

26. A systems perspective on creativity and its implications for measurement

Mihaly Csikzentmihalyi
(*School of Behavioral and Organisational Sciences,*
the Claremont Graduate University)

Abstract

As long as we assume that creativity is primarily an individual trait, measurement will be primarily focused on personal dimensions, such as divergent thinking or a 'creative personality'. But if we realise that creativity is a systemic — as opposed to individual — process, we are led to broaden our perspective to include systemic properties such as the availability and accessibility of information, encouragement of novelty by institutions such as schools and corporations, and so forth. This paper presents the 'Systems Model' of creativity, which includes personal qualities (especially in regards to motivation and enjoyment), but also characteristics of a creative society and a creative culture. Wherever possible, suggestions for measurements based on the model will be explored.

Preface

This chapter consists of two parts. First, I present a report on my impressions of the conference held in Brussels, 28 and 29 May 2009, entitled *On Creativity, Towards an Understanding of Creativity and its Measurements*. This is followed by the summary of my talk at the conference in Part 2 and some implications for measurement.

Part 1: Impressions on the conference

I will preface my words with two remarks that shall qualify my perspective. First, I spent only two days at the conference, so I had very little opportunity to learn about the process and the individuals involved in this initiative. Second, because I have been involved in studying and writing about creativity for over 40 years, for better or for worse, I have rather strong opinions about this topic, which make it difficult for me to be as objective about what happened in these two days as an interested novice would be.

The conference was in some ways better than I expected, and in some ways worse. It was better in the sense that the presentations that were focused on measurement issues showed a sophisticated understanding on how to approach the description of complex multicultural phenomena. Although I heard no new ideas or techniques, by and large, the presentations were state of the art. One had the impression that once a research design was agreed upon, the ability to carry it out would not be a problem.

Where the conference delivered less than I expected can be summarised under two main headings.

- (a) I had hoped that the goal of measuring the creative potential of the EU nations would have been more advanced by now in terms of staffing and organisation. Instead, I felt that while there was a general shared interest and some enthusiasm among the participants, it was rather amorphous and uncoordinated. Some people had very ambitious hopes of using this project as a tool for changing basic cultural values; others saw it simply as a way to enrich education, or to stimulate the economy. In the short period I spent in Brussels I had no sense of a common vision, or a clear leadership — and of course this might well exist, but had not been obvious to me.
- (b) A second issue that I am more sure was problematic was the absence of a clear conceptual framing of the main topic — that is, *creativity* and *innovation*. In most of the talks it was assumed that ‘creativity’ existed as a recognisable individual trait (as opposed to being, for instance, a post hoc social attribution to new ideas and objects that find favour in the marketplace of ideas or of commodities).

Of course, I don’t expect for a moment that everyone will agree with this perspective. All I am suggesting is that such fundamental issues need to be discussed, and if no agreement can be reached, the differing perspectives should be taken into account.

These seem to be abstract, ‘academic’ concerns. But, in my opinion, they are fundamental. If we do not know what it is we are looking for, we might collect tons and tons of data, without learning anything important from them.

And this concern connects again with the problem suggested in Part 1 above. Without a clear mission and strong leadership, I fear that the rich data collected by the advanced methodology might only result in colourful PowerPoint presentations, but leave the question of how innovation and creativity can be enhanced, unanswered.

Part 2 : Summary of the ideas in my talk, May 29 2009

My talk expanded on a single paragraph of a book by Warren Bennis. In there he writes:

Jack Welch once said of his role at General Electric: 'Look, I only have three things to do. I have to choose the right people, allocate the right number of dollars, and transmit ideas from one division to another with the speed of light.' Those three tasks are familiar to almost everyone involved in creative collaboration.

These three tasks are indeed essential to the healthy functioning of any organisation, and to creative accomplishment in general. Let me expand on the concise observation contained in this quote, and unfold some of its implications.

In my own work, I have argued that creativity with a capital 'C' — the kind that changes the way we see or understand the world — never happens in the mind of a person exclusively (Csikszentmihalyi, 1996, 1999a, 1999b, 2000). It can be observed only in the interrelations of a system made up of three main elements (See Figure 1). The first of these is the domain, which consists of information — a set of rules, procedures, instructions for action.

What we call a culture is a collection of thousands of such domains. They include, for instance, the domains of religion, mathematics, poetry, recipes for making BBQ sauce, the rules of basketball — you name it — our thoughts and actions are ordered and directed by the information contained in domains we absorb from the culture we belong to. Creativity does not happen in a vacuum; it always involves a domain of some sort. One is never creative in the abstract; instead a person may be a creative musician, or a creative scientist, or a creative basketball player. To do anything creative, one must operate within a domain. In fact, creativity can best be understood as *an idea, product, or action that changes a domain*.

A corporation such as GE could be thought of as a culture in a microcosm. It too contains information organised within domains — the concerns and procedures specific to the various divisions of the organisation. If the firm wants to be creative, the first step is to make the information contained in these domains accessible to everyone in the company, since most creative ideas arise when previously unrelated material becomes connected. This is why Welch is right to say that 'ideas' must circulate in an organisation with the speed of light.

The second component of a system is the *field*, which includes all the individuals who act as gatekeepers to the domain. It is their job to decide whether a new idea or product should be added to the domain. New ideas and products are constantly being thought up, but few are worth remembering or implementing because they are no improvements on the status quo. According to Peter Drucker, only one out of 500 new patents ends up making any money, and the same proportion holds for works of art or music. It is, therefore, important for any system that aspires to creativity to have gatekeepers who can choose well among the many innovations the ones that are worth supporting. At General Electric, Jack Welch is the highest representative of the field who must 'allocate the right number of dollars' to transform ideas into reality. If the field is too permissive and accepts novelty indiscriminately, or if at the other extreme it is too conservative and does not stimulate and reward worthwhile novelty, the organisation will suffer as a consequence.

The third component of the system is the *person*. Creativity occurs when a person makes a change in the information contained in a domain, a change that will be selected by the field for inclusion in the domain. This is where Jack Welch's 'right people' come in. How does one recognise the 'right person,' that is, the person who wants to innovate, and who is likely to come up with something creative?

There are many characteristics that mark someone as a candidate for creativity. I will only mention a few that personally I feel to be the most important ones. In the first place, a person should enjoy pushing the envelope of a particular domain, if someone loves to make music, and delights in coming up with new tunes, he or she has a reasonable chance of coming up with something new that others will also appreciate. The same is true for an engineer or a marketing executive: nothing is more important than wanting to do one's job for its own sake. Too much concern for making money, or acquiring power and fame are warning signs that the person's priorities are not really promising as far as creativity is concerned. On the other hand, promising signs are interest, curiosity, and an almost childlike naivety that questions everything, that is dissatisfied with the answer: 'But this is how things have always been done.'

But creative individuals alone do not make creativity happen. They need access to the right information, and they need access to resources. If any of these three elements of the system are not functioning properly, the system — whether it is an organisation or a larger institution such as a nation — will not adapt creatively to its environment. For instance, if the field (e.g. management) in a company is bent on compartmentalising knowledge so that workers in production do not know what people in sales or marketing are doing, or what suppliers and customers want, and

no one has a clear idea as to what the leaders of the organisation are thinking about, chances are that even the potentially most creative employees will not come up with ideas for any useful new process or product.

Suggestions for measuring the creative environment at the national level

From the perspective of the Systems Model of creativity, measuring the creative potential of individuals is not the main issue. Most approaches to creativity focus on how original the person's thinking is, without concern for the other elements of the system. Yet it could be argued that the level of creativity of a nation is not the sum of the individual creativities of its population — rather, it depends on how conducive to creativity the various societal institutions are. Unfortunately, thus far there have been no systematic measures developed to assess creativity at the *field* and the *domain* levels. Where could one start, to develop such measures?

The culture

First of all, one would want to develop a way to assess the *availability* of domain-related information in the culture, and its *accessibility*. Not so long ago, information was concentrated in a few urban centres — in libraries, museums, laboratories; and it was only accessible to a privileged few. This situation is changing rapidly, and with the resources of the web almost everyone can have all the information in the world at their fingertips. Still differences exist in the availability of such information, and the computer literacy of the users. Also, the way information is stored, how free it is, is also important. But the basic principle, whether we are talking about libraries or computers, remains the same *How easy is it for a person to retrieve the information stored in the culture?*

Also, historically every creative culture has been one where different world views, belief and ethical systems coexist. Often this has been an unintended by-product of a mercantile economy: Athens, Florence, Istanbul, Paris, and New York, were centres of international trade that acted as informal schools for diversity, expanding the horizons of thought for the population as a whole. The basic principle here is: *How easy is it for people to be exposed to different ways of thinking and acting?*

The previous two questions are difficult to answer, and no ready-made measures for answering them exist at this time. The next issue is a more familiar one, and it would be easier to measure. The question is, *How many institutions are present in a culture for learning and practicing a particular domain?* For example, creative chefs are developed in cul-

tures with a tradition of gastronomy, in part because they can apprentice with a greater variety of restaurateurs, and their skills are more easily recognised and appreciated.

The formal educational system is of course a key contributor to the formation of potentially creative persons. Again, however, there has been no successful way of measuring how creative a particular school system is in this respect. Some nations have excellent schools for teaching the basics of science and knowledge in general, but they do not encourage individual originality; other systems encourage individual expression and original thinking, but do not provide strong enough foundations. Yet creativity depends on both thorough knowledge of fundamentals, and independent thinking. So the question here is: *How easy it is for a child to pursue his or her interest, and learn to be an excellent biochemist, poet, philosopher — or whatever — and still preserve his or her personal curiosity and vision?*

The society

The availability of information is a necessary condition for creativity to flourish, but not the only one. The next questions that need to be answered in order to assess creativity at a national level concern the role of society in the creative process. In many ways, the problems with creativity tend to demand-driven, not supply-driven. In other words, in most domains the number of potentially creative individuals is much larger than the number the society can afford to recognise and support.

In this respect, the first question is, *How much support does the society provide to new ideas?* It is clear that the great explosion of artistic creativity in 15th-century Florence, for instance, was due to the resolution of the community leaders: bishops, bankers, noble families, leaders of the merchant guilds — to make Florence into a 'New Athens.'

Their resolution was expressed in financial support for arts and architecture, but also — and perhaps more importantly — with a personal involvement in selecting projects, developing the specifications for the finished product (e.g. the grams of expensive ultramarine blue that an artist was contractually obligated to use in a painting, or the number of sheep that Ghiberti had to include in the bronze panel he submitted in his bid to construct the East doors of the Baptistery — which then took him 50 years to complete, while being paid to do so), and then supervising and evaluating the artists' products.

In this respect, early competitions in the sciences, arts, and literature for school children should be taken at least as seriously as athletic competition. *To what extent are adults involved in stimulating excellence and novelty in children — preferably outside*

the classroom, preferably in realistic situations? And how many opportunities are there in businesses, universities, civic organisations, to express and implement novel ideas?

The person

If the culture and society are open and supportive of creativity, the number of individuals attracted to express original ideas is inevitably going to increase. But of course there are some influences that will determine whether a person is going to be more or less ready to benefit from the opportunities available in the culture and society. For instance, the traits of *curiosity*, *perseverance*, and *flexibility* are important characteristics of creative individuals, and these traits are in part shaped by early experience in the home, in schools, and in the community.

So to develop a metric of creativity at a national level, it would be useful to know: *To what extent are curiosity, exploration, originality, intense involvement with one's interests encouraged at the level of various levels of the life cycle (e.g. family, school, and so on)?* This is not an easy question to answer, but one could look, for instance, at the content of children's stories, school curricula, and so on, to establish a baseline for how the development of traits conducive to creativity are viewed in the social milieu where the child is growing.

The psychologist Howard Gardner, for instance, used the example of how he and his wife stood patiently by as their four-year old boy struggled trying to insert a key in the lock of their hotel room in Beijing. The other guests and the staff of the hotel were looking on with mounting exasperation, until finally a Chinese gentleman told the parents: 'Look, why are you torturing that poor child? Why don't you just teach him how to use the key?' Gardner uses this vignette as an example of a fundamental difference in eastern and western pedagogy: The first based on assimilation of past knowledge, the second encouraging trial-and-error experimentation.

The Systems Model suggests a variety of concrete, realistic approaches to measure creativity beyond the person-centred assessments relying on paper-and-pencil tests or artificial laboratory behaviour. That is a very great advantage. The disadvantage of the Systems Model is that there are as yet few examples of measures that are built on it. But that could be a very attractive challenge to those who are curious about such things, and one that the importance of improving our measures of creativity amply justifies.

References

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