Creativity

When people use words *create*, *creatively*, they usually mean 'produce something new' or 'in a new way'. How do they get new ideas? There are two main ways: intuitive and rational.

Intuition (some call it *inner voice, fantasy* etc) is an ability to sense, feel, listen to subtle ideas that come to our mind. Ideas, hints or signs come to all, but not all are listening. Yet everyone can improve their listening skills.

Rational approaches can also lead to development of the new. They are convenient when the number of options is limited and one can evaluate them one by one, seeking the most suitable.

Below are some classic stages to solving problems. They can help conceive a new solution. They include both *intuitive* and *rational* steps. You can take all steps or just some. Feel free to change their order.

If you have reached a dead end in any stage, you can repeat some or all of the steps or simply give yourself a pause. A solution is seldom one idea only, but more often a set, a series of them. They may not come all at once. If you are stuck, go for a walk, take a nap, or simply change activities for a while, then return to the problem with fresh mind.

(1) **Decide what your aim is**.

Writing it down helps formulate the aim more precisely. Sometimes you will need to rewrite it several times before you define it clearly enough.

(2) **Find a direction** of action with *intuition*.

Although science cannot explain how it works, intuition has been playing a great role in human lives since the beginning of times. We are often taught to ignore it and rely on reason instead, in spite of recognition of intuition by great thinkers of all epochs.

Subtle ideas and signs are coming to every one of us, all the time. They take different forms: ideas, feelings, forebodings, moods, visions, dreams etc. The problem is that they are subtle.

To hear them, we need to listen. They are so subtle that sometimes we need 'deep silence': to 'switch off' our reason so that it would not reject those subtle messages. We can compare this mental situation to a boat in the sea. If you want to understand where the stream pushes the boat, you need to switch off the motor and observe. (A skilled sailor can also do it without switching off the motor.)

For example,

Find a quiet place. Stop thinking. Wait a little. Listen to your 'inner voice'. When some first images or emotions arrive, try to *feel* (not to deduce with reason) what they suggest. What is the key thing in them for you, what is their message to you? You may want to watch them for a while (they sometimes develop like a movie) to comprehend better.

* Maybe you do not understand them immediately, but it is O.K. They may be about future, for which not all circumstances are in place yet. In some cases, it may even take several weeks before you realize their meaning fully. During this time, you may receive additional information about your problem or find a new angle to look at it from.

* Trust your intuition. Usually the **first** ideas are the most intuitive. They can seem weird or wild in the beginning, but it does not mean they are not helpful. Soon after you begin 'listening' to your intuition, rational thinking attempts to interrupt, to "turn on the motor" again and guide you towards more 'acceptable' conventional options. Yet more rational ideas are not always better for your aim. (Needless to say, they are more often banal, their potential is more limited.) In short, listen carefully to the first ideas no matter how wild or weird they are.

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(3) **Elaborate** the direction with *reason.*

Review your aim, if necessary. Clarify the problem and formulate it more precisely.

In geography, people use the dimensions (latitude and longitude) to locate something exactly. Likewise, you can use the common dimensions of *quality* and *quantity* to determine your aim and, accordingly, your view of the problem more exactly.

In the most general form, *quality* dimension (answering the question *what*) can be subdivided into three realms: *physical, rational* and *spiritual.* Does your interest lie in the physical domain – the one of material world (objects), things, tangible resources; rational domain – the one of knowledge, recipes, how-to, know-now, technologies; or in the spiritual domain – the one of purposes, aims, high-level visions?

Similarly, *quantity* (answering the question *how much, how often etc*) can be represented with categories *one* (or a few), *many*, and *transformative.* The latter category represents something that can be explained as *too many.* Similar to Einstein's theory of relativity, where matter and energy change into one another under some extreme conditions, growing quantity can reach a point when it causes qualitative changes in a system.

For example, if one eats too much sugar (quantitative dimension), one can also become a different person in the qualitative dimension: physically (body can get diseases), mentally (suffering from addiction and corresponding psychic difficulties), spiritually (different aims compared to the condition without overconsumption of sugars).

Figure 1 illustrates how a problem arising from one event can be viewed, depending on the aim. If you were riding a bike to a party, but a bike pedal broke, you can think about this problem in many ways and then choose one or several to focus on.
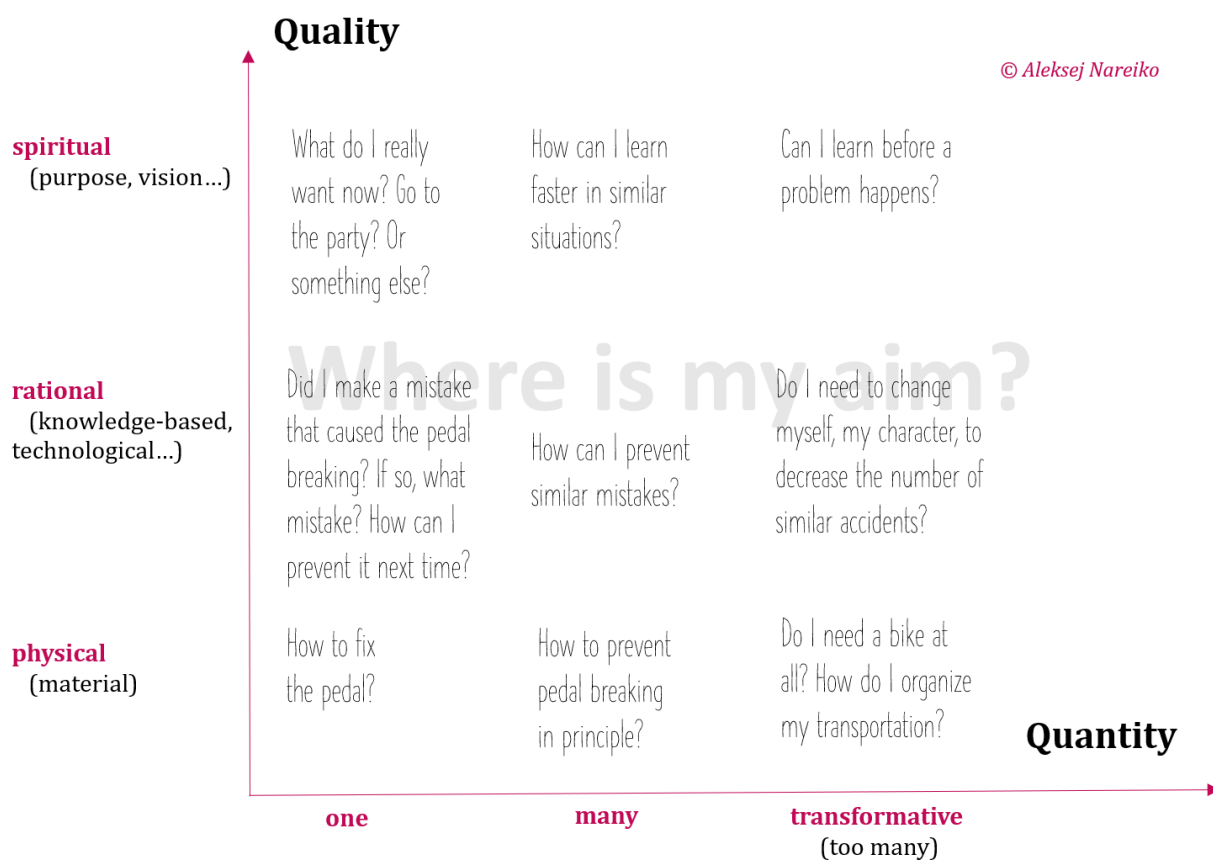
Quality

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	one	**many**	**transformative** (too many)
spiritual (purpose, vision...)	What do I really want now? Go to the party? Or something else?	How can I learn faster in similar situations?	Can I learn before a problem happens?
rational (knowledge-based, technological...)	Did I make a mistake that caused the pedal breaking? If so, what mistake? How can I prevent it next time?	How can I prevent similar mistakes?	Do I need to change myself, my character, to decrease the number of similar accidents?
physical (material)	How to fix the pedal?	How to prevent pedal breaking in principle?	Do I need a bike at all? How do I organize my transportation?

Where is my aim?

Quantity

Figure 1. Possible views on a problem based on one's aims: a bike pedal broke while a person was riding to a party.

(4) **Find a solution** by using *intuition* or *reason* again.

An example of *intuitive* problem solving:

Search an analogy of your problem with an appropriate known phenomenon (e.g. a process, an object, a mathematical model) and 'translate' its known solution into the context of your problem.

For example, if we continue the case of the broken bicycle, it can appear to you that your situation is similar to loss of some burden, which frees you. More freedom – more possibilities to start a new life. Maybe you can save time from biking and use it on a hobby?

An example of *rational* problem solving:

As mentioned above, rational methods can also be effective in finding solutions, including novel ones, especially when possible options are limited. A vast majority of problems **can** be regarded as problems with a limited number of options if we structure their possible solutions by fields. Then the number of the fields (groups of solutions) is usually limited. You can analyse them one by one, seeking as many ideas from each field as possible. After you have gone through all fields, you can compare the conceived possible solutions and choose the most suitable one.

Such enumerative approach can be compared with walking around the perimeter of the castle that you want to penetrate. No castle is equally well protected from all sides. Every wall is different, and you can think of different ways to enter the castle. If you go a full circle around the castle and think well about every part of the perimeter, you are likely to identify quite a comprehensive set of ways to act. Compare them and choose the best one for you.

(5) **Finalize the solution** using *reason*, as well as relevant knowledge and skills.

For example, decide about details, implementation steps, schedule, resources etc.

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