



## Analysis of the Ig-Nobel Prize

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**Abstract:** The Ig Nobel Prizes are selected and given to the winners based on the criterion of “Research that makes people LAUGH and then THINK”. It naturally includes unexpected or fantastic research. This material conducts the statistical analysis and qualitative analysis of the research. As the consideration, it refers to the feature of the Japanese researches. As the statistical analysis, first, we survey how much the relevant research materials are registered to the academic database SCOPUS. We obtained that the registration rate gets bigger along with the year since 1991 when the Prize started. Second, we survey how many research of a country were awarded. In the survey, we selected the three field of physics, chemistry and medicine/physiology as same as the scientific field of the authentic Nobel Prize. We allocated each five years beginning in 1991 to a section then got the average over the three fields for each section. Then we obtained that the USA got the biggest proportion for the 1<sup>st</sup> thru. 4<sup>th</sup> section and Japan got the biggest proportion for the 5<sup>th</sup> section which means 2011 thru. 2015. As the qualitative analysis, we survey how unexpected the awarded researches are. Then we obtained that there are seven types in those researches; sex organ or excretion relations, dangerous relations, and so forth. Lastly, we conduct the consideration on Japanese features. We obtained the features; Japanese winners tend to regard scientific approach, regard original unexpectedness which supposed to be an emotion inductive to laughing instead of regarding the laugh itself and so forth.

**Keywords:** *Ig Nobel Prize, statistical analysis, laugh*

**Received:** 23 April 2018; **Accepted:** 14 June 2018; **Published:** 20 August 2018

### INTRODUCTION

This article looks at the Ig-Nobel Prize<sup>1</sup>, which is considered a parody of the Nobel Prize, as a subject of research. About ten Ig-Nobel Prizes are awarded each year. There are widely divergent views on the merit of the Ig-Nobel Prize. While some see the prize in a positive light by finding value in “humor,” others see it in a negative light, dismissing it as a diversion or fun and games. At the award ceremony, a wide array of unconventional research is presented.

The main purpose of this article is to examine and analyze the contents of the prize. In order to conduct the analysis, we used a statistical approach as a quantitative methodology and a typological approach as a qualitative methodology. The main reasons for analyzing the Ig-Nobel Prize, despite the divergent views on its merits, are as shown below.

The first is that the Ig-Nobel Prize has been awarded annually for over 25 years since 1991. The fact that the prize has continued over such a long period shows that not a few proponents saw value in having the prize. The prize also calls attention to the nature of the research winning the Ig-Nobel Prize, which may further develop into a general and

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<sup>1</sup>“Ig-Nobel” is regarded as a play-on-word of “ignoble”

fundamental debate on the question of “What is research?”. Activities that start from unconventional ideas will have a significant impact on training, particularly of scientists in the fields of science and technology.

The second reason is that the Ig-Nobel Prize has implications for the development of science and technology. This is because in today’s world where science and technology has advanced to a highly sophisticated level, the potential of approaches to interdisciplinary or transdisciplinary research is being explored.

For example, research and development of computers have been carried out for the main purpose of benefitting human society. In this age, moreover, AI is being used to extend the frontiers of computers, in other words, in pursuit of “knowledge and intelligence.” At the same time, interest is rising on “emotions and feelings” to help enrich people’s minds (Subiyantoro, 2017). At a time when a wide range of approaches to research and development are being employed, diversity found in the Ig-Nobel Prize is expected to contribute to the development of science and technology from a transdisciplinary perspective. Looking at the past Ig-Nobel Prizes, one finds that the research achievements depend much on the researcher’s personal efforts (Abrahams, 2002). On the other hand, it appears that interest in the prize at the organization level is limited.

In fact, on the main website of the National Institute of Science and Technology Policy<sup>2</sup>, there are more than 20 hits when using the search word “Nobel Prize” but no hit when using the search word “Ig-Nobel Prize.” Even though the Ig-Nobel Prize may be regarded as unorthodox research activities, interest in the prize at the organization level is expected to bring about a positive effect on long-term science and technology policy.

## STATISTICAL FEATURES

### History

The Ig-Nobel Prize was founded by Marc Abrahams, the editor-in-chief of a scientific humor magazine. The prize is awarded to “Research that makes people LAUGH and then THINK” and to discoveries “that cannot, or should not, be reproduced.” There is also an unofficial rule that the achievement must be “amazingly silly but stimulating.” It means that the prize is awarded to an intellectual work or activity that makes people laugh.

Table 1 *Ig-Nobel Prize and Nobel Prize*

Item for Comparison	Ig-Nobel Prize	Nobel Prize
a. Year of Founding	1991	1901
b. Founder	Marc Abrahams	By the will of Alfred Nobel
c. Award Ceremony	USA	Sweden (Norway)
d. Application	Nomination by others or self-nomination	Nomination by others
e. Prize Money and Travel Expenses	None	Prize money and travel expenses are provided
f. Winners	Given both to those still living and no longer living	Given only to living persons
g. Number of Japanese Winners <sup>3</sup>	8.9	Physics - 3.8, Chemistry - 2.5, Physiology or Medicine - 3.3
h. The ratio of Japanese Winners (%) <sup>3</sup>	12.0	2.7
i. Categories Won In	Physics, Chemistry, Biology, Medicine, Peace, Economics, Psychology, Mathematics, Technology, Public Health, others	Physics, Chemistry, Physiology or Medicine, Economics, Literature, Peace
j. Research subject	Unusual	Basic, universal

<sup>2</sup>National Institute of Science and Technology Policy <http://www.nistep.go.jp/archives/33898>

<sup>3</sup>The number of winners is winners in the limited three fields corresponding to prizes in physics, chemistry, and physiology or medicine. The winners are counted based on the country name indicated on the website. Precise comparison between the Ig-Nobel Prize and Nobel Prize is difficult as it is unclear whether the same methods are used, in the Ig-Nobel Prize and the Nobel Prize, in identifying countries of the winners. The period covered by the survey is from 1991 to 2016.

Table 1 shows a comparison between the Ig-Nobel Prize and the Nobel Prize. Item g. “Number of Japanese Winners” is calculated based on the following conditions: The calculation is based on information from the official website.<sup>4</sup> If more than one winner and their countries are indicated for a single prize, their collective contribution of 1 is divided equally by the number of winners to obtain the contribution from Japan. If more than one country is indicated for a single winner, the contribution by such a winner is divided equally by the number of countries. If there is no indication of the relation between the country and the winner, the collective contribution of 1 is divided equally by the number of countries to obtain the contribution from Japan.

Secondly, in relation to Item i.e., the Ig-Nobel Prize does not necessarily have the same prize categories each year. New categories are created, and some categories are used only in some years. It appears that the categories are set in accordance with the contents of the research that has been awarded the prize. Moreover, some category titles seem to drift widely apart from what most people would normally associate with the titles (Yadu & Tripathi, 2017). For example, in 2002, Bow-Lingual, a machine that translates the feelings of a dog from its bark, won the Ig-Nobel Prize in Peace. The Ig-Nobel Prize in Peace in 1995 also suggests little about the contents of the research (Busch & Starling, 1986). Therefore, even if the Ig-Nobel Prize has the same category title as the Nobel Prize, it is sometimes difficult to guess the contents of the research from the title.

### *The ratio of Theses Referenced in Scopus*

Scopus is a database of abstracts and citations. It covers over 20,500 titles from more than 5,000 publishers worldwide in the fields of science and technology, medicine, social sciences, and liberal arts. The author used this database to search the theses that led to winning the Ig-Nobel Prize and the number of citations. If more than two theses were given for a single prize, the thesis with the larger number of citations was used.

This survey covered a period of 16 years from 1991 to 2016. As there was no thesis referenced in Scopus for any of the winners of the Ig-Nobel Prize in 1991, the ratio of referenced theses was obtained for the winners in and after 1992 as shown in the next paragraph.

The Ig-Nobel Prize website contains scientific theses as well as videos, patents, and magazines as a reference for awarding the prize. The author extracted, for each year, the prizes regarding which the reference used for awarding the prize was a scientific thesis that could be found in the Scopus. The author then obtained the ratio of the number of such prizes to the total number of prizes.

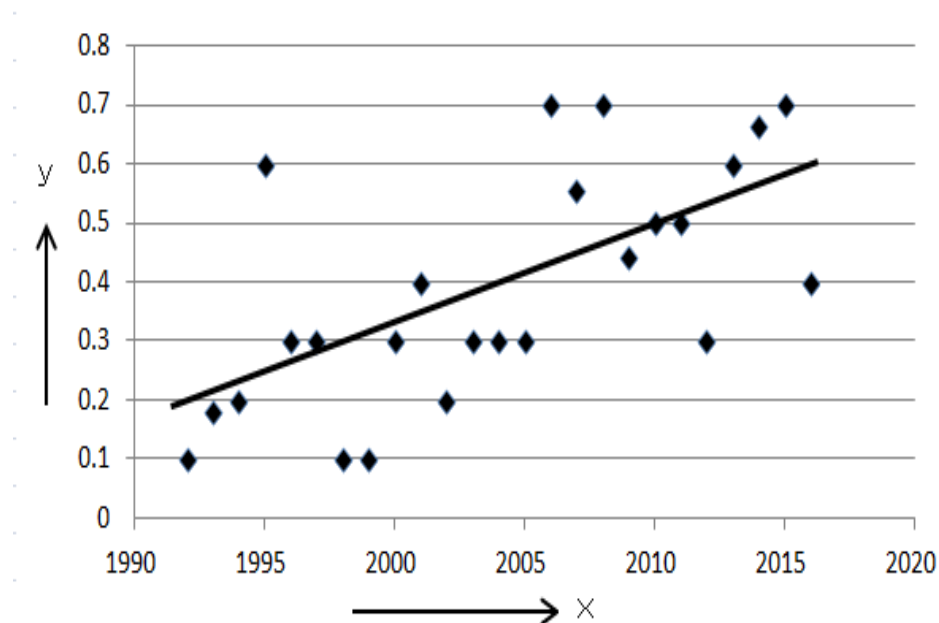


Figure 1 Ratio of Theses Found in Scopus

<sup>4</sup><https://www.improbable.com/ig/winners/>

The results are shown in Figure 1. It shows that the slope of the regression line is positive. In other words, there is a tendency for the prizes awarded based on a thesis that can be found in the Scopus to increase each year<sup>5</sup>. From the above, two arguments are possible, as follows:

- The Ig-Nobel Prize is becoming more scientifically relevant. Therefore, the Ig-Nobel Prize is now more noteworthy.
- The activities of the Ig-Nobel Prize are reverting to the existing realm of science, which is a matter of concern. It remains to be seen which argument holds more merit.

### Comparison of Major Countries

The author added up the number of Ig-Nobel Prizes won in the limited field of natural sciences (physics, chemistry, physiology or medicine) by country. The results are shown in Figure 2. The countries with the most number of prizes are shown from left to right. From this result, five major countries that have been winning the Ig-Nobel Prize can be identified as the USA, UK, Japan, France, and Germany. The period of the survey was between 1991 and 2015. The data were tabulated for each segment of five years.

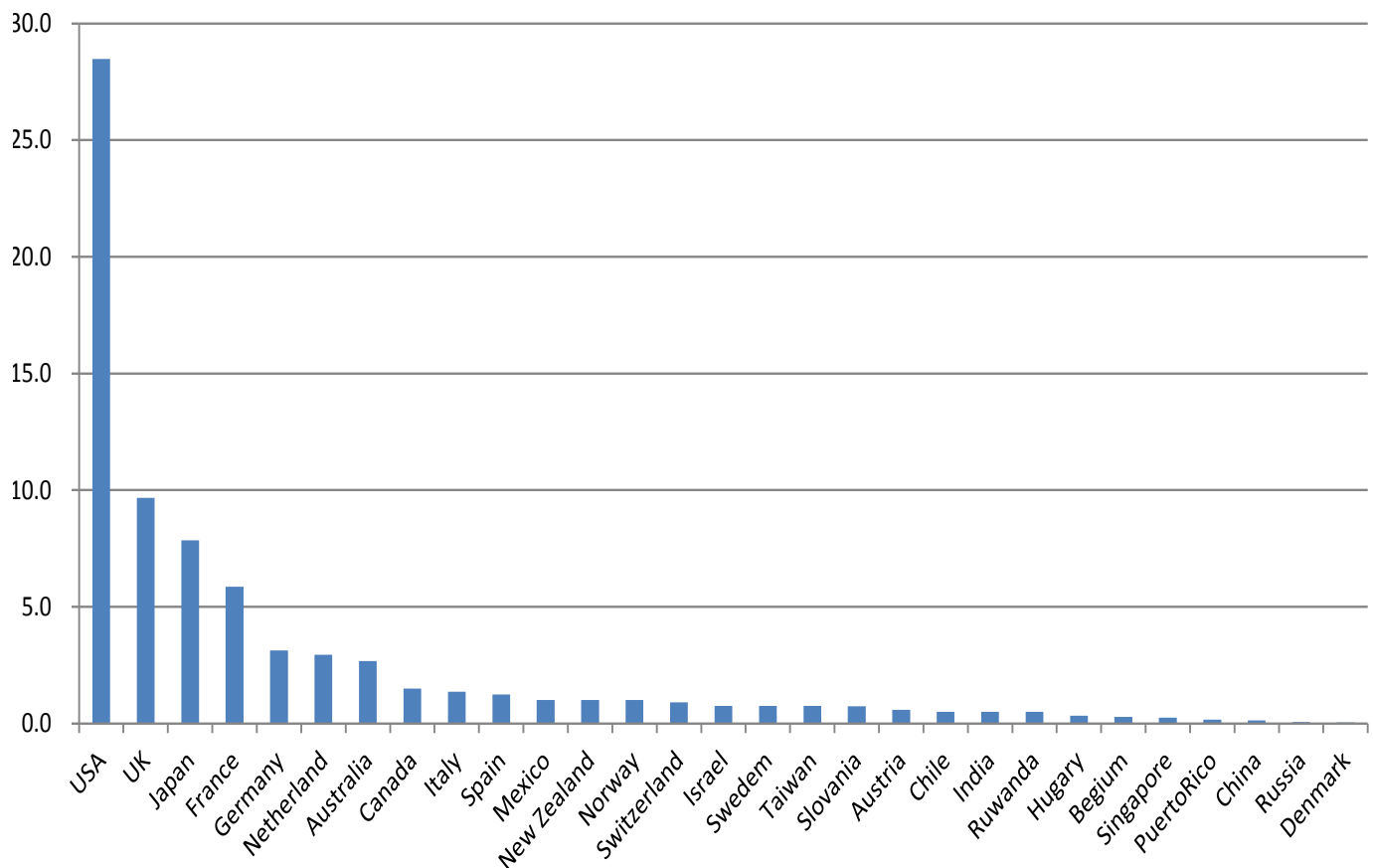


Figure 2 Number of Ig Nobel Prizes Won

Figure 3 shows the average level of contribution for each Ig-Nobel Prize in each time segment by each of the five major countries. For both Figure 2 and Figure 3, the formulas used to obtain the contribution levels are as described above. Figure 3 shows that the USA has the highest average contribution level in the first four time segments. Noteworthy, however, is that for the fifth time segment (2011-2015), the positions of Japan and the USA have reversed, putting Japan at the top.

<sup>5</sup>This conclusion, however, is conditional on the premise that the Scopus is managed the same way at any time period. Therefore, further study is needed.

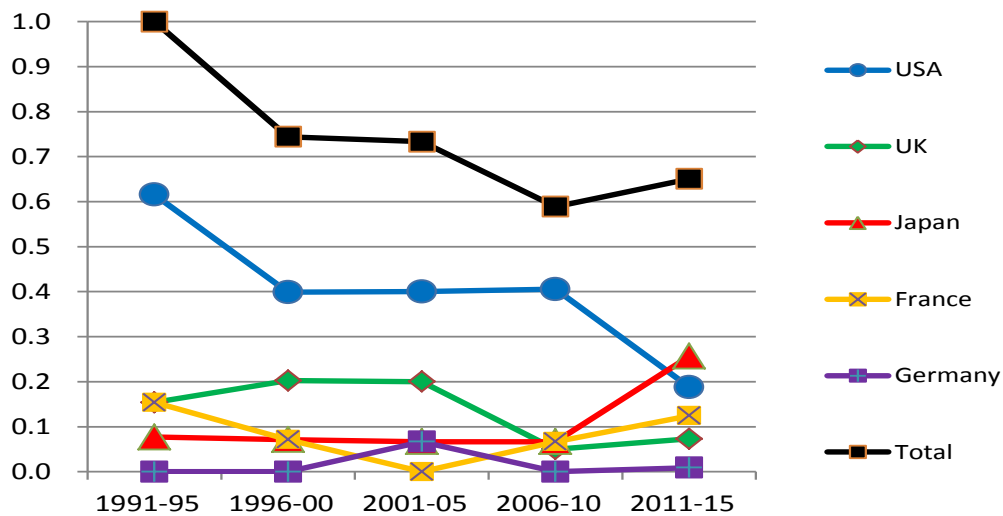


Figure 3 Average Contribution Level of Countries in Ig Nobel Prize

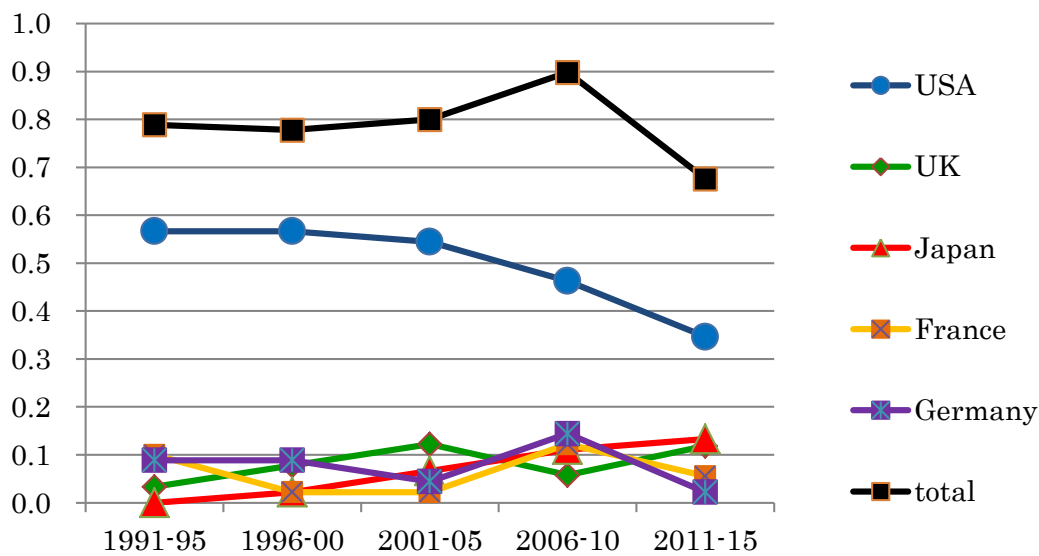


Figure 4 Average Contribution Level of Countries in Nobel Prize

Figure 4 shows the average contribution level for Nobel Prizes in the natural sciences. The same formulas are used to obtain the contribution levels as for the Ig-Nobel Prize. If one follows the time segments in Figure 3 and Figure 4, the features of the USA and Japan become relatively clear. For both prizes, while the average contribution levels of the USA are trending downward, those of Japan are trending upward. On the other hand, average contribution levels of Germany, UK, and France are volatile for both the Ig-Nobel Prize and the Nobel Prize.

Looking again at Figure 3, one can see that the “total” in the first time segment is 1.0, which means that the five major countries had a monopoly of winning the Ig-Nobel Prize in that time segment. But in the fifth time segment, the “total” has declined to around 0.65, which means that there is a greater diversity in countries winning the Ig-Nobel Prize.

### Average Number of Winners

When research covers multiple fields or requires different types of knowledge, the number of research collaborators naturally increases. The author, therefore, studied changes over the years in the number of winners. Figure 5 shows the average number of winners per one Ig-Nobel Prize in the field of natural sciences mentioned above (exclusion was made of the Ig-Nobel Prize in Literature in 1993 (Gusto Investigators, 1993), which was awarded for having numerous collaborators). Figure 5 also shows the average number of winners per one Nobel Prize.

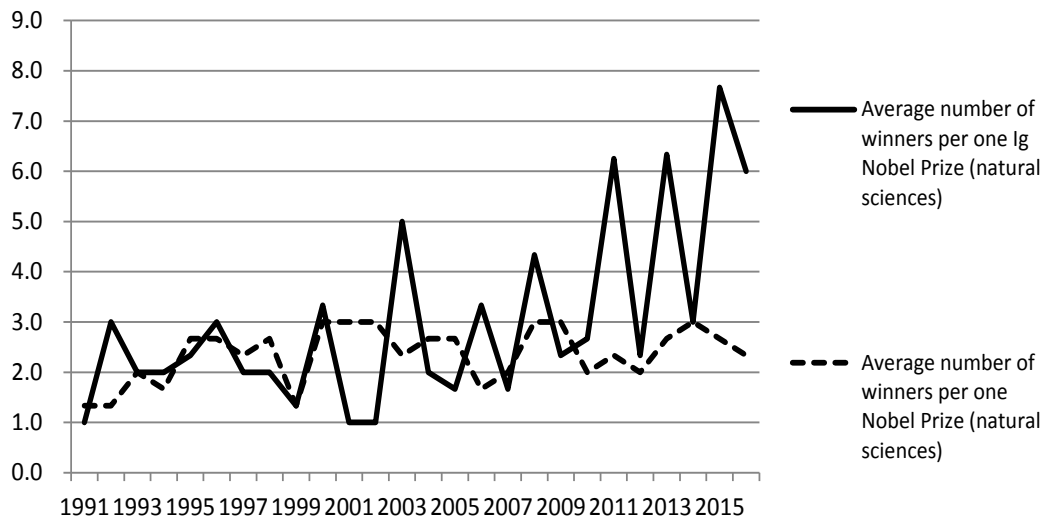


Figure 5 Average Number of Winners Per One Ig-Nobel Prize/Nobel Prize

From Figure 5, one can see that for the Ig-Nobel Prize, the average number of winners is trending upwards since the beginning of the 21<sup>st</sup> century. In particular, from 2009 onwards, the average number has tended to swing each year widely in the range between 2.5 and 7.5. In comparison, there is less variation in the average number of winners in the Nobel Prize, generally staying within the range between 1.3 and 3.0. It is, however, unclear whether there is a restriction on the number of winners during the Nobel Prize selection process.

## FEATURES OF THE RESEARCH CONTENTS

### *Ig-Nobel Prize Awarded to Japanese*

We make an overview of the Ig-Nobel Prizes awarded to Japanese in the last ten-odd years, limiting to prizes with Japanese contribution rate of 0.5 or over, as follows: Medical Education in 2018 (contribution rate 1.0; (Horiuchi & Nakayama, 2006)), Perception in 2016 (contribution rate 1.0; (Higashiyama & Adachi, 2006)), Physics in 2014 (contribution rate 1.0; (Mabuchi, Tanaka, Uchijima, & Sakai, 2012)), Medicine (contribution rate 0.86; (Uchiyama et al., 2012)) and Chemistry (contribution rate 0.93; (Imai et al., 2002)) in 2013, Acoustics in 2012 (contribution rate 1.0; (Kurihara & Tsukada, 2012)), Chemistry in 2011 (contribution rate 1.0; (Goto, Sakai, Mizoguchi, Tajima, & Imai, 2010)), Transportation Planning in 2010 (contribution rate 0.78; (Tero et al., 2010)), Cognitive Science Prize in 2008 (contribution rate 0.83; (Nakagaki, Yamada, & Tóth, 2000)), Chemistry in 2007 (contribution rate 1.0; (Yamamoto, Futamura, Fujioka, & Yamamoto, 2008)), Nutrition in 2005 (contribution rate 1.0), Peace in 2004 (contribution rate 1.0), Chemistry in 2003 (contribution rate 1.0), and Peace in 2002 (contribution rate 1.0). As shown above, there have been many Japanese winners from 2002 onwards.

### *Diversity of Research*

An overview of research awarded the Ig-Nobel Prize shows that such research contains elements that are normally not part of ordinary scientific research, such as drawing laughter, being outlandish, and entailing great risk. This feature has resulted in creating diversity in the Ig-Nobel Prizes. Some of the factors that bring about such diversity and their examples are as follows (Abrahams, 2002):

- There are allusions to genitals or excrement: The Ig-Nobel Prize in Statistics awarded to a thesis titled, “The Relationships Among Height, Penile Length, and Foot Size” (Siminoski & Bain, 1993).
- An idea is presented without carrying out an experiment to validate the effectiveness of the idea: A woman is strapped onto a circular table, and the table is then rotated at high speed for the use of centrifugal force to aid the woman in giving birth (Blonsky & Blonsky, 1965).
- Some prizes are awarded for the attributes of a group of authors: The prize awarded to a thesis with more than 900 co-authors (Gusto Investigators, 1993).

- Some prizes are awarded for a person's courage in conducting a risky experiment: The Ig-Nobel Prize in Medicine is awarded for an attempt to treat a victim of a venomous snake bite by electroshock, attaching automobile sparkplug wires to the patient's body (Dart & Gustafson, 1991).

- Some prizes are awarded for activities that may seem paradoxical or controversial in the minds of the Japanese public: The Ig-Nobel Prize in Peace awarded to Jacques Chirac, President of France, for commemorating the 50th anniversary of the dropping of atomic bomb on Hiroshima with atomic bomb tests in the Pacific in spite of worldwide opposition.

- Some prizes are awarded for causing significant social losses: An Ig-Nobel Prize in Economics is awarded for the "achievement" of a trader of financial futures, who instructed his computer to "buy" when he meant "sell" and subsequently attempted to recoup his losses by making increasingly unprofitable trades that ultimately lost 0.5% of Chile's gross national product.

- Some prizes are awarded for the sheer volume of theses published: The Ig-Nobel Prize in Literature is awarded to a scientist from the Institute of Organoelemental Compounds in Moscow, for publishing more than 900 scientific papers (on crystallography, etc.) in ten years.

An overview of the above examples and reasons for the award of the Ig-Nobel Prize shows that some of the prizes are awarded for features that normally are completely unrelated to science or for features that normally would not be considered fit to be given an award. Even though not all of the achievements awarded the Ig-Nobel Prize correspond to either of these types, it appears that such features may lead to a misunderstanding about the value of the research achievement. But on the other hand, it can also be said that such features give greater diversity to the research awarded the Ig-Nobel Prize.

## DISCUSSION AND CONCLUSION

The first point is the conceptualization of research for the Ig-Nobel Prize. An overview of the Ig-Nobel Prizes awarded to Japanese scientists reveals a number of features, as follows: (1) The results of the research are easy to understand for many people; (2) there are elements of science and technology in the contents or methodology of the research; (3) the research focuses more on the element of surprise in conceptualization than on humor itself; and (4) there is little that may cause misunderstanding in people. For (2) and (3), in particular, the research results are often highly specialized and, at the same time, the conceptualization has an element of surprise for the experts themselves. As an element of surprise is one factor that causes people to laugh, it can be said that scientists of such research are carrying out research and development in accordance with the standards of the Ig-Nobel Prize (Kitagaki, 2003).

The second point is the Joy Nobel Prize. As already mentioned, the Ig-Nobel Prize is awarded based on the official criterion of "Research that makes people LAUGH and then THINK." If so, we can, in a play on words, create the Joy Nobel Prize, as the third Nobel Prize, that is awarded to an achievement that "makes people HAPPY and then THINK." Research that has practical benefits for human society mainly in the fields of engineering, agriculture, forestry, and fisheries would be eligible.

The key is that the research must have different types of benefits from those covered either by the Nobel or Ig-Nobel Prize. The Joy Nobel Prize may have positive repercussions on the promotion of education and research and development of international business. It may, moreover, provide an incentive for scientists to set global standards that originate in Japan, at a time when Japan is having to grapple with global standards that originate in other countries. Many of today's finished engineered products, however, are a combination of different ideas. If we think of a product as a systematic accumulation of different technologies, it will not be easy to decide who should be included as winners of the Joy Nobel Prize.

The third point is the Ig-Nobel Prizes effect on nurturing scientists. In the age of innovation, different ideas and sets of values are combined to complete a product as a systematic whole. In terms of research, the Nobel Prize has value with respect to building the foundation of science, the Ig-Nobel Prize has value as a parody, and the Joy Nobel Prize conceptually has value with respect to utility. As there have been many Japanese winners of the Ig-Nobel Prize, it can be said that Japanese scientists have excelled in this field. It is hoped that young Japanese scientists can shine in different science and technology fields.

Lastly, science has been respected as something that enhances human knowledge. As a conclusion, the results of this study on Ig-Nobel Prize showed that there is potential for Japan, through its scientific research, to significantly contribute to the emotional aspects of humans through a laugh. It can be hoped for Japan and the USA to play the central

role in creating a new “world of laugh” through collaboration in scientific research participated by many countries.

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