

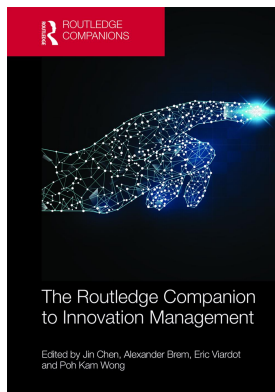
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DELIBERATE AND SPONTANEOUS

The impact of cognitive disinhibition on people management

Franc Ponti

The human brain is a gray mass full of folds, and it weighs approximately 1,300 grams. All brains are equal in appearance, or almost. In actual fact, the brain of each person is extraordinarily different from the rest. Our connectome (map of neural connections) differs from that of all other people in many ways. In it are deposited our experiences, our particular vision of the world, our knowledge and many more elements. We are the carriers of a brain of which there are no replicas (for the time being).

Every brain houses around 90 billion neurons. Although this figure may vary depending on the source, this is obviously an astronomical amount. If we consider the potential number of connections that can be established among all these neurons, then the figure is mind boggling: between 100 and 500 trillion synapses.

These figures are impressive because, as in the case of the immensity of the universe, they are beyond our routine intuitive comprehension. Modern neuroscience is constantly surprising us with new data on the subject: it seems that neurons are not only found in the brain but that the brain prolongs itself in remote places in our body such as the heart and the stomach. In fact, both these organs help us to perceive reality in a specific way. We often feel emotion with our heart (love, hope, joy) and we experience sensations with our stomach (satiety, security, fear). Some scientists have even gone so far as to affirm that in certain cases the orders that the neurons from these two organs send to the brain may be stronger than those being sent in the opposite direction.

To start with, the brain is a conservative organ. Its main functions are to control, both internally (the body's homeostasis in all the senses) and externally (detecting dangers and sending out alarm signals). Hence, if we suddenly bump into an infuriated wild boar in an isolated spot in the woods, this triggers a series of mechanisms, which are regulated by brain functions (especially the emotional brain) that in turn articulate protection and defense mechanisms: adrenaline secretions, a change in blood flow, a faster pulse, etc. However, our brain is able to adapt with more or less effort to any new task we propose: learning a language, studying a subject or quitting something (smoking, for example). This is made possible thanks to what is known as neuroplasticity, in other words, the brain's capacity to regenerate itself and form new neural connections, which subsequently incorporate and fix new learnings and experiences.

Its degree of plasticity will depend in any event on how trained the brain is to register changes and proceed to process and integrate them. In this respect, young brains start off with a certain advantage: we all know from experience that it is better to learn a language at the age of seven than at the age of seventy. Having said this, a trained brain of an elderly person can still learn, change and constantly adapt itself.

From the standpoint of creativity, the brain also acts as a sound box of each person's immediate environment. Leaving genetics aside, the creative brain continues to build itself throughout a person's lifetime, but the experiences during the first fifteen or twenty years of one's life are certainly very important. Lives that are led under controlled parameters and excessive security tend not to be as creative as others. By contrast, life trajectories rooted in exploration and play tend to express greater creativity.

It is said that the creator of the video game *Super Mario Bros.*, Shigeru Miyamoto, spent his childhood playing with sticks and strings near the riverside in Kyoto, Japan. He used to make dolls and puppets and performed shows for his friends. One day he discovered a cave and began spending hours and hours in the dark, letting his imagination run wild. The childhood accounts of many highly creative individuals underline the fundamental importance of play and of transgressing the limits of normality in forging an innovative trajectory. These words uttered by George Bernard Shaw are very much to the point here: "We do not cease to play because we become adults; we become adults when we stop playing".¹

A large number of people, for different reasons, do not manage to exploit their creative potential to the full. Either out of personal choice or due to factors related to their environment, these people are being towed along, simply letting things happen to them throughout the course of their lives. They are always expecting things to happen and often opt out when it comes to their creative capacities, passing on the challenge to other people. Others, on the other hand, act as leaders of their own creativity, challenging conventions, breaking barriers, overcoming their fears and generating an extraordinary attitude of vital creativity. These are people who build their own lives.

Why are there so many differences between people with regard to creativity? Why are some people very creative, whereas others aren't or don't show it? Does this depend solely on genetic factors? Does it have to do with a person's learnings, experiences and attitude towards life? Most probably it's a bit of everything. However, the great majority of experts in creativity attach relatively little importance to genetics while emphasizing the relevance of environmental factors. At the end of the road (or at the beginning, as one prefers), creativity is something that we build, design, live and dream.

Generally speaking, which factors determine personal creativity?

- Enjoying a childhood (at home or at school) full of opportunities to explore, dare, cross limits and discover things through constant play and experimentation. The findings of some studies confirm that children with a rigid learning environment (with too many restrictions on how to do things) end up losing their curiosity and the excitement of coming up with answers on their own.
- Living in an environment that facilitates and fosters creativity, be it at school, in the workplace or any other social circumstances. Unfortunately, this very familiar sentence is still echoed throughout many organizations: "You are not being paid to be creative but to do your job properly". At the other end of the scale, cutting-edge organizations do away with rigid hierarchies, create collaboration and experimentation spaces and succeed in promoting creative trust among their members.

- Enjoying “T”-shaped learning, whereby the top part of the letter consists of various types of knowledge (music, history, comics, gardening, etc.) and the vertical part corresponds to intensive specialization (in industrial engineering, for example). The combination of directions in knowledge (horizontal-vertical) means that people combine their specialization with transversality. New combinations and different perspectives spring up as a result, and these constitute the basic elements for creative action.
- Having great passion, accompanied by curiosity, for either one particular field or various fields. People who tend to flow, as Csikszentmihalyi² has very aptly defined it, are usually much more creative than people who do things simply because they have to do them. An individual who has mastered a particular talent (dance, for example), who incorporates elements of creativity in their activity and who happens to be in the right place at the right time to fulfill their dream, has all the chances of situating themselves in their “element” or “creativity zone” (a term coined by Ken Robinson).³
- In addition to this, there may be some genetic factors that highlight our creative potential. The real query in this respect is whether this simply has to do with genetic “determinants” or a combination of these and environmental factors.

Obviously this is not an exhaustive list. Creativity is so slippery, elusive and complex that it would be pretentious to draw up a totally comprehensive list of factors that promote it. Having said this, we have most probably mentioned some of the most significant ones. In this chapter we are going to look into one of the most important concepts for being creative, what is known as cognitive disinhibition (CD), and we will also present the results of a recent study on this subject,

What is cognitive disinhibition?

We can define CD as the brain’s incapacity to filter irrelevant information for a specific practice or for survival.⁴ Expressed in other words, our brain tends to select information that is relevant or useful for a given daily task: grooming, going down a staircase or thinking creatively. If, for example, we intend to come up with ideas on how to improve a ballpoint pen, our brain automatically filters everything that is irrelevant to this specific task while we come up with improvement ideas for the ballpoint pen, for example, a giraffe, our grandmother’s face or baked onions.

Experts in creativity point out – and there is quite a lot of consensus on this – that there are two clearly differentiated pathways towards creative thinking: the deliberate pathway and the spontaneous pathway.⁵ Deliberate thinkers are sequential, logical and structured. They focus their attention on the object or process that needs to be improved and exercise conscious creative control over it. Observation using neuroimaging shows that the active brain areas during a deliberate episode are the left prefrontal cortex and certain areas of the left parietal and temporal cortexes (the executive control network). In contrast, spontaneous thinkers find it difficult to focus their attention on the selected object or process, and their minds tend to wander and mix different pieces of information. Ideas do not occur directly or consciously but pop up suddenly and unexpectedly. The brain areas activated in the case of spontaneous thinkers are the alternative brain areas: interhemispheric associative thinking zones, the limbic system, etc. (the default network).

CD takes place much more frequently in spontaneous thinkers than in deliberate thinkers. The default network, the alternative brain system to that of the executive control network, far from filtering irrelevant information, allows concepts coming from the brain’s implicit

(unconscious) structures to combine in unusual ways and enable more imaginative and transgressive solutions.

There is sufficient scientific evidence confirming that the majority of highly creative individuals activate their spontaneous networks more often, although they are also able to engage in both types of thinking simultaneously, which allows them to fantasize and play around with concepts and, at the same time, to evaluate information critically and come up with solutions adapted to the real world.

Having said this, in order to construct a creative or innovation team, it is important to have a combination of people of both styles, as long as they share a common denominator: the ability to listen, respect and integrate ideas. The deliberate–spontaneous conflict can prove to be very productive if it is managed in an appropriate fashion: building on the other person's ideas through dialogue and collaboration. The efficacy of creative disciplines such as design thinking, one of most successful innovation methodologies around today, is grounded on combining deliberate phases (empathy towards users, defining the user's point of view) with spontaneous phases (coming up with new concepts and prototyping). It is therefore important for a design thinking team to incorporate profiles that are as diverse as possible (spontaneous, deliberate, visual, emotional, cognitive, etc.), always on the condition that its members overcome the limitations of their egos and embrace the cooperative dimension and a collective win-win mind-set.

In addition to the two general styles we have discussed, some authors state that creativity can be expressed through seven different and complementary brainsets: connecting (establishing remote associations between ideas), reasoning (using memory and logic to argue), visualizing (perceiving reality in a visual and metaphoric way), absorbing (leaving the mind in a state of repose), transforming (creating through negative emotional states), evaluating (judging ideas critically and taking decisions) and flowing (a state of motivation that leads to alterations with the passing of time and provides a sensation of union with the creative activity). Highly creative individuals would be able to switch in and out of a greater number of brainsets than less creative people, who would be settled in a more reduced comfort zone.

Evidently, both the general creative style and the previously mentioned brainsets can be developed in each individual. Generally speaking, creative genius would obtain the greatest possible number of creative registers; in other words, it would be able to achieve the largest number of combinations and maximum intensity by spanning across all the generated creativity options.

Due to the brain's neuroplasticity, understood as the brain's capacity to create new connections arising from different vital experiences and learnings, we can develop both the general creative style (deliberate or spontaneous) and the different brainsets. Table 2.1 outlines different practices, habits or exercises that can help anyone work on their failings or consolidate their strengths. In this respect, this constitutes a real "personal creative development plan", which would enable the person to evolve creatively in the desired direction (see Table 2.1):

Associated concepts

It is worthwhile going over a series of concepts that are very closely related to CD: divergent thinking, meditation, mindfulness and psychopathology.

With regard to divergent thinking, which consists of coming up with several ideas or solutions to open-ended problems (alternative uses for a plastic cup, for example), it seems logical that CD tends to favor the quantity of ideas that are generated and at the same time allows these ideas to be more original. In fact, if CD enables more heterogeneous interaction between the elements of information which are able to cross the brain filters, it seems evident that the degree of originality of the ideas will be greater. A plastic cup, for example, could easily be converted

Table 2.1 Deliberate style and spontaneous style

<i>Deliberate style</i>	<i>Spontaneous style</i>
<ul style="list-style-type: none"> – Putting forward hypotheses, rejecting them or validating them – Learning to solve closed problems (with a single solution) – Learning to work using a project methodology (project management) – Practicing meditation techniques (mindfulness) based on concentrating on a stimulus – Familiarizing oneself with idea selection and evaluation techniques (PMI, etc.) – Familiarizing oneself with structured creativity techniques (SCAMPER, Idea Box, etc.) – Practicing systematic trial and error – Learning how to order an activity using task lists (checklist) – Controlling body movements (yoga, Pilates) – Analyzing information, big data, etc. 	<ul style="list-style-type: none"> – Solving open-ended problems (many solutions) – Thinking and decision making based on intuition – Default mode network, meditation (imaginative) – Seeking and immersing oneself in moments that foster creative insight (walks, outdoor activities, etc.) – Practicing intuitive techniques (Ideart, color bath, etc.) – Coming up with hypotheses (what-if questions) – Generating ideas without conscious control (mind wandering) – Creative inspiration based on emotions – Creative visualization – Altered states of awareness – Developing sensibility (outer and inner) – Promoting daydreaming

into a flashing light on a police patrol car. This aspect becomes especially relevant during brainstorming processes in teams. Many individuals often feel awkward in such situations because their brain tends to function in “problem solving” mode (convergence) and not by seeking out different approaches in order to achieve flow, variety and flexibility of ideas (divergence). Recent studies on brain connectivity have found that divergent thinking and originality are common among more creative individuals, whereas the connections of less creative people take place between the brain zones associated with memory and thinking about the past (lived experiences)⁶

Furthermore, according to certain studies, practicing meditation or mindfulness on a regular basis has a positive impact on CD.⁷ In fact, when one is able to attain states of mental calm or “absorption” with relative ease, this means that less information is filtered and consequently one can achieve a greater amount of unexpected combinations, which in turn facilitates creative originality. In this respect, as some experts point out,⁸ meditation, the main objective of which is to focus attention on a particular stimulus (breathing, sound, etc.), would create new connections in the executive control network akin to those of deliberate thinkers, whereas imaginative meditation (fostering modifications of the initial stimulus, for example, the flight of a butterfly) would have beneficial effects on the default network, typical of spontaneous thinkers, thus facilitating the development of radical imagination. Practicing both types of meditation regularly would therefore be extraordinarily beneficial from the point of view of creativity, in that it would consolidate the interrelations between the two big brain networks linked to creativity.

Finally, some researchers have found sufficient scientific evidence that establishes a link between CD and a tendency towards eccentricity or, taken to its extreme, towards psychopathology (schizophrenia, bipolar disorders and neuroses).⁹ When filtering irrelevant information becomes too difficult, this may lead to mental confusion and a tendency to construct alternative realities, especially if the individual is not equipped with protective factors such as a high

Table 2.2 Four large zones

<p>High GI and low CD Associated with individuals with management and decision-making capacity but who have difficulties when it comes to accessing advanced creative states.</p>	<p>High GI and high CD The high creativity zone, given that it combines high doses of CD with the protection factors (GI, memory, mental flexibility). Most highly creative people fall into this zone.</p>
<p>Low GI and low CD This corresponds to barely creative individuals who tend towards routine. Their intellectual performance is clearly below average.</p>	<p>Low GI and high CD Individuals with high CD but without protection factors. A tendency towards delirium and disordered schizoid thinking.</p>

intellectual coefficient or mental flexibility. We can take the two key concepts (cognitive disinhibition and general intelligence) to draw up an explanatory table that features four large zones (see Table 2.2).

The research study findings

A research study that was carried out recently set out to find out whether the results of a CD test correlate with another test of creative flow. The working hypothesis was that a relationship exists between the two variables.

After preparing the tests (Shelley Carson's Creative Mindsets Questionnaire for evaluating CD and Robert McKim's Creative Flow Test to evaluate general creativity), they were handed out to 237 people who at the time of completing the questionnaires were taking a business education program in the EADA Business School in Barcelona. The sample was made up of adults with management responsibilities in companies from different sectors. All of them took part voluntarily.

The tests were handed out during the sessions that the author of this study had with the participants on different courses and programs at the center of education. It is worth mentioning here that the participants were allowed to ask questions during the process, which tends to improve the reliability and the consistency of the results.

The findings proved that the individuals who obtained high scores on Shelley Carson's Creative Mindsets Questionnaire, which assesses CD, also obtained high scores on Robert McKim's Creative Flow Test. More specifically, a significant correlation was found of 0.043 (chi-square), which proved that the two variables under study were not independent of each other, confirming the alternative hypothesis (that the two variables are related). Therefore, the differences observed in the distribution of the groups cannot be regarded as random. Consequently, the study's main hypothesis was confirmed.

The most important conclusions that can be drawn from the study, as well as from other research studies with similar findings, are:

- Spontaneous creativity in any context is as valid for solving complex problems or coming up with ideas as deliberate creativity. Undoubtedly, by combining the two we can achieve greater creative capacity at all levels. The research points out that people with higher levels of CD tend to obtain higher creativity scores when given a standard creativity test. What's more, in real situations where the need arises to come up with ideas for solving problems or giving birth to new concepts, these people may be more efficacious.

- In the corporate environment we need to learn how to manage and recognize the value of the sources of spontaneous creativity (intuition, meditation, playing, etc.) in the same way as we have valued the sources of deliberate creativity up to now (reasoning, logic, planning, etc.). These should not be two closed off and barely interrelated realities. Deliberate individuals should open themselves up to the spontaneous dimension of their being and vice versa. Creative complementarity needs to be regarded as a powerful tool for personal and consequently for professional growth.
- The study opens up the door to new considerations concerning aspects related to people management inside organizations, which we will review in detail further on.

Some of the drawbacks of the study have to do with the lack of existing tests for measuring or estimating the CD levels of the examined individuals. Furthermore, in order to obtain even more significant results, we need to enlarge the study sample, stratify it and even carry out studies by different age groups and in different cultural contexts.

The implications for people management

CD has relevant implications for improving people management and administration. To this end, we need to reflect upon the need to set up mechanisms inside the company that allow both pathways towards creativity, the deliberate and the spontaneous (as well as the different brainsets), to be expressed under equal conditions:

- The total or partial doing away with “hard” organizational structures, such as organizational charts or hierarchies, in order to progressively promote the expression of different creative sensibilities. A spontaneous individual, for example, needs fewer rigid plans, deadlines, formal meetings, etc., so as to be able to give free rein to his or her creativity. By progressing towards a greater balance between control and an attitude of open listening, we can foster a better understanding between deliberate and spontaneous people. Cutting-edge company management models such as the one put forward by Frederic Laloux share three key common features: In the first place these companies have a clear “organisational purpose”, a kind of “soul” which gives meaning to their existence and especially gives meaning to the work of their members. Patagonia, a US firm dedicated to manufacturing and commercializing mountaineering gear, has a healthy obsession with producing long-lasting, environmentally friendly products, which can be regarded as a highly inspiring ongoing purpose. Second, state-of-the-art companies allow their members to be themselves, entirely stripped of masks and hypocritical behaviors. The purpose here is to replace behaviors of submission to power with others based on genuine relationships among peers. Whole Foods supermarkets, recently acquired by Amazon, is a good example of an integral company. Finally (what is perhaps its distinctive feature), the model put forward by Laloux calls for the total or partial doing away of hierarchies and their corresponding organizational charts. In order to counter the logical fear that such a measure would lead to chaos or a permanent incapacity to take decisions, Laloux is in favor of holocratic structures based on self-managed teams. The case of the nonprofit Dutch organization, Buurtzorg, is very representative in this respect. Buurtzorg is made up of over 200 self-organized teams of nurses who provide home nursing services. Each team makes its own decisions, and Buurtzorg only has a small coordination and support structure. Instead of working driven by cost and efficiency criteria, Buurtzorg provides a service focused on optimizing quality care for customers: their maxim is “sit down and have a cup of tea with each patient and listen to their problems

with understanding”. Subsequently, the leadership in such organizations is substantially altered. Far from pointing the way or giving orders, the leaders, along with their people, “feel and respond” to changes.

- Changes to training plans in order to introduce spontaneous skills to compensate the excess of deliberate skills: meditation, self-awareness, sensorial awareness, lateral thinking, etc. In short, the long-term trend should be towards a greater balance between the two modalities. A holistic training plan should therefore combine knowledge, tools and skills related to the deliberate stream with competencies and the acquisition of sensibilities of a more spontaneous nature. Taking the Google company as an example, it should be every company’s responsibility to set up an optional training system that, in addition to the skills and knowledge required to fulfill each employee’s functions, will be in charge of organizing seminars, workshops and personal growth forums to offer integral training for each person and provide them with a holistic vision of their work, interests and life objectives. We are not dealing here with a traditional training plan (where company employees may even be obliged to participate in an activity). Instead, each person should be able to draw up their own personal growth plan adapted to their specific goals. The company therefore wouldn’t be in charge of preparing a more or less standardized training proposal, which its employees would have to adapt to, but rather things would be the other way round: employees’ requests would gradually configure a heterodox, dynamic and flexible training space.
- Introducing work spaces and methodologies that facilitate more interaction between the two creative modes: from experimentation areas or creativity laboratories right up to a comprehensive remodeling of the company’s office spaces so as to foster interpersonal relationships and interdisciplinary cooperation while removing what are often very important status symbols. These spaces would fulfill a double purpose: On the one hand, they can provide the organization’s employees with a space to work on innovation projects and where they can disconnect from their daily tasks. They would also be curiosity and experimentation areas for testing out extreme ideas, prototyping solutions to problems, etc. With regard to the work methodologies, companies should promote those that facilitate greater interaction between deliberate and spontaneous thinkers – for example, design thinking, which, as we have already seen, combines analytical and disruptive competencies.¹⁰ In the coming years setting up such spaces (both physical and virtual) will make the difference between more traditional and more advanced companies.

Notes

- 1 Phrase attributed to George Bernard Shaw. Its origins are not clear.
- 2 See the book “Flow: the psychology of happiness”, by Mihaly Csikszentmihalyi (2002). Rider.
- 3 See “The element: how finding your passion changes everything”, by Ken Robinson (2009). Penguin Books.
- 4 See “Your creative brain”, by Shelley Carson (2013). Harvard Health Publications.
- 5 See “How creativity happens in the brain” by Arne Dietrich (2015). Palgrave Macmillan.
- 6 See the article “Robust prediction of individual creative ability from brain functional connectivity” by Roger E. Beaty, Yoed N. Kenett, Alexander P. Christensen, Monica D. Rosenberg, Mathias Benedek, Qunlin Chen, Andreas Fink, Jiang Qiu, Thomas R. Kwapil, Michael J. Kane, and Paul J. Silvia. PNAS January 16, 2018; published ahead of print January 16, 2018.
- 7 See “Mindfulness: a practical guide to finding peace in a frantic world”, by M. Williams and D. Penman (2011). Piatkus.

- 8 See “Wired to create”, by SB Kaufman (2015), especially the chapter on meditation and its effects on creativity. Vermilion.
- 9 See “Creativity and mental illness”, compiled by J. Kaufman (2014). Cambridge University Press.
- 10 See “Reinventing organizations” by Frederic Laloux (2014), an excellent practical treatise on how to gradually leave aside what until very recently were considered immovable truths of management. Published by Nelson Parker.