1st Seizon (Human Existence) and Life Sciences Dialogue Conference
Takemi Kinen Seizon Kagaku Kenkyū Kikin (Takemi Memorial Seizon & Life Science Research Fund), public interest trust
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Dr. Taro Takemi and Seizon & Life Sciences
—From Dr. Takemi's Teachings and the Record of His Lectures—

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Lecture titled "Record of Dr. Taro Takemi's Teachings," delivered by Hideaki Koizumi at the 1st Seizon (Human Existence) and Life Sciences Dialogue Conference, which took place at the International House of Japan on August 10, 2017

Method to Summarize This Report

The report prepared for this dialogue conference is a summary of Dr. Taro Takemi's one-on-one teachings and guidance based on the notes I took when he taught me.

Provided, however, that for many of the descriptions of such teachings, similar expressions and terms are used to those in the remaining verified records of the various lectures delivered by Dr. Taro Takemi. Two original charts drawn by Dr. Takemi (the "Metabolic System of Life Sphere" and the "Reflection of an Envisioned Future") have been used with partial modification.

In this report, I refrain from expressing my own thoughts as much as possible. Such should be separately summarized in other academic papers to receive constructive criticism and opinions.

Among the reports and theses that I published after Dr. Taro Takemi passed away, only those directly linked to his guidance provided when he was alive are listed at the end of this report as "References."

Many of Dr. Taro Takemi's concepts have a three-dimensional or multidimensional structure of parameter space. In contrast, a talk or a description using language is single-dimensional. In this report, to express multidimensional concepts, I tried to create new charts to transcend dimension as much as possible. When Dr. Takemi was a member of RIKEN, the theory of general relativity and quantum mechanics of the matrix form flourished, which might have influenced his concepts significantly.

Quotations and References

1. Private Communication between Dr. Taro Takemi and Hideaki Koizumi (1982–1983)
2. Record of the 1st Seizon and Life Sciences workshop (April 24, 1982)
3. Record of the 8th Seizon and Life Sciences workshop (February 5, 1983)
4. Record of the 13th Seizon and Life Sciences workshop (October 1, 1983)
5. Record of a special lecture, “Seizon and Life Sciences and the Future of Human Beings,” at the 31st regular general conference of the Forum on Energy (June 2, 1982)
6. Follow-up Committee Regarding the Development and Distribution of Medical Resources, World Medical Association, Tokyo (1977, 1979, 1981)
7. Taro Takemi, “Socialized Medicine in Japan,” Japan Medical Association (1982)

＜Dr. Taro Takemi passed away at age 79 on December 20, 1983＞

8. Edited by the Taro Takemi Memorial Papers Editorial Committee of the Takemi Memorial Seizon & Life Science Research Fund: “*Takemi Taro no hitoto gakumon* (Taro Takemi Himself and Sciences),” Maruzen (1989)
9. “*Seizon kagakueno michi* (Road to Seizon and Life Sciences),” Editorial Committee of the Institute for Seizon and Life Sciences: “*Seizon kagakueno michi* (Road to Seizon and Life Sciences),” Nakayama Shoten (1984)
10. “The 1st Takemi Symposium on International Health” at Harvard University (1984)

Wartime Monthly Meeting That Dr. Taro Takemi Attended as an Observer

(Origin of a Seizon and Life Sciences workshop)

Participants

Kitarō Nishida, Tetsuro Watsuji, Daisetsu Suzuki and Shigeo Iwanami

Dr. Kitarō Nishida (Dr. Taro Takemi's patient) foresaw that there was no possibility of winning at the start of World War II, triggered by Japan's Pearl Harbor attack, and he therefore researched and configured postwar measures.
Although Dr. Nishida was fiercely attacked by the military of Japan, in order for his opinions to be heard by the upper administration at the time because Shigeo Iwanami sponsored monthly meetings where Dr. Takemi attended as an observer.

Dr. Nishida often said, "I have run out of ideas. I am lost. Let's end today's discussion."

Dr. Takemi's take on Nishida's philosophy → Always moving forward with flexible thinking

"Human existence is never limited to the domain of natural scientists alone but closely involves both the cultural and natural sciences." Moreover, "foresight" is extremely important. Human society needs more fundamental prediction than simple statistics-based prediction.

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Diverse Bases for Prediction and the Difficulty of Prediction

Dr. Kitarō Nishida

Prediction based on Nishida's philosophy

Dr. Yoshio Nishina

Standpoint as a physicist

Count Nobuaki Makino

Long-term prediction of the occurrence of specific catastrophic events based on careful analysis of the fundamentals of the concepts and activities of historic individuals and the observation of social trends.

Prime Minister Shigeru Yoshida

Prediction as a politician

In terms of a law of universe-"cause and effect," causes made a long time ago and causes made recently, both intertwined with various other factors, result in a certain consequence, which, I keenly felt, makes prediction highly challenging.

(The persons indicated above were also patients of Dr. Taro Takemi, who was a physician.)

Budding of the Concept of Seizon and Life Sciences

Dr. Taro Takemi recognized the importance of the life sciences.

"Physics ultimately needs to address issues of human life."

(Dr. Niels Bohr's remark quoted by Dr. Yoshio Nishina around 1955)

Although the term *life science* did not exist in 1955, Dr. Bohr's remark appears to refer to the concept of this term. Together with some friends, we organized a life science research circle in which physicists Satoshi Watanabe and Yoshio Fujioka, medical doctor Waro Nakahara and agricultural chemist Fumito Inukai (an academic group of scientists in the natural sciences) participated.

Life science research began at a subcommittee of the Japan Medical Association through eight symposiums that were held with the basic theories of the life sciences as their themes. The final symposium (8th) was titled "Life Sciences and Freedom."

In 1972, the world's first academic conference was held in the field of life sciences, where Dr. Taro Takemi was the only Japanese participant. (Sponsored by "Jerne, President of Roche"*; Venue: Basel, Switzerland; Participants included Margaret Mead, the 20th century's representative cultural anthropologist; in 1973, Dr. Takemi held a conference in Japan, sponsored by La Roche.)

Followed by the compilation of *Seizon no riho* ("Theory and principle of human existence")

*Explained on the next page

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Supplementary Explanation about Dr. Jerne

The record of Dr. Taro Takemi's lectures includes descriptions such as the aforementioned "Jerne, President of Roche" and a "very important person called Jerne of Roche," which shows up later in this report. However, because these are confusing descriptions, I need to provide a supplementary explanation. Dr. Taro Takemi loved and respected Dr. Jerne.

Dr. Niels Kaj Jerne (1911–1994), immunologist, was invited as Director in 1968 to The Basel Institute for Immunology, which was newly established by Hoffmann-La Roche Co. (He was not the President of Hoffmann-La Roche Co. in 1972, although the record of Dr. Takemi's lectures states so.)

Dr. Jerne received a Nobel Prize in Physiology or Medicine in 1984, a year after the demise of Dr. Taro Takemi (1983).

Also, on the recommendation of Dr. Renato Dulbecco (1914–2012), who was an Advisor at the Institute and a recipient of the Nobel Prize in Physiology or Medicine in 1975, Dr. Susumu Tonegawa moved to The Basel Institute for Immunology in 1971 and received a Nobel Prize in Physiology or Medicine in 1986. Dr. Taro Takemi's new concepts about life sciences seem to have been formed during this period.

The name of Dr. Jerne is difficult to read in Japanese. Dr. Susumu Tonegawa pronounced it "Yane." However, the name is spelled in various ways such as as "Yerne," "Yerune" and "Yaanu" in Japanese publications.

Seizon no riho and *Seizon Chitsujo* ("Order of Human Existence")

Seizon no Riho ("Theory and principle of human existence")

The combination of two types of *Seizon no Riho,* one based on genetic factors and the other resulting from one's own culture, leads to the birth of significant characteristics.

Although the human body is the grouping of all phases of matter, there is a limit to analysis by disassembling the elements. When it comes to each unit, one unit never differs completely from the other units.

> Example: Although part of the membrane of red blood cells (RBCs), or erythrocytes, contains a tiny amount of metal, if such is extracted from inside to outside the membrane, such metal elements perform a completely different function.

In today's world, knowledge about the life sciences is somewhat confusing and needs to be better organized. To configure the stages of organizing the life sciences, the Seizon and Life Sciences workshop was created.

Seizon Chitsujo ("Order of human existence")

Other than human beings, few animals have utilized the matter in nature as health and cultural resources and for their medicine.

> Example: Long-term plan and dexterous utilization of mountains and slopes in agricultural technologies

Background of *Seizon no Riho*

Aim of the proposal

I (Dr. Taro Takemi) proposed *Seizon no Riho* ("Theory and principle of human existence") as the basis of "Seizon and Life Sciences" as an attempt to set a possible direction for modern civilization.

Reason for the proposal

If a scientific revolution occurs that further involves a revolution of biology, a new sense of ethics would need to be formulated.

The mechanical explanation of classic Darwinism to the effect that "completely accidental mutations are followed by natural selection" has become insufficient for today's world, resulting in the creation of a modern theory of evolution that includes molecular evolution. It has become necessary to fully consider that the condition of the natural environment itself indirectly sets the direction of biological evolution. This aspect has become increasingly crucial in the social evolution of human culture.

An important question in *Seizon no Riho* might be "what is the decisive factor that characterizes the stage of formation of human beings, which is the final stage of the continuing evolution from matter and life to mind and mentality?" This difficult question, however, has not been clarified. Related to this issue, progress in cerebrophysiology casts a huge impact on this issue.

From *Seizon no Riho* to "Seizon and Life Sciences"

What conditions will ultimately create humane and compassionate human beings?

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The existence of humans who have freedom and self-responsibility is essential.

↓

Seizon and Life Sciences

To make this scheme a science, "Seizon and Life Sciences" was created, originating in *Seizon no Riho.*

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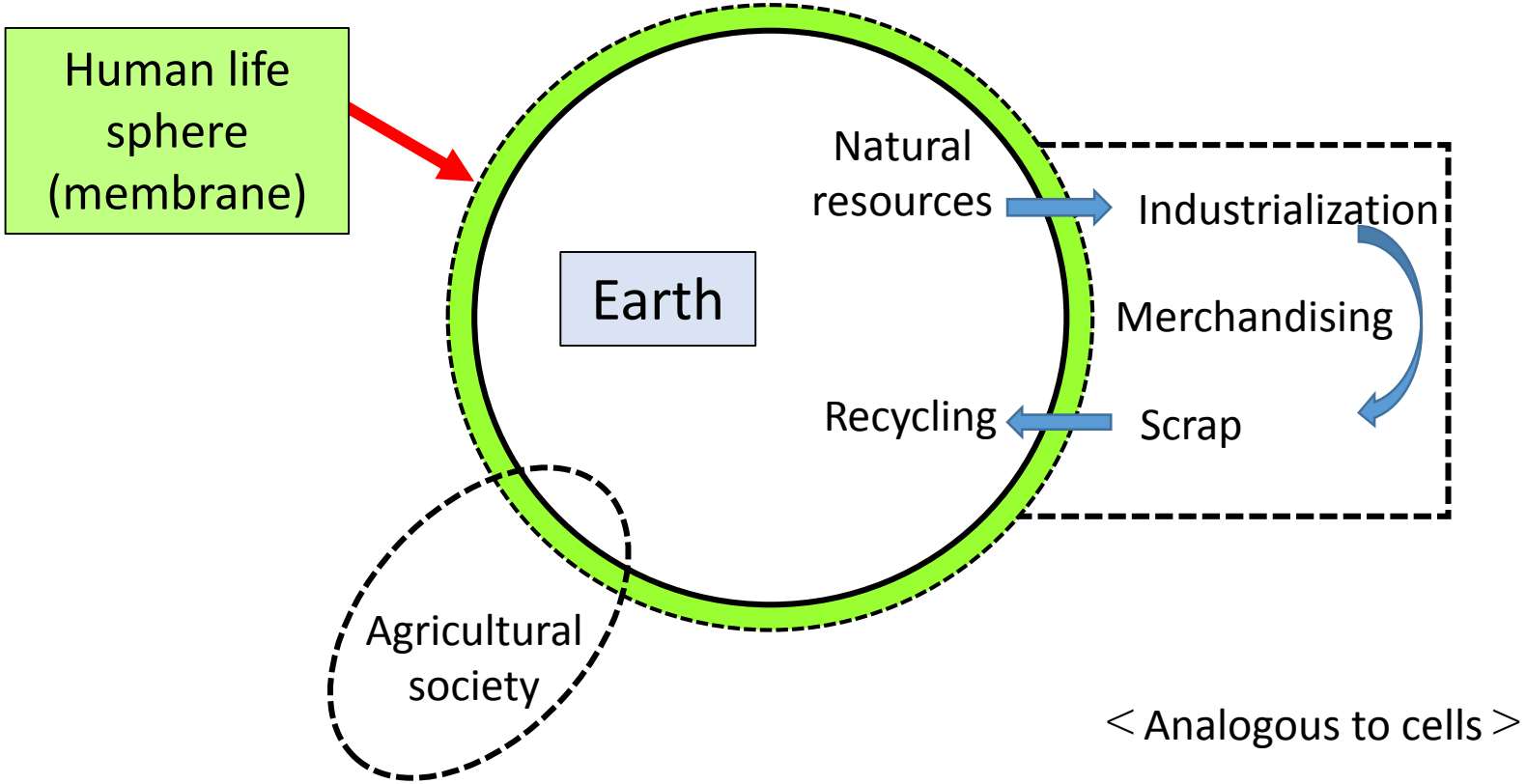
Metabolic System of Life Sphere



The original chart (English) made by Dr. Taro Takemi has been amended.*

*Takemi, T.: Human Survival: The Environment and Medical Care, *The Korea-Japan Medical Economics Symposium*, JMA House, Tokyo (1976)

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Science of Human Existence

Presentation of an issue

Humans are changing each moment.
(Teaching of the current theory of evolution)

We can't replicate a society and create an identical society.
(Cannot create an experimental society twice)

The methodologies of the modern sciences alone eventually hit a wall and are insufficient for handling this issue.
＜Need for the reasoning and analogies used in *Inmyo* (*hetu-vidyaa*) theory (Buddhist logic)＞

Until the development of cerebrophysiology, which occurred much later, Western ideologies, which are scientific, did not include the concept of *Shinshin ichinyo* ("body and mind as one") (especially in the medical field).

Development of a new methodology is essential.

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Need for a New Theory of Human Beings

A way of thinking to understand human beings from a cerebrophysiologic perspective once gained popularity.

Today (in 1983), the theory of human beings from the aspect of genetic engineering has developed significantly.

The integration of macro and micro *seizon* is essential to the progress of the theory of human beings.

For this “integration,” no methodologies have been developed yet.
(Need of “Seizon and Life Sciences”)

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Establishment of the Seizon and Life Sciences Workshop by Dr. Taro Takemi

Process

1st Seizon and Life Sciences Workshop (April 24, 1982)

The preparation phase (foundation making) by various medical associations and committees (e.g., the Medico-Economics and Social Insurance Research Committee) has reached maturity, and “Seizon and Life Sciences” is ready to start as a comprehensive science.

Meaning of “Seizon and Life Sciences”

Human body:
morphological structure + physiological order and functions

Human society:
administration and laws + economic order and functions

(Comprehensive perspective of individuals and the whole)

Ningen-no Seizon (“Human Existence”)

Morphological structure of a human body ⟷ Physiological functions of a human body

Extend to social perspectives

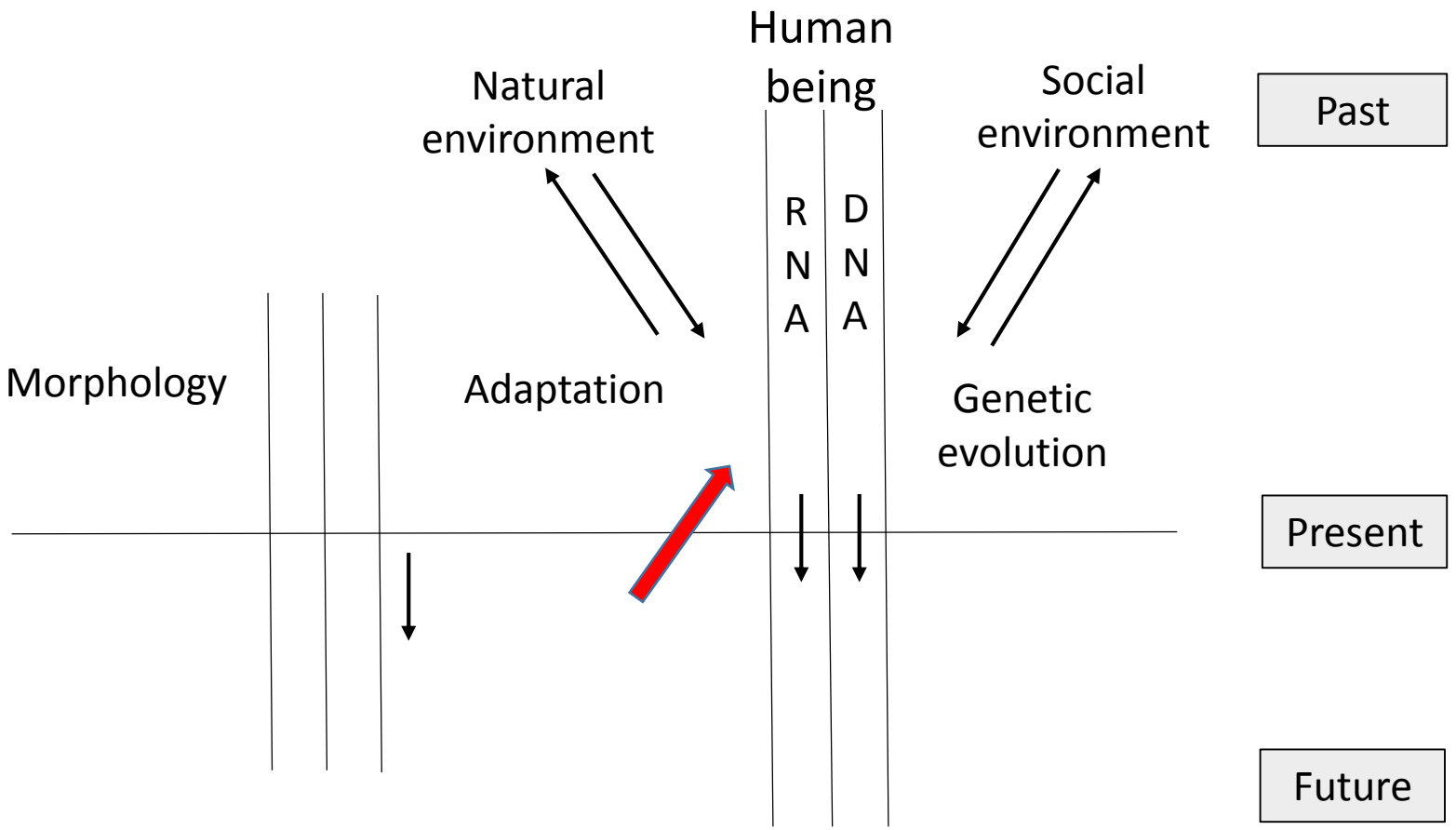
Law and order　　Economic functions

↓

Three approaches

1. Analyze human existence from the aspect of society.
2. Conduct deeper analyses of the common elements of existing specific sciences.
3. Set future goals and introduce science at the core, while continually reviewing the goals.

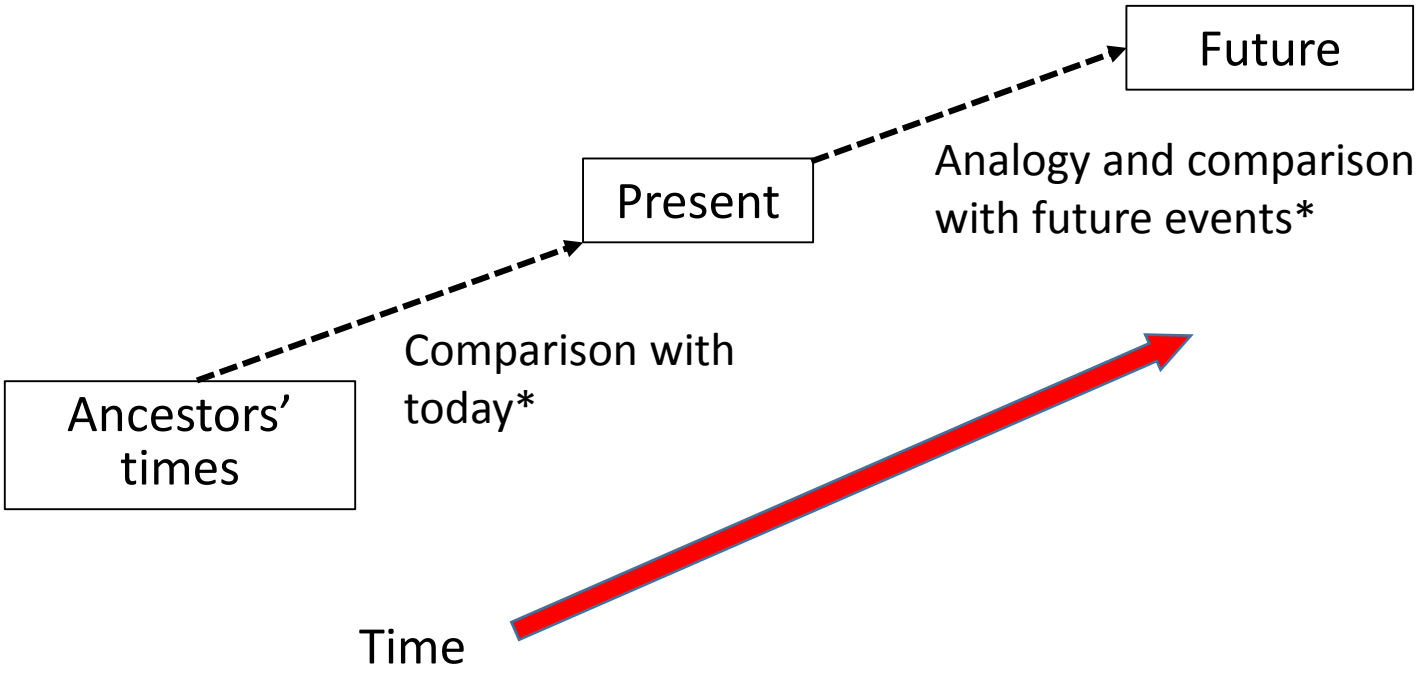
Reflection of an Envisioned Future



Dr. Taro Takemi's chart (English) has been amended.*

*Takemi, T.: Human Survival: The Environment and Medical Care, *The Korea-Japan Medical Economics Symposium*, JMA House, Tokyo (1976)

Comparative Thinking



*Dr. Taro Takemi called the "comparison with events that occur later *Kohi.*"

Kohi is a concept in ancient Indian logic called *Inmyo,* which also influenced Buddhism.

Two Kinds of a Future

Natural future ⟷ Planned future

In addition, various futures could exist, including a “biological future.”

Approach that sets a goal in the future

Amid rapid and radical changes of everything in line with the progress of scientific technologies and technological innovations, the perspective of *Ningen-no Seizon* (“human existence”) can provide room for review.
Also, this perspective helps combine and evaluate various concepts and clarify issues looking to the future.

Based on such thoughts, we can realistically understand that many factors play significant roles in *Ningen-no Seizon* or human existence educationally and culturally.

Planned Future

Today (in 1983), the current reality is ongoing insignificant activities in peripheral technologies that fail to analyze human beings deeply from a medical perspective.

Deeply analyze human beings from many perspectives.
Consider human beings in an integrated way of thinking that sets goals in the future.
Aren't these natural ways of thinking from the perspective of "Seizon and Life Sciences"?

Taking such realistic matters into account, we shouldn't deviate from systematic thinking.

It is not good enough to continue living within the confines of past order. Without a vision of planned futures, our efforts concerning *Ningen-no Seizon* might not be successful.

Eastern Logic and Western Logic

Eastern logic

Inmyo (*hetu-vidyaa*) theory: Logic that originated in ancient India and is centered on comparison-based reasoning. This type of logic is a founding concept of Indian civilization as indicated in *Kyogo*.
Although this logic traveled to China, Chinese medicine did not include inductive reasoning as a significant characteristic. Rather, it is based on the accumulation of experiences. Such logic does not apply inductive reasoning toward systematization but does create various inferences.

Western logic

Centered on inductive reasoning and deductive reasoning. The development of modern science was based on the recognition of an inductive method and its application to empirical facts. However, it is doubtful that medical science could have been established by inductive methods alone. In addition to logic in the inductive and deductive methods, analogy and reasoning are required.

A methodology for Seizon and Life Sciences requires the simultaneous utilization of inductive and deductive methods, which also need to be integrated with the science of inference.

Uniqueness of a Human Body

Seizon no Riho (“Theory and principle of human existence”)
and *Seizon Chitsujo* (“Order of human existence”)

Issues that need to be positioned as the basis for considering this proposition

Genetic predispositions

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Cultural elements

Birth of the Concept of “Stability in Instability”

I (Taro Takemi) would like to use the term *stability in instability.*
Although this concept has a slightly different nuance from the issue of the stability/instability of inorganic substances, an important part of the stability or instability of human beings as a biological body is, I believe, “stability in instability.”

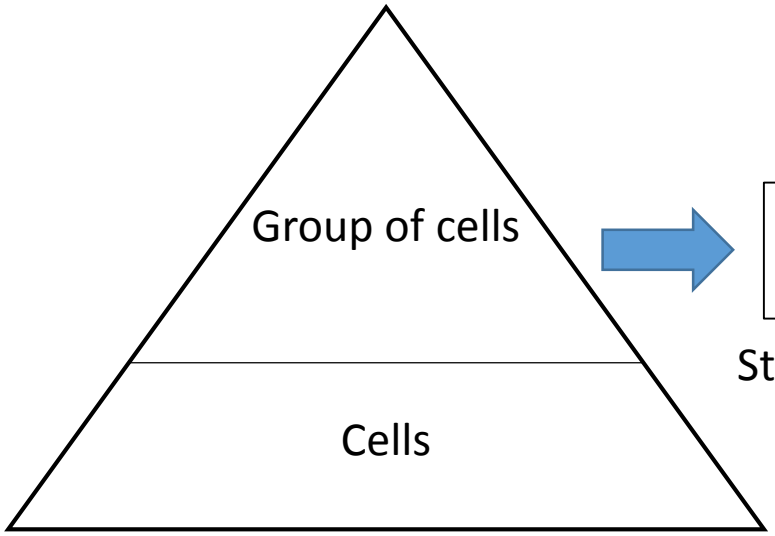
“Stability in instability” is an important characteristic of organisms, especially human bodies.
(Biology, which does not have this concept, cannot handle the life sciences.)

Example: Genes remain stable by breaking off and connecting with each other at various points.

Even though the external look is unstable, because the system as a whole ultimately lead to maintaining life, a certain kind of stability exists (in the system).

Stability in Instability

An individual body as a group of cells (uniqueness of a human body)



Comprehensive functions

Stability in Instability

Human dignity

Freedom of human beings

Today's healthcare system and trends do not correspond with the uniqueness of the human body.

Stability in Instability
(Supplementary explanation)

The terms *stable* and *unstable* ordinarily refer to a static condition, and the concept of dynamic stability/instability has not developed fully, which is problematic.

Roche initiated the world's first symposium of life science in 1972. Asked at that time if I wanted to hold the next meeting in Japan, I discussed that with Seiji Kaya. At the Japan Medical Association in 1973, the 2nd symposium of life sciences was held with 5 or 6 persons. I heard someone say he couldn't handle the life sciences because he didn't know what the life science is. Later, an important person called Jerne of Roche* said that the content of the symposium was really good despite the small scale. I was happy.

*Dr. Jerne was mentioned earlier in this report along with a supplementary explanation.

Concerning the life sciences in the modern era (as of December 1, 1983), we need to work to create new concepts. Otherwise, even if the life sciences have developed to a certain stage, we wouldn't be able to determine which direction to go. Part of the life sciences enter the field of "Seizon and Life Sciences."

Prime Minister Nakasone is going to invest a huge amount of money to conduct international research. Although I am happy about his initiative, to make this successful, someone significant must be coordinating the effort in the background. Although pharmaceutical companies operate in a competitive market and belong to the field of marketing, conventional thinking that regards academic research as a separate thing no longer works.

Dynamic Instability

Issue of chemical instability

Issue of instability including a broad sense of biological environmental elements

Issues of instability created by the person himself/herself
(Unstable elements created on his/her own seem not to be addressed sufficiently.)

Concerning instability, the larger the number of cells and the more complex the mechanism, like human beings', the bigger the instability, and, conversely, the bigger the stability as well. (A link to evolution becomes visible though it is not direct.)

At the center of stability exists *Seizon.* It is the correct order to think of stability and instability emerging from *Seizon* at the center.

The Other Kind of Instability

To consider stability and instability, the concept of time, which means aging, and the concept of "time of nature," which is unrelated to aging, need to be considered separately.

"International Health" based on the consideration of self-defense mechanisms

Macro self-defense functions

Micro self-defense functions

Segmentation by race and region

Concept of a “Family”
= Smallest Unit of *Ningen-no Seizon* (Human Existence)

Concept of a family nurtured under the feudal system

Reestablish the concept of a “family” as the smallest unit of human existence from the perspective of adaptability including biological and medical approaches

Need a new concept of a “family” that fits the modern era

(Need to pay attention to the tendency of Japanese culture in which even under democracy Japanese families have yet to be true “nuclear families.”)

Issue of Population

In many fields, the issue of population is handled as an issue of economics rather than as a biological issue.
This issue was once discussed in the field of ecology as well. None of the initiatives to change population-related policy have succeeded.

It will be interesting if we can develop a theory of population that combines economic and natural sciences perspectives to tackle the issue of population.

Today's issue (in 1982) of the total fertility rate being 1.7 cannot be explained easily. Does a population decrease as productivity improves? In which phase does the population decrease? The perspectives of both economics and the natural sciences are necessary to tackle these issues. Although some fields experience the phenomena of natural selection as the number of members of the same family increase, today's issue involves more than that.

As a nation becomes an economic giant, the traditional division of gender roles creates psychiatric and biological issues. The issue of population will be an early theme for joint economics and biological research.

Development and Distribution of Medical Resources

As the President of the World Medical Association and President of the Japan Medical Association, I started with *Seizon no Riho* to consider healthcare issues.
To discuss the framework of future healthcare on a global scale based on a basic vision that can be called the predecessor of “Seizon and Life Sciences,” a special committee was established at the World Medical Association with the theme “Development and Distribution of Medical Resources."

What I felt most keenly was the necessity for a methodology.

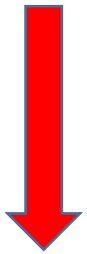
The development of modern sciences was based on the recognition of inductive reasoning and its application to empirical facts. However, it is doubtful that medical science could have been established by inductive methods only.

It is important to add analogy and conjuncture on top of inductive methods.

Inherent Roles of the Health Insurance System

The current health insurance system helps patients only in terms of the monetary value and has nothing to do with the uniqueness of human beings, which needs to be recognized.

Humans have a significant self-defense capability against future health events.



Although the system played a certain role in the past and in the current treatment of illness, such contribution is trivial compared to the importance of its roles in the future.

Inherent roles

- Development of self-management of health
- Development of the human body's self-defense capability
- Equalize the above capabilities as a goal of human beings overall

Although the health insurance system works closely with the healthcare system and the economic system, there is no inherent relationship between them. The framework needs to be largely changed to address environmental changes.

Medical Science and the Healthcare of an Aging Society

Issues of healthcare for the elderly are a focal consideration
for healthcare in the near future.

Today (in 1982), discussion on healthcare for the elderly is focused on elderly care from the aspect of illness. The degree of healthiness or the age-related particular characteristics of the elderly have not been considered as a central theme. It is important to address an aging society based on the healthy elderly, which should become the mainstream.

Twenty-five years from now (in 2007), it will be necessary for everyone up to age 70 to stay productive mentally and physically. At the same time, the birth rate will become a serious problem. This is a high-profile administrative issue.

If society's ethics continue to allow easy access to abortions, that might link to the risk of the emergence of a way of thinking that the elderly who are no longer productive might be allowed to die. We need to think carefully about human ethics.

Importance of "To Age Soundly"

Age Soundly

For many years, as President of the Medical Association,*
I have been advocating “To Age Soundly.”

*Period of service as President of the Medical Association:
1957–1982 (13 consecutive terms: 25 years)

No medical test has been conducted to check if seniors are aging soundly.

How people are aging overall needs to be tested, taking into account individual characteristics and general tendencies.

The above is really difficult because current medical science
(in 1982) focuses on treating and curing illness.

The first signs of aging include a decline of the immune system and physical adaptation ability and increased fatigue. Psychological signs include a decline in the senses, perception, memory and the ability to retain discourse content.

The natural decline in general health due to aging
and issues of “local disruption” need to be handled separately.
(The recently enacted “Act on Health Insurance for the Elderly” is rudimentary.)

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Ideal Healthcare System

Basic issues

Neither today's healthcare system nor the current trends of medical science represent an ideal system to address the uniqueness of human bodies.

Direction to aim at

Redistribution of income → Redistribution of health

Although health insurance varies depending on the country, its major purpose is the redistribution of income.

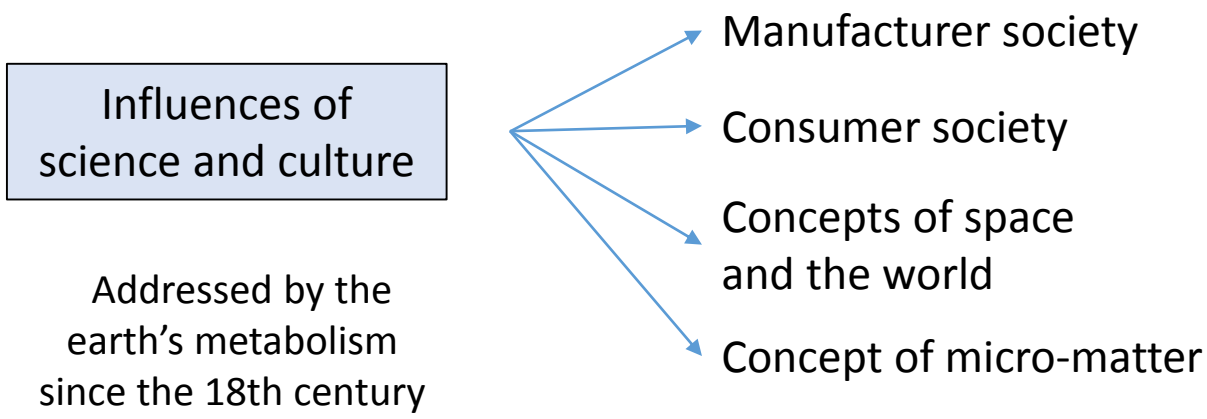
The "redistribution of health" is to equalize and develop people's self-defense capabilities.

Address a Near Future

At the stage of the average life expectancy being 80 years, it is convenient and appropriate to think of the near future as a 25-year cycle (a quarter of a century).

Reverence for life should not change inherently. Changes in the forms of expressions of life are summarized in the forms of *Seizon*.

The environment, genes and adaptation are extremely important factors of *Seizon*. We need to address our various creations including our culture.



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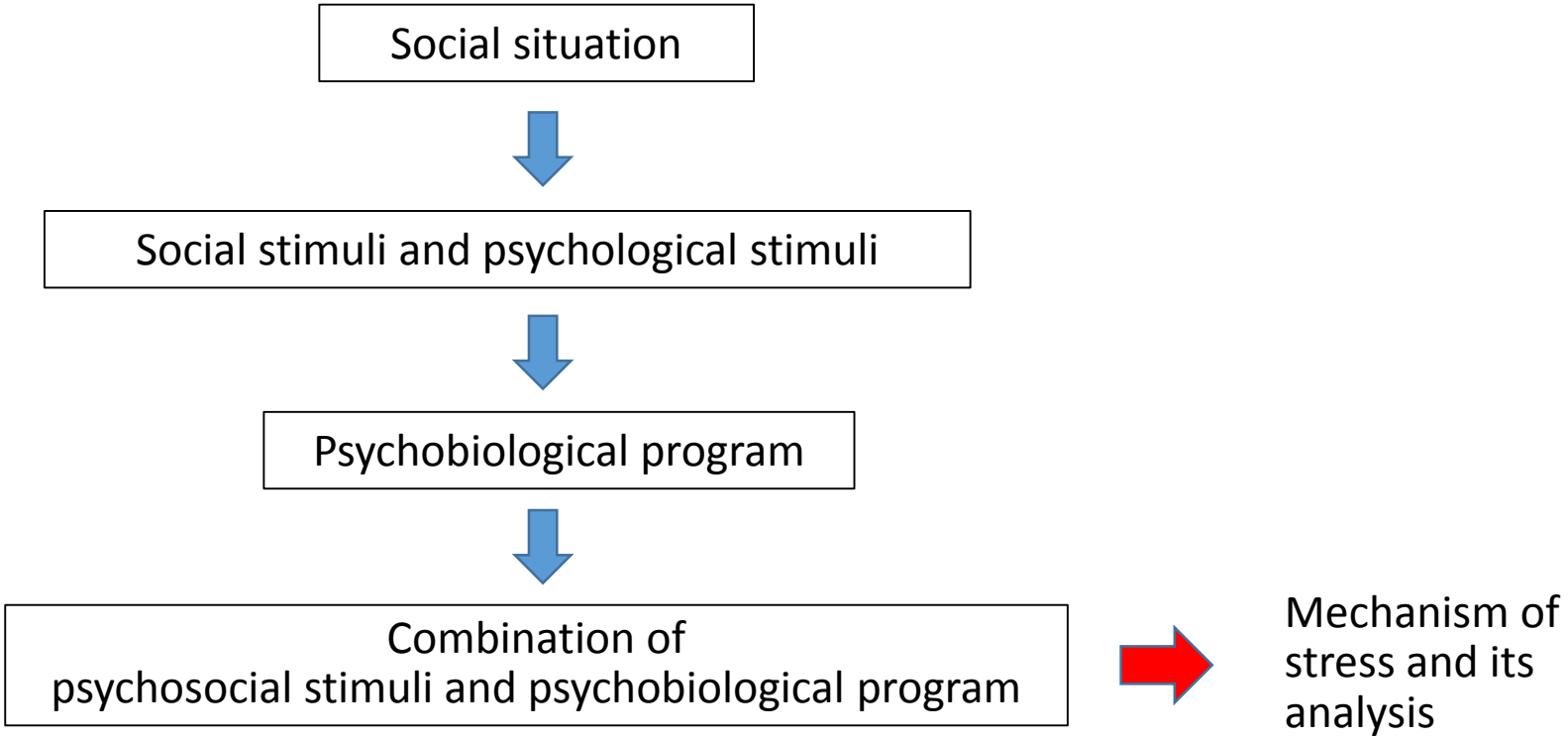
Stress and Mental Health

It is interesting to try to organize the simplest concept of “I am living,” which becomes the source of stimuli and stress.
When we think about issues to address continuing to live, that causes mental stress.

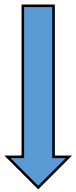


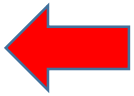
“Mental health” was discussed intensely among the doctors at the Japan Medical Association. A summary of the discussion has turned out to be one section of “Seizon and Life Sciences.”

Adaptation to an Information Society

Information about life

Information technology in an information society





How will humanity and individuality be handled in an information society and incorporated into the system?

Various things change to information-based, resulting in an information society

If the basis for information evaluation is lost, total chaos occurs.

At the same time, it is important to evaluate information

One pillar of "*Seizon* and Life Sciences"

Life Science and Freedom

Ontogenesis repeating phylogenesis and the issue of humans' freedom are completely separate (in general).

The languages of and learning by human beings are largely different from other animals' in method and quality.

The freedom of human beings has been expanding to a tremendous degree and quickly. Extreme superiority in the degree and speed of expansion to that of other animals is a significant characteristic of humans. Human freedom is always expanding. A natural way of thinking from the aspect of biology is that freedom started from the state of embryos of human beings.

Humans living in various places on the earth have made their life possible, leveraging the "stability in instability." If any fixed part ever exists, the fixed condition of such part eventually disappears.

Instability is not even close to destruction. But that is not something fixed. By integrating unstable elements, a human body is formed. At the formation of a human body, a state of "stability in instability" is attained for the first time.

Letter of Appreciation to the Guests at His Own Funeral by Dr. Taro Takemi Himself

My farewell address

1. We need to think about the relationship between Japan's Royal Family and Japanese citizens. Families need to ensure they respect our Royal Family.
2. Although my achievements have yet to reach a conclusion, the results are sure to arrive on a global scale.
3. My success was not only the result of my efforts but also thanks to the understanding and support of Hideko and other members of my family, as well as other people who provided cooperation. I would like to express my sincere gratitude to all of you.

Thank you so much for coming to my funeral today.
Taro Takemi

Appendix

Teachings Not Found in the Record of Lectures by Dr. Taro Takemi in His Later Years

1. An important issue that I would like to consider related to "*Seizon* and Life Sciences" is education. (This is the last sentence in my notebook recording Dr. Takemi's teachings.)
2. Outlook of neuroscience and the relationship between "form" and "function"
3. Other various items

Remaining issues after his demise

My Own Research after the Demise of Dr. Taro Takemi

1. Concerning Dr. Taro Takemi's Thoughts 2/2

(Mainly regarding the "Seizon and Life Sciences" periodical)

1-11. Koizumi, H.: "New Science of Humanity Preface," Bridging and Fusion of Theories of Matter and Information, *Seizon and Life Sciences*, 16B, 13–29 (2006)

1-12. Koizumi, H.: Brain, Mind and Education, *Ningen Sougou Kagakkaishi,* 3(2), 152–152 (2007)

1-13. Koizumi, H.: Concept of "Brain-Science & Ethics," *Seizon and Life Sciences*, 17B, 13–32 (2007)

1-14. Koizumi, H.: Art, Education, Brain, *Seizon and Life Sciences*, 18B, 71–80 (2008)

1-15. Koizumi, H.: Brain-Science & Economics: Transdisciplinary Approach Based on the "Brain-Science & Education" Research Toward Eliminating Economic Disparities, *Seizon and Life Sciences*, 18B, 81–95 (2008)

1-16. Koizumi, H.: About "Brain-Science & Art," *Seizon and Life Sciences*, 18B, 1–7 (2008)

1-17. Koizumi, H.: Concept of "Brain-Science & Art," *Seizon and Life Sciences*, 20B, 7–14 (2010)

1-18. Koizumi, H.: Origin of Music & Brain-Science, *Seizon and Life Sciences*, 20B, 61–63 (2010)

1-19. Koizumi, H.: Dawn of "Applied Brain-Science," *Seizon and Life Sciences*, 21B, 7–18 (2011)

1-20. Koizumi, H.: Feeling of Being Moved/Impressed and Happiness, and Concept of a Future, *Seizon and Life Sciences*, 21B, 87–95 (2011)

1-21. Koizumi, H.: Transdisciplinary Bridging and Research Governance Methods, *Seizon and Life Sciences*, 23B, 5–22 (2013)

1-22. Koizumi, H.: Seizon and Life Sciences & Education—Revolving Lantern Full of My Appreciation to Dr. Takemi, *Seizon and Life Sciences*, 24B, 27–45 (2014)

1-23. Koizumi, H.: Creating a Forest That Nurtures Children's Brains, *Seizon and Life Sciences*, 26A, 59–71 (2015)

1-24. Koizumi, H.: Ethics-Based Engineering—Toward Human Security and Well-Being, *Seizon and Life Sciences*, 26A, 307–312 (2015)

1-25. Koizumi, H.: Capitalism from the Perspective of Brain-Science, *Seizon and Life Sciences*, 25B, 233–257 (2015)

1-26. Koizumi, H.: Ideal Scientific Technology in the 21st Century—from the Perspective of Engineering Ethics, *Seizon and Life Sciences Symposium: Bridging toward a Future—Ethics to Live Better,* 25–52 (2015)

Lecture titled "Record of Dr. Taro Takemi's Teachings," delivered by Hideaki Koizumi at the 1st Seizon (Human Existence) and Life Sciences Dialogue Conference, which took place at the International House of Japan on August 10, 2017

My Own Research after the Demise of Dr. Taro Takemi

2. "Brain-Science-Based Education" and "Evolutionary Education" from the Perspective of Seizon and Life Sciences

2-1. Koizumi, H. (Ed.): *Proceedings of the Trans-Disciplinary Symposium on the Frontier of Mind-Brain Science and Its Practical Applications,* Hitachi, Ltd. (1995)

2-2. Koizumi, H.: Nurturing the Brain: Science of Learning and Education, *Science*, 70, 878–884 (2000)

2-3. Koizumi, H. (Ed.): *Grow, Learn, Heal/Brain Map 21,* Kosakusha (2001)

2-4. Fischer, K., Battro, A., Daniel, D., Immordino-Yang, M.H., & Koizumi, H.: Why Mind, Brain, and Education? Why now? *Mind, Brain, and Education*, 1, 1–2 (2007). (Best New Journal Award by the Association of American Publishers, 2008)

2-5. Koizumi, H.: *Brain Is Nurtured via Encounters: Introduction of Brain-Science & Education,* Seitosha (2005). (Chinese translation: Higher Education Press, Beijing, 2007)

2-6. Koizumi, H.: Developing the Brain: A Functional Imaging Approach to Learning and Educational Science. In M.B. Battro, K.W. Fischer & P.J. Lena (Eds.), *The Educated Brain*, Cambridge University Press, Cambridge, UK (2008)

2-7. Reviewed by Koizumi, H., Translated by M. Koyama & Y. Tokunaga, OECD (Ed.): *Learning from the Aspect of the Brain—Birth of New Science of Learning,* Akashi Shoten (2010)

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2-9. Koizumi, H.: Toward a New Educational Philosophy. In M. Suarez-Orozco & C. Sattin-Bajaj (Eds.), *Educating the Whole Child for the Whole World*, New York University Press, New York (2010)

2-10. Koizumi, H.: *Scientific History of the Brain,* Kadokawa Corporation (2011)
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2-11. Koizumi, H.: Brain-Science and Education in Japan. In S. Della Sala & M. Anderson (Eds.), *Neuroscience in Education*, Oxford University Press, Oxford University Press, Oxford (2012)

2-12. Koizumi, H.: *Albert Einstein's Inverse Omega: Education from the Perspective of Evolution of the Brain (Evolutionary Pedagogy),* Bungeishunju Ltd. (2014) (Received a Papyrus Award in 2015)

2-13. Koizumi, H.: Development of the Brain and Preschool Education. In H. Imura (Ed.), "Healthcare and Human Beings"), Iwanami Shoten (2015) (Quoted in the entrance examination of Tokai University)

2-14. Koizumi, H.: Scientific Learning and Education for Human Security and Well-Being. In A.M. Battro, P. Lena, M. Sanchez Sorondo & J. von Braun (Eds.), *Children and Sustainable Development: Ecological Education in a Globalized World*, Springer (2017)

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My Own Research after the Demise of Dr. Taro Takemi

3. Environmental Issues and Bioethics from the Perspective of "Seizon and Life Sciences"

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3-2. Koizumi, H.: Analytic Science and Its Conceptual Structure, *Hitachi Scientific Instrument News*, 35, 3619–3624 (1992)

3-3. Koizumi, H. (Ed.): The Proceedings of the Trans-Disciplinary Forum on the Frontier of Science and Technology for the Global Environment: Environmental Measurement and Analysis, JST, Tokyo (1996)

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3-5. Koizumi, H.: Progress of Brain Science: Persons Who Look into Their Mind Ask Themselves about Ethics. *The Asahi Shimbun*, p. 7, July 11 (2005). (Quoted in the entrance examination of Okayama Prefectural University)

3-6. Koizumi, H.: Meaning of Bioethics in Brain-Science Research (Lecture delivered at the 17th general meeting of the Japan Association for Bioethics), *Bioethics,* 16, 12–28 (2006)

3-7. Koizumi, H.: A new science of humanity: A trial for the integration of natural science and the humanities towards human security and well-being. In M. Sanchez Sorondo (Ed.), *What Is Our Real Knowledge about the Human Being*, Pontifical Academy of Sciences, Vatican (2007)

3-8. Aoki, R., Funane, T., & Koizumi, H.: Brain Science of Ethics: Present Status and the Future, *Mind, Brain, and Education,* 4, 188–195 (2010)

3-9. Koizumi, H.: Authenticity of Brain-Science—Eyes of Science That Debunk Neuromyths, *Nikkan Kogyo Shimbun* (2011)

3-10. Koizumi, H.: Engineering for Human Security and Well-Being, *Engineering*, 1, 282–287 (2015)

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Thank you for listening!