A New Direction of Chance Discovery

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What is chance discovery? For new readers, let me briefly introduce the field. Although in various articles I described the definition of a "chance," which was introduced by Ohsawa (Ohsawa & McBurney, 2003), I wish to introduce it here again. In fact, it rather differs from the original definition in (Ohsawa & McBurney, 2003) to reflect the recent research interests. I redefine it, without a gap from the literature, as follows:

Chance discovery is the discovery of a chance: A chance is rare, hidden or novel event(s)/situation(s) that can be conceived either as a future opportunity or risk.

Research on chance discovery aims to establish methods, strategies, theories, and activities for discovering a chance. In other words, it aims at discovering essential factors in humans and their environment for discovering opportunities and risks and at activating those factors. Therefore not only researchers in computer science or engineering but also with different expertise such as psychology, philosophy, economics, and sociology have been taking part in studies and meetings on chance discovery. Thus, chance discovery can be viewed as an interdisciplinary research.

This is a special issue on chance discovery. So far, we conducted several special issues on chance discovery. The latest one was published in 2011 (Abe & Ohsawa, 2011). In addition, we have published several books including Advances in Chance Discovery (Ohsawa & Abe, 2012). In this volume, the following papers are included -- 12 papers have been submitted and 5 papers were selected via a finely and fairly coordinated review process by distinguished referees from US, UK, Canada, The Netherland, Australia, France, Italy, Malaysia, China, and Japan:

Oehlmann and Gumbleton discuss chance discovery from their original viewpoint of an inter-team relationship. They have developed the TaROT system which can be used for the team operation by using screens for uploading and displaying images of the members of the given team as well as screens for characterizing the team members and the relationships with the user. They conduct several experiments and pointed out that the internalization of characteristics of others as opposed to the internalization of aspects of relationships, which appears to be of particular importance for group oriented cultures as those in East Asia, is important for the better team construction. Then they conclude that an extension of the relationality concept is needed that is less influenced by the western low-context cultures. Their study shows a practical approach for discovering the opportunity for successful internalization of intra-group as well as inter-group relationships.

Ikeda and Ohsawa discuss a key factor in the concept creation. For this purpose, they focus on human's handwriting measured by ANOTE (digital pen). They conduct several experiments and discovered important factors as follows: (1) The pen speed becomes faster on insight after the pen speed is relatively slowed or time gaps between strokes increase. (2) The pen pressure becomes higher on insight after the same slowing period as above. Based on these observations, they show a hypothesis on the relationship between insight process and handwriting: In some cases, we can create new concepts by being aware of inconsistency or existing constraints, with making viewpoint changed and obtaining an insight. Their analysis is noteworthy as a basic finding for the perception of opportunities for concept creation, i.e., the point where chance may exist which one may overlook without the ANOTE based analysis presented in this paper.

Ohsawa and Akimoto discuss sticky tsugoes . They analyze conversations during Innovators Market Game○R by KeyGraph○R and obtained interesting results. For instance, a post-constraint of an action may make a pre-constraint for others, sometimes for oneself. Then they obtain three assumptions as follows: (1) The action (utterance, proposal of a solution, etc.) of X represents X's intention. (2) The pre-constraint for an action of X should have occurred before the action. (3) X's action may be followed by his post-constraint on other actions (of himself or others). In conclusion, they give a remarkable analysis showing that the reinforcement of sharing tsugoes, which tend to be sticky due to humans' tendency to hide real intentions and constraints, contributes to creating products and services which are acceptable to consumers - novel, useful, and feasible. That is, talking about tsugoes (intentions and post/pre constrains that interact) reinforce the sense of humans to discovery opportunities for the creations of useful scenarios.

Magnani and Bertolotti discuss faked chance and how to escape from it. They focus on the notion of chance curation , and on how it should deal with phenomena that can be seen as ambiguous with respect to chance discovery, such as "bullshitting" and religiosity. Such activities are interesting because some studies let such phenomena be perceived as chiefly disruptive of eco-cognitive chances, while others praise them as benefitting the retrieval and construction of local chances. Their claim is that the ambivalence of such phenomena is actually an epiphenomenon of

the cognitive niche they are nested into: a rich cognitive niche might indeed take advantage of the careless creation of chances that might be either fake or real, reducing the harm coming from fake chances; conversely a poor cognitive niche - individuating a situation with scarcity of chances - are most likely damaged by ambivalent phenomena such as bullshit or religiosity. The activity of chance curators should therefore not only consider the impact on chance discovery of the given phenomena, but should also pay particular attention to the overall state of the cognitive niche. By this effort, chance curation shall be freed from chance disruption. We can say the authors extended the discussion of curation in chance discovery.

Abe discusses the relationship between chance and black swan. Here, he discusses that the awareness of black swan and chance discovery can be modeled (qualitatively) in the similar framework. The concept of Black Swan was introduced by Taleb in 2007 (Taleb, 2007). Taleb uses the rare black swan metaphor to explain how a usual human tends to ignore rare or novel events and the importance of being aware of such rare or novel events. As shown in the definition, chance discovery also deals with rare or novel events. In this sense, black swan awareness and chance discovery have the similar problem and can be discussed in the similar framework. As an embodiment of this idea, Abe formalized a chance selection strategy in the context of affordance. His theory is based on abduction and affordance selection. In his formalization, affordance may also emerge during the process of abduction – such a challenge to logically grasping decision making in uncertainty can be useful in black swan selection and chance discovery.

Themes dealt in these selected five papers are themselves novel in chance discovery, and also provide new directions for forthcoming studies on chance discovery. Tsugo, affordance, and curation are not themselves so new (even tsugo is an established word in Japan), but have been recently introduced to the community of chance discovery. As well, the concept of extended relationality introduced by Oehlmann and Gumbleton has been introduced. Let us look back at recent histories of science: Fruits of a research domain having started linked to artificial intelligence, e.g., robot soccer, data mining, social intelligence design, etc., have been not only computational algorithms but often useful concepts such as we are just facing in this special issue. All the papers here may be looking at rather different targets for the time being, but offer very interesting viewpoints which any chance seeker can put into practice. In this issue, if we dare to find a common theme, I dare to say the new theme is will be creativity with surprise after endeavor: Creativity has been already an important theme in chance discovery, and here we are witnessing this field started to show out models of the process where events dynamic environment and factors in active humans do interact, so that both evolve to sustainably create systems (societies of minds, bodies, and artifacts) of creative systems (humans, machines, and events).

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ENDNOTES

1. A tsugo is a triple of the intention and two types of constraints -- pre-constraint and post-constraint -- behind each stakeholder's acting/planning.

2. Curation was introduced to chance discovery by Abe (Abe, Curation in Chance Discovery, 2010).

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