

## 【Grant-in-Aid for Transformative Research Areas (A)】

### Section I



**Title of Project : Human behavioral science for subjectification ("tojisha-ka") by interaction-based & rule-/story-based understanding of the brain & the world**

**KASAI Kiyoto**  
(The University of Tokyo, The University of Tokyo Hospital, Professor)

Number of Research Area : 21A101 Researcher Number : 80322056

#### 【Purpose of the Research Project】

People with minority characteristics that do not match the world designed to be predictable for the majority have developed the knowledge that noticing the discrepancy between their own rules/stories and those of the world is the beginning of recovery. Learning from this, we consider rules and stories as follows. When humans interact with the world, if the same event is repeated many times, the brain internalizes it as a rule and uses it to predict the next situation, which is defined as rule-based process. On the other hand, story-based process is defined as the internalization of a single event in the world as an episode, a position, and its transition from a spatio-temporal beginning to the end point. If we define rule-/story-based process in this way, it is possible that this two-dimensionality is the basic mode of recognizing and internalizing the environment and events by the brain in animals in general including humans. Furthermore, the cognitive process by which human beings find and internalize rules and stories in the world when they earnestly interact with the real world, which is difficult to predict and difficult to follow, is defined as "tojisha-ka". We will elucidate the adolescent developmental process and mechanism of tojisha-ka through academic innovation that integrates the academician's own tojisha-ka, co-production with user researchers with minority characteristics, and the integrative sciences.

#### 【Content of the Research Project】

In this Research Area, we will elucidate the behavioral basis of the process of human becoming a "tojisha", based on the interactionality and two-dimensionality (rule-/story-based) of the relationships between individual brain and the world. Based on this nature, the Group A investigates the interactionality of the brain and the world using population science. On the other hand, the Group B concerns the rule and story-based understanding of the brain-world loop using cognitive and brain sciences.

[A01] This subgroup will construct a computational neuroscience model of the individual brain-world interaction loop using large population neuroscience.

[A02] This subgroup will apply the neuroscience model to a large cohort of adolescents to demonstrate the process of adolescent development in which humans become tojisha and proactively commit to the world.

[A03] In this subgroup, the dynamics of the brain-world loop obtained from A01 and A02 will be further elucidated by the interaction effects of age (era), generation, gender, and urbanicity. Also, qualitative

studies on sociology and medical anthropology will be bridging the findings between the Groups A and B.

[B01] This group will clarify the behavioral basis of the unmatching and rematching of the rules/stories of the brain-world loop under the process of tojisha-ka, and to develop a program to promote tojisha-ka based on the findings.

[B02] This group will clarify the brain basis of how the individual brain internalizes the rules/stories of the world under the process of tojisha-ka.

[X00] In this way, we will be able to change the history of academia, in which academics have become observers by separating themselves from citizens and have conducted research that contributes to social design for the majority, regarding citizens as objects. Specifically, through the workshop for academics to study the tojisha-ka, the academics themselves will be transformed from non-tojisha to tojisha and we will work with user researchers to co-produce research from the research design stage.

#### 【Expected Research Achievements and Scientific Significance】

Through this Research Area, we can expect that knowledge will be updated to resolve the majority-minority disparity in the modern world by accelerating the brain-world interaction loop. We will also expect that the process by which humans become tojisha and proactively commit themselves to the world will be clarified and the policy to reform educational and social structures could be suggested. True academic fusion is expected based on a research paradigm called interaction-informed human behavioral science (IIHBS) that can be agreed upon in the humanities and biological sciences. It is expected to spread to the academic world a concrete implementation method for the co-production of research and the transformation of academics themselves to tojisha.

#### 【Key Words】

Individual brain-world interaction, rule-based, story-based, tojisha-ka, adolescence, co-production of research

【Term of Project】 FY2021-2025

【Budget Allocation】 1,088,700 Thousand Yen

【Homepage Address and Other Contact

Information】

<https://tojishaka.net/>