archimedes was not focused on this particular law. He tried to find out whether the goldsmith mixed foreign metal with gold when forging the crown of King Hieron II. Galileo's ad hoc was a task he received from the Tuscan Duke Cosimo II de Medici, who wanted to be in the thick of the battle and safe at the same time. Galileo, just as Leonardo da Vinci, the Dutchman Leeuwenhoek, Kepler, and Newton after Galileo, was crafting a telescope with consecutively arranged lenses. He preferred to do this in solitude at night. A cat was another midnigher constantly spinning under his feet. Pushing the purr away, Galileo accidentally touched the invention with his elbow and suddenly saw through the telescope the sky and the moon, mountains and craters similar to the Earth's. At that time, the rotation of the Earth around its axis was

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disproved by the simple consideration that in this case, stones from the mountains should fall only in the evenings, while they roll down at any time of the day. The heliocentric theory and the spherical shape were then considered eccentric, contradicting the authority of Aristotle and Ptolemy. Observing the movement and rotation of the planets in his telescope, Galileo concluded that a geocentric world was impossible, but we remember that he made an appliance that allowed the duke to be in the thick of the battle and safe simultaneously. According to the legend, Dmitry Mendeleev dreamed of his periodic table of chemical elements in the form of a solitaire which was the chemist's hobby: "They say that in search of connections that unite the elements into a single foundation of the universe, Mendeleev wrote names of the elements on one side of business cards, and on the other – their atomic weight and formulas of the main compounds. For hours in his office, he shifted this chemical "solitaire", arranging the elements according to their properties in logical rows. In the end, as a chess player, he imagined in his mind the entire field consisting of sixty-three cells [this is the number of the elements known at that time], where the elements were to be placed. But none of the options satisfied him. One day, in a dream he saw the very order which he was unable to find in waking life. The vision was so clear and precise that he woke up and wrote it down on a piece of paper. In the morning the periodic table was ready" [6,7]. The story of solitude is told about Isaac Newton and an apple that fell on his head on his parents' farm, about the ship's doctor Robert Mayer who discovered the law of conservation of energy, comparing blood tests of sailors taken in temperate and equatorial latitudes, about Steve Hawking, who turned over the physical ontology of the universe, sitting in a compartment of a commuter train. In fact, there are many examples of this kind, and one can also refer to personal experience: from time to time, in expeditions, there are situations in which all actions are impossible. I call these situations "an action crisis", and I really appreciate it when these states happen. Finding oneself in an action crisis, a person (that is me) must calm down, stop fussing around and look for a way out of this situation, go deeper into reflection and reasoning, for example, while listening to good music or gazing at an inspiring landscape, then just doze off and fall asleep. The most wonderful, beautiful, and unusual solutions, not to a specific situation but of more general and abstract nature, come to the mind in this very state of an action crisis. While a specific situation usually resolves quickly enough as soon as new thoughts and ideas have emerged and exhausted themselves. They say that God helps only those who are focused on a particular problem and slips in an ad hoc solution to the seeker at the right time.

Organizing Ad Hoc or Solitude

In the conditions of collective scientific activity, a science producer is obliged to organize a scientist's workspace in such a way that is not just secluded but methodologically oriented and coordinated. A layout of methodologically arranged activity was proposed by R. Descartes [2] (Figure 1).

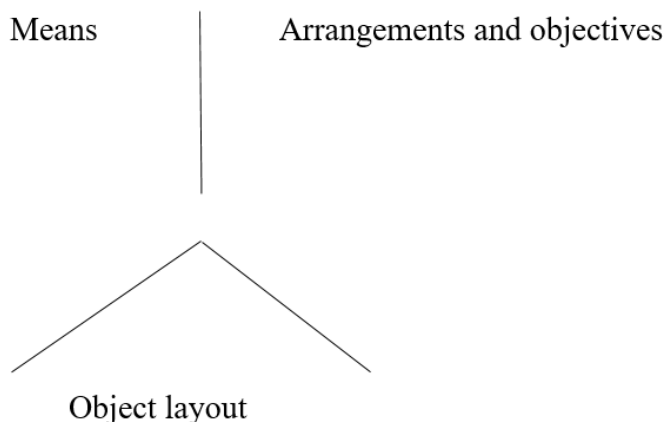


Figure 1: Layout of methodologically arranged workspace for scientific activity (according to R. Descartes).

Scientific activity is not time-bound, it can be carried out at any time of the day or night, in moments, flashes, short intervals, continuously, or with any iteration frequency, most often when being alone, but it can also unwrap dialogically, in the laboratory, in a pub, at night when dreaming or being sleepless. This flexibility of conditions and environment, unpredictability and dependence on chance require patience and composure from scientists, their scientific management and science producer. However, subject knowledge, an array of tools, and work arrangements should be at hand and accessible at all times. Arrangement of the research workspace is the prerogative of a scientific producer and manager, but it should take into account individual characteristics of contractors: someone cannot work without music, someone needs deadly silence, someone requires presence of pretty and young girls, someone is inspired by the outside landscape, but all these things should contribute to achieving concentration, and depth, detachment.

The Concept and State of Detachment

The definition of detachment is probably the key. Detachment is a state of a scientist himself: science producer or science manager cannot be included here. Detachment is a kind of sterilization of a scientist's communication channel with the Navigator, release from interference and noise. Detachment is a necessary state similar to an action crisis. It is a voluntary refusal to search for solutions except the only one, detaching from all socio-cultural connections and contacts which are external interferences and noise, a manifestation of trust to the Navigator, who is complicated to describe and therefore is most often perceived

intuitively as a teacher, an opponent, God, Cosmic consciousness or any other external subject. An induction/creative circuit is established between the scientist and the Navigator (Figure 2).

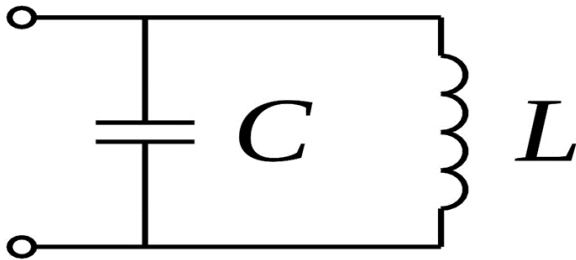


Figure 2: The induction/creative circuit of the dialog between the scientist and the Navigator.

It is important to point out that the roles of an "induction coil" (L) and a "capacitor" (C) are performed by the scientist and the Navigator alternately and at random. A scientist as a subject of research often finds it difficult to indicate if it is they or the Navigator who makes the necessary push forward, and this is why they often mention a fallen apple, a cat under feet, a dream, a junction of train cars, a punch of a billiard ball.

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