

Creativity as Chance Discovery

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Abstract

In this paper, we regard a chance as a creative work and model a process that conceives chance as a creative work. Recently, the necessity of creative work assistance has increased. Creative works are usually regarded as specialized skills. On the other hand, from the viewpoint of Chance Discovery, a creative work can be thought of as a chance.

By regarding creativity as novel (not rare), this paper shows a creative work procedure as the process of a novel concept discovery: that is, Chance Discovery.

Keywords: creativity, chance, Chance Discovery, search engine

1. Introduction

Recently, the necessity of creative work assistance has increased. We usually expect that artistic works are creative work done by professionals. However, in this paper we expand the definition of creative work to include daily works that satisfy some potential senses. First, we offer some definitions of “creativity.”

- 1) Carl Rogers defined the creative process as follows [7]:

The creative process is the emergence in action of a novel relational product, growing out of the uniqueness of the individual on the one hand, and the materials, events, people, or circumstances of his life on the other.

- 2) In DynaGloss [2], collective creativity is defined as follows:

A term describing the phenomenon where concepts emerge in people’s mind through interacting with knowledge in the world — external representations, with other people, or with computer systems. Designers evolve artifacts by externalizing such concepts and by sharing them with other people. Though creative

individuals are often thought of working in isolation, the role of interaction and collaboration with other individuals is also critical. Thus, creative activity grows out of the relationship between an individual and the world of his or her work, and out of the ties between an individual and other human beings.

- 3) Our definition of creative work resembles collective creative.

Creativity means a novel and creative work that comes from nothing or something related but whose relation to the work is hidden or latent. In actuality, for creativity, such mental processes as intuition or special senses might be necessary that emerge by such stimulus as information (background knowledge). In emergence, knowledge functions as a catalyst.

As shown in our definition, we need various types of background knowledge to unveil the intuition or special sense for creativity hidden in our mind.

From a computational viewpoint, computers can easily deal with a large amount of information. Furthermore, recently the internet offers easy access for everyone, and as a result, it is quite simple to search for information. In fact, DSIU [3] is a question and answer system that obtains necessary knowledge from the internet and then creates missing or new knowledge to make inferences. Similarly, as shown in CYC [4], a large amount of organized information seems to assist our common sense reasoning. In addition, it is said that a large amount of knowledge helps achieve creative works. For creative work assistance, Shibata and Hori proposed a creative thinking supporting system [8] that shows information and related information that stimulates thinking. The pervasiveness of the internet has simplified the management of large amounts of information. Accordingly, the internet has slightly simplified the stimulation of creative thinking. Creativity will emerge by such stimulus as background knowledge. We also believe that creativity lurks in the mind, and it must be coaxed to the surface of our consciousness.

Ohsawa defined chance as “a new event/situation that can be conceived either as an opportunity or a risk [6].” In this sense, a creative work can be regarded as a chance because creative suggests novel (not rare). A creative work comes from nothing or something related but whose connection is hidden or latent. For instance, in [9] Sunaga suggests a feature of creativity with the following example. One night he saw something strange; a motorcycle with a bag. At first, he did not recognize it as a motorcycle. But, after he recognized that it was a motorcycle with a bag, he obtained a new idea for the design of a motorcycle. Something strange sparked his creativity. That something strange can be regarded as something related but whose connection (to motorcycle) is hidden or latent. In addition, Shibata and Hori discussed creative work assistance from the viewpoint of Chance Discovery [8].

In this paper, we regard creative work as a chance and then model the process of conceiving a chance that is creative work. Section 2 illustrates creative work as a chance. Section 3 illustrates the unfolding of chance discovery as a creative work process.

2. Creative work as a chance

In general, creative works are regarded of as such lofty accomplishments as philosophical treatises, paintings, drawings, poetry, composition, etc. Sometimes they seemingly come from nothing while sleeping, walking, swimming, eating etc. However, usually a certain seed hides behind the work. As shown in our definition of creativity, collaboration with organized knowledge is important. The problem is how to obtain organized knowledge. It is easy to obtain knowledge from the internet, but it is slightly more difficult to catch up with changing information. We need to continuously access the entire internet or use certain tools that can catch up with new or updated information. Computationally, one powerful tool for catching up is a search engine.

This section illustrates one creative process with an example of writing a technical paper. In fact, we show the process by using a search engine offered by Yahoo (<http://www.yahoo.com/> or <http://www.yahoo.co.jp/>).

2.1 Non-creative search results

Let the situation be one where we do not have enough references for writing a technical paper, and neither proper book shops nor libraries are accessible but we do have an internet-connected computer. In this case, an easy solution is to consult the internet. Suppose we would like to write a paper on the “effects of humor in communication.” When utilizing the internet properties, it is natural to input the words ‘effect,’ ‘humor,’ and ‘communication’ into a search engine

site, for instance, <http://www.yahoo.com/>. Here are the results.

1. Humor in Computer-Mediated Communication
The Performance of Humor in Computer-Mediated Communication. TABLE OF CONTENTS. ABSTRACT ...
www.ascusc.org/jcmc/vol1/issue2/baym.html
2. humor on Encyclopedia.com
... that the glands had a controlling effect on this balance ...
Publication: Communication Studies;
www.encyclopedia.com/html/h1/humor.asp
3. American “Comics”
... Professor, Communication and ... effect and impact is more pronounced....
www.csun.edu/vcspc005/cartoon.html
4. Humor
... accomplishment involving a wide range of communication skills including, but not exclusively involving, language ...
[www.brown.edu/Departments/Anthropology/...](http://www.brown.edu/Departments/Anthropology/)

In fact, they are useful to write about “the effects of humor in communication.” However, we cannot get additional information from the results because no more information exists than ‘humor’ and ‘communication.’ Consequently, no more imagination than fixed concepts on humor and communication can emerge. This result is insufficient for creative works.

2.2 Creative search results

Let’s consider another situation. Suppose we are going to write a paper on “the usage of language in advertisements.” If we input ‘advertisement’ and ‘language’ into <http://www.yahoo.co.jp/>, the results are unsatisfactory. If we input the words into <http://www.yahoo.com/>, the results are again unsatisfactory: no adequate results are listed from the search engine. Since some advertisements are usually shown in (multi)media, we change the keyword from ‘advertisement’ to ‘media.’ If we input ‘media (メディア)’ and ‘language (ことば)’ to http://www.yahoo.co.jp, the result includes the following lists:

5. What wrong with our literary style?^{†1}....
<http://www.ipsj.or.jp/members/SIGNotes/Jpn/33/1998/034/article001.html>
6. The 6th “Female and Male generated by Media Literacy and Gender Media”
<http://www.city.joetsu.niigata.jp/gyosei/.../kouza/14/6.pdf>

^{†1}The Japanese title includes ‘media society’ and ‘language.’

In fact, these pages are not really what we seek, but they provide us with another viewpoint of the “language in media or advertisement” theme. Then we can do another research on language or even include another viewpoint in our research.

In the case of “humor,” the search engine returns adequate results, but not in the case of “media language.” However, for “media language,” the result might extend or change our interests to reflect a potential interest. In addition, the site shown in 5. is a page for a Special Interest Group (SIG) on information media, so we can obtain and refer to the other papers on information media. The site shown in 6. also contains a paper on gender issues. Thus unintended search results sometimes indicate a better direction for creativity.

We regard creative work as a chance. As shown above, creativity is something novel that has potential. Creativity appears because of certain stimuli. In the above case, a slightly different research area seems to function as a stimulus. As Shibata and Hori pointed out [8], similar areas will be also stimuli, but they cannot change or extend one’s interests. In fact, when we are experiencing deadlock, it is important to change our viewpoint or interest to overcome the situation.

3. Chance discovery process

3.1 Chance discovery process modeling

Shibata and Hori showed that related problems and ideas stimulate creative thinking [8]. True, but in Fig. 1, we illustrate another process of creative thinking. This figure shows the thinking process model shown in the previous section.

The development path shown on the right side is the process model shown for “humor.” The expected or desired results are exhibited. In this case, normal (expected) results will be created, which we usually want to obtain.

On the contrary, the development path shown on the left is the process model shown for “media language.” No results or unexpected results are exhibited. Of course, we do not want unexpected results. In fact, 80% of such results will be useless or a waste of time. However, an interesting pattern in the process model is shown on the left side. In this case, from an ordinary viewpoint, the search fails because the results are outside our expectations or desires. However, a user can find a new interest or viewpoint from which to conduct an improved or additional research. Based on the results, we argue that slightly different results sometimes simulate hidden or potential creativity. They serve as catalysts to stimulate our hidden or potential creativity and desire.

We think this type of unpredicted interest change is a chance. By this interest change, we can delve into a new

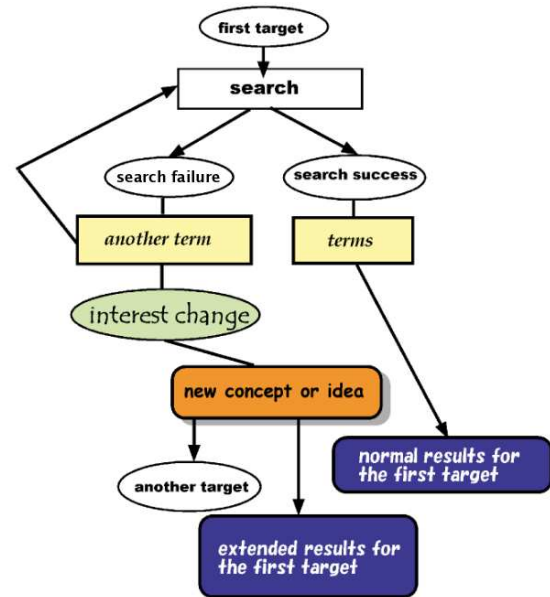


Figure 1. Chance discovery process.

concept or change our viewpoint. Of course, we can also start a new research.

3.2 How to set search words?

We only showed the successful examples in the previous section. Of course, we do not always successfully obtain a proper site to stimulate our creativity. For instance, if we input ‘media’ and ‘language’ into <http://www.yahoo.com>, the results are not fully satisfactory. In addition, for such very specialized field as ‘narratology,’ the search results usually contain only sites that refer to narratology. For creativity, ambiguous (multiple meanings) or non-specialized search words seem better. However, if we input ‘humor’ and ‘communication’ into <http://www.yahoo.com/>, then the results are as follows:

7. FUNsulting, etc.: Humor, article, newsletter, communication ... In this world of information overload, your written communication must stand out if you want others to read ... www.funsulting.com/october_2000_newsletter.html
8. Christian Humor: why humor, fun, jokes and Humor has great potential to communicate the Gospel effectively. There is a surprising amount of humor in the Bible.... www.gospelcom.net/guide/resources/humor.php

These results do not stimulate our creativity. In fact, field coverage seems slightly larger than the results from the three keywords, but the field is quite close to the results.

60% to 80% of them are the same. Finally, if we only input 'communication' into <http://www.yahoo.com/>, then the result will be an information deluge. Consequently, the results are not only useless but also harmful to creativity or pure searching. Search engines are easy to use and convenient, but for obtaining adequate results, we need to carefully select keyword. If we need a precise result, we should input many keywords to restrict the results, vital point for good internet searches. Thus it is quite difficult to obtain results that stimulate our hidden or potential creativity by simply using internet search engines. Moreover, if the searched site has papers from various fields, it will help to stimulate our thought from other viewpoints. For example, when searching for a certain theme, if we can find a site such as <http://syass.kwansei.ac.jp/kiyou/> (database of the papers of Kwansei university), it is very helpful to stimulate or change our interest. Hence it has various papers from unexpected fields. Actually, this is an ideal or lucky case; generally, it is quite difficult to determine keywords.

In this paper, we only showed qualitative analyses. Quantitative analyses are necessary for better keyword selection. Thus we cannot show generalized methods to select proper keywords to obtain adequate search results that stimulate hidden creativity. However, for creativity, we offer the following suggestion:

- properly ambiguous (multiple and vague meanings) words
- non-specialized words
- non-common used words

4. Conclusions

This paper defines creative work as a chance and shows creativity as the process of chance discovery. Formalization comes from the author's experience, who worked abroad and failed to bring enough reference materials and did not have access to a proper library near his office or home. When writing a paper, he naturally used an internet search engine such as yahoo. Since each search engine has its own features, so we must know them to obtain proper results. Such a task will resemble to the performance of a craftsman. Sometimes a search engine returns different results from intention. Usually, such results are useless, but in some cases, they lead us to novel thinking or confirm our original target. We modeled this type of development as a chance discovery process.

Nara and Ohsawa proposed a double-helical model of the chance discovery process [5], which is similar to ours. Our model is based on sequential processing; on the contrary, their model presumes parallel processing. Actually, we sometimes think in a parallel way, but our model does not deal with parallelism, because we assume a model for

writing only one paper. We must consider a model of multiple creative work performances at the same time. In the future, we should consider parallelism.

In this paper, we did not show a generalized method to select proper keywords for adequate search results that stimulate our hidden and potential creativity. We only gave some hints for keywords. In the future, we must find a generalized method to select such proper keywords.

In another paper, we proposed context changes in abduction to generate humorous phrases [1]. Interest changes can be caused by context changes. In a future paper, we will formalize the demonstrated creative process by abduction.

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