Climate Chance Humanities, Toilet Humanities

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withBasics.org

1. Feces Standard Money

We are facing problems from two of our great inventions: money and flushing the toilet. We all use money, but we can be isolated from money at the same time. Money is one of the greatest human inventions, but it may also be among the worst ever created.

Our present monetary system has nothing to do with anything that comes from human beings. While we can do many things with money in our modern societies, there are no significant connections between the money and ourselves. Thus, it can be hypothesized that whenever we use money, we are isolating ourselves from the world.

Flushing the toilet—a second great invention—also has both positive and negative aspects. While it deals effectively with issues of hygiene, when we flush the toilet we are flushing our excretion into the natural environment, and this leads to severe problems.

Here's an idea that could lead us into a new kind of fiscal world: Can you think of how we might mitigate the problems while keeping the advantages of our current money system? Imagine a scientific method of making odorless powder from our feces and replacing money with that powder: that is, feces-standard money, or FSM.

Every morning we can put our powder into reactors situated in our communities to supply food for the microorganisms that can produce various fuels, such as methane and biodiesel. We can receive a certain amount of FSM in exchange for the powdered feces and use the FSM to obtain any equivalent value within a system. Feces, like ordinary currency, is limited and precious; nobody can make more than a certain limit, and it can be converted to energy.

Furthermore, everyone can make feces every day. Whenever we produce and use FSM, it will remind us of the bottom-line connection between FSM and human beings. Thus, FSM has meaning from the perspectives both of the economy and the human mind.

FSM can become "basic income" as long as we put feces into the reactors on a daily basis instead of continuing to flush the toilet. We don't have to rank the feasibility of the concept of basic income against that of our present monetary system. We can use both money systems without conflicts.

FSM is different from other types of credit, such as mileage, coupons, and online coins, because it is directly connected to our existence and free will—our intention to not use the flushable toilet.

Suggestions: An FSM system can be designed with an app or in other, similar ways. FSM can be used, along with the present currency, to buy such things as gas, coffee, food, and to pay for various enjoyable activities. Values depending on the production of energy or other equivalent products from the feces at a designated time or date can be distributed to the participants of the system. (Of course, since FSM can't provide everything we need, conventional money also has to be used.) The proposed money system will also require development of various technologies, such as biological processes for energy production —and new industries as well, such as the manufacture of bathroom appliances for the conversion of feces into powder.

We excrete about 200~400 grams of poop per day and make approximate 50 liters of methane gas when using an anaerobic digestion or produce approximate 0.5 kWh with the poop recovered from a waterless toilet. Is this only reason why we have to consider our poops as valuable resources? If so, I believe we think so as our perception lies in an economics of values based on efficiency regarding the standard of our current money. What if we do not use flushing toilet to save our nature? That is another value. We can also get mindful (psychological) satisfactions from the selection of not using the flushing toilet. Our poop brings values of current money, saving nature, and personal satisfaction of mind.

With the three different values, we can persuade people to use waterless instead of flushing toilet. I think very few accept this offer. I believe we are not easy to make a motivation to act without enough reward whatever it is. With reward, our behavior is subject to be reinforced in the theory of behaviorism (from About Behaviorism by B.F. Skinner, 1976), which is why I would bring a concept of a feces-to-energy economy with the feces standard money (FSM). I previously introduced the values of our poop, from the aspects of bioenergy (such as methane), water, wastewater, and compost. In exchange of the values, we can circulate a currency, with a unit of 'Ggool' which means honey in Korean, to use boiling water made using the bioenergy, to ride a shuttle bus to be operated using the bioenergy, and to buy vegetables grown in the compost resulted from the poop.

Our society needs welfare without a doubt. And, I believe the FSM may help to achieve a welfare of society to some extents even though I understand there can be many different ways to implement it. I prefer to call this system as the feces-to-energy economy system with FSM within which a welfare subsystem exists to operate. The system needs an environment in our society designed using the circulation among feces, energy, water, and our activities with meanings; here, environment against a system is taken from the social system theory (from Social System, by Niklaus Luhmann, 1995). The environment may employ everything except the acts relating circulation of feces, energy, water, FSM, and formed structure, which provides us with a different definition of the classical environmental science and engineering.

Theme of Weekly report:
What do you think the role or importance of "Money"?

Reference:
edge.org/response-detail/26660

2. Science Walden

In the project, Science Walden named after the Thoreau's essay and the Skinner's novel, two ways to connect scientific technologies and implementations into a community, have been attempted. The two are feces standard money (FSM; please refer to edge.org/response-detail/26660) and artistic collaboration between scientists and artists. FSM is not substituting for the present currency but parallel one to supplement it, on economic and social aspects. Arts, here liberal arts, is believed to give imagination and courage in our design of a community using scientific concepts and ideas. To experience all the endeavors, we designed and built a Pavilion that is the laboratory where scientists and artists study together with our goals. The name of the Pavilion is "Sa-Wol-Dang (思越堂)" which means a place where we can think beyond in Chinese letters.

Flushing toilet has been told both one of the greatest and worst invention in our scientific history, from perspectives of sanitation and natural environment, respectively. Not using flushing toilet means, with the help of scientific developments, something important and beyond which we have never thought. We hope to bring new values from the experiences

of not using flushing toilet and to get to a new horizon for our community. We place non-flushing toilets in the Pavilion. The first is a commercialized one with which we can convert the feces into compost in approximate one week, the second is a designed and fabricated one that can make a powder out of fresh feces in about 30 minutes ~ 1 hour. The last toilet is not made for usage of a toilet but an exhibition as a model design and sitting experience. We open our restroom to the public with reservation so that visitors can experience and obtain the FSM of which unit is "Ggool (honey in Korean)" in exchange for their participation through either a developed smartphone application or a paper money. The feces is set to experience to a series of sustainable energy production reactors and facilities, from anaerobic digestion, separation of methane and carbon dioxide, followed by green algae cultivation. All of the reactors and facilities are placed and operated within the Pavilion, under supervisors of different researchers. We plan to use produced methane for heating and both methane and biodiesel from the green algae for fuel of a community bus so that residents can spend the FSM to pay for the heating and to use a community bus. We prepare water necessary for the Pavilion through rainwater harvesting from a green roof followed by filtration/disinfection facilities. We designed gardens in the Pavilion together with artist and scientist, and grow vegetables, such as barley, using the remained composts transformed from the feces and water purified from rainwater. We purchase the vegetables using the FSM.

Of course, we can use the non-flushing toilet, make energy or manure out of feces, and recycle water, only with a motivation of environmental protection and for purposes of saving of both energy and water. However, we imagine a certain horizon beyond that and would like to design a laboratory, Sa-Wol-Dang, to convince people to participate more sustainably all the activities proposed from the Science Walden. The Pavilion is only a start of our plan and also a symbol.

Further information:
sciencewalden.org

3. Convergence of Science and Arts

Initiating the Collaboration
We have to understand firstly language with terminology to converge into other areas, for convergence, for example, as a scientist into arts. We should meet artist or scientist to

communicate with our language to expose ourselves to others, then, we know which is different for communication and know what to do to reduce the gap. Secondly, we have to act on a project or any similar event in which both scientist and artist are interested, which also make the meeting of scientist and artist easier. A project is not a sort of things that only privileged experts can do, but, persons are going to practice while conducting the project to be a matured expertise. We do not perform but use it to study. Thirdly, both artist and scientist have to attempt to find common materials to design a product with the project. Upon finding appropriate materials helps us to proceed into a design of the next steps with meanings and selections for the acts. Fourthly, we had better share our vision and goal between scientist and artist. Only when we share, we can find a way to make realities that are visible and tangible but are not visible and sensible now.

On the Methodology of the collaboration, with Arts

When I visit any city, both small and big, in Europe, I can not help visiting cathedral. Cathedral is architecture where there are many different represented characteristics of not only the religion but also the spirit of the time when it was built. I generally see vault and column of the cathedral which always attract my interest; columns and ribs of vault are connected, from the floor to the top. Whenever visitors enter cathedrals, they always look up toward the vaults, with their mouth opened and astonishment from the height. This is purpose for cathedral designers to intend to let the visitor behave as cathedral is most divine place. The exact intention of the designer is to help people in the cathedral to feel divinity, rather than to give them some feelings of incompatibility from the height. Thus, artististic architects try to design their architectures to represent symbolic and other practical purposes. Architects use various different elements for architectures, but, also have to use two fundamentals: harmony and regularity, to make their arts to be an unity (instead of building having compositing elements which are not harmonically composed). We do not want to see the column separately, but, try to see it under the harmony with vaults, beams, stained glasses, statues, paintings, and others. Another big harmony from cathedral which architect wants to achieve is sounds (or music) from outside bells and inside pipe organ; sounds from outside bell and inside pipe organ represent most unstable/disordered and divine/stable/harmonic ones, respectively.

Please taking aside the cathedral for a moment, then, let's take another example with a great painter named Picasso, especially his representative works titled Guernica (1937) and Massacre en Coree (1951). Picasso wanted to represent horrible aspects of wars

committed by human cruelty, using his artistic talent to abstract something important from the accidents. Thus, the two works of Picasso are not photos but paintings which Picasso used abstracts something touching us, from horrible war affairs that actually occurred in Spain and Korea. When I visited the Sophia museum in Madrid, I had stood in front of the work of the Guernica for longer than a hour. Of course, I was shocked by the sad and miserable scenes but also very much touched by his abstracting, and representing styles (not the cubism) from his hidden intentions.

One more example that I would take is works made by Kandinsky (1866-1944), Russian painter. Whenever I look at his works, those remind me of two things, first, he follows color theory made by Goethe not by Newton, and secondly, he tried to integrate music (sounds) into picture. He is known expressionist and also founder of modern abstracting technique, but, I personally want to call him both artist and scientist.

I feel necessary to look into definitions of art and science. Aristotle and Plato had different opinions of arts, capability to make catharsis and only dealing with shadow of existence, respectively. Hegel described on art, in his book of Lecture of Aesthetics, together with thoughts of Goethe, that we have to know individual characteristics of fundamentals of object, in order to know the beauty of art; here, the characteristics is (i) reality, (ii) type or mode (motion, shape, color, shadow, etc.) of the reality, as existence. From this description, I understand art is collection of actions and consequences of taking abstracts from objects that artists observe, through reality representation and abstracting of either subsistence or inherence of the represented reality. Meanwhile, Einstein defined science as a creation of the human mind with freely invented ideas and concepts, not just collection of unrelated facts and laws. I believe that ideas and concepts are interconnected with corresponding realities, from our observation and sometimes imagination. Based on the definitions of both Hegel and Einstein, I think that art and science have similarity and difference at the same time, in methodologies, activities, and resulted consequences. Similarity lies mostly in methodologies for object observation with senses, intuited and represented reality, and concepts making, while, difference exists in rules and principles to make abstract and/or concepts from represented and/or intuited realty.

Art and science both start with observation of object, using sensibility, and transform it to represented appearance(s), using analysis followed by synthesis or a method with unity, through intuition. Then, from the represented appearance(s), science try to make

concept(s) (which is knowledge) with rules or principles (combination of rules) logically governing each appearance and underlying between those, however, art make work by abstracting characteristics from the representation(s), using freely acting imagination based on, not strictly, rules or principles, the same as for science. Science should use some principles of necessity, comprising of cause and effect, but, art does not follow this principle, instead, uses contingency, which is a big difference in methodology, between art and science (contingency versus necessity). We may find necessity concept in some artistic works, but, it is not common. To the contrary, we can not find contingency concepts from scientific works.

Artists use methodologies exactly the same as ones of scientists, except for principles of necessity. When we see the art work of Picasso, Guernica, we do not think exactly the same scene of the work actually existed during the Spain war, and the same to the work, Massacre en Coree, during the Korean war. Instead, Picasso used his intuition and imagination to abstract the elements from the horribles, and combine those using his freedom and artistic creativity. If we asked Picasso why he selected all the comprising elements for one work, he might answer he selected those by artistic format (for harmonic combination), but not by the scientific principles (i.e., necessity concept). With these artistic format with underlying creativity, the Guernica can appeal, even after a long time, the saddest history with human cruelty to descendants who do not experience any war, as Picasso imbued his creative spirit and actuality into the unreality (i.e., the work). When we see works of Leonardo da Vinci (the Mona Lisa and the Last Supper) and Raffaello Sanzio (the School of Athens), similarity in methodology is more clear. They are known as founders of using technique of perspective with painting which make clear difference appearances for objects located in near versus distant places. Meanwhile, Picasso intentionally ignored the perspective in his works to make his distinct and creative artistic works which we may call scientifically manipulated artistic works.

I would like to obtain some helps from the artistic methods to do science, with respect to scientific concept and idea which are equivalent to represented abstract with beauty in art. Thus, it is sensibility and intuition that we can share to use when conducting both art and science; who has most sensitive sensitivity and creative intuition among expertise in their domains? It is probably artist, thus, we need to learn something from them. Sensitive and effective sensibility is essential for both artists and scientist to be able to find objects, realistic and sometimes even unrealistic, to be analyzed or intuited with an unity. A

scientist focuses (and had better) one domain among various areas, but, the selected domain has to be observed in many diverse aspects, i.e., with respect to not only existences and realities but also different types of modes, such as motion, and interaction with others through causality and reciprocity. There are ways for scientists to take for a travel from observation to concepts and ideas (i.e., knowledge). Different ways request us to pay different travel expenses; we need a certain sensibility to receive objects in outer world into our inner world, and also need certain roles of our intuition to transform the object to represented appearance and intuited reality, then need our understanding ability to make concepts from the unified representation and intuited reality. In order to learn something from arts, for science, with respect to working rules, performing techniques, underlying philosophy, and many others, especially in sensibility and intuition, it is necessary to know individual characteristics of each art, including architecture, status, music, paint, and poet. How can we learn these? It is not classes in school but a project where both artist and science work together and share common goal, with a contemporary culture which both prefer to make.

Having a definition of culture of converting mere thoughts into actualities, we have our own cultures of art and science. Of course, we have that for the project, Science Walden. All of the cultures influence individual members, and vice versa, thus, we can not be away from the culture. Whenever we do research within the project, we are set to be influenced by, and influence as well, the culture. We do not want to confine ourself within an isolated room surrounded by walls; but, this is not about making friends, but about cultures of art and science, for research and living, and also towards a horizon. Under the culture, we have to try to meet ourselve because it is "I (myself)" who perform both artistic and scientific work. Respect and polish up (perfect) your intuition, through meeting your intuition, that is the only way not to be addicted to mannerism in a brutal (so competitive) world. Why? Science generally requires us to analyze object, but, analyzing is sometimes one of obstacle to creative work. Intuition (not itself but with data from observations) may compensate the weakness of the method of analysis.

I think we need to develop a system for both scientists and artists to communicate with information. Otherwise, it is hallucination without reality. The system can be a project, for example, Science Walden, where acts or behaviors or all the events occur. Thus, a system comprises of not participating persons but communications. Thus, the system is not fixed but very flexible as it varies with different boundaries with various elements depending on

time and space. We communicate with information based on our experiences in the project. A project is one where we can collaborate, practice, and more importantly cultivate ourselves. We need a medium to communicate, especially in this project of both scientists and artists, including language. We share the common goals of the project and discuss to select possible media to communicate; letters are one but others, such as image, sound, smell, and other sensible ones, may work. An observation of object gives us an impression, representation, sensation, and image which turn out to be finally knowledge with concepts or ideas. Knowledge transfer occurs through the media, which is the responsibility of the scientists and artists.

We can make knowledge of concepts using, of course, language and many other forms as well. For example, take the concept of the FSM. Artists can help scientists to understand the concept and to represent something out of the experiences based on scientific experiments, such as bioenergy production of the poo. As we discussed, artists share some parts of the methodology to make concepts with scientists. I believe artists are good at illiteracy types of knowledge which are also concepts but not with any language. We can collect both literate and illiterate knowledge into our faculty of concepts, titled as the illiteracy library of the FSM. Instead of only making lots of papers in journals, like most of the scientists, we can contribute differently to our community.

Once we make a system, we either have or need the corresponding environment. The environment may include the Nature and human psychic, such as consciousness, as well, which we are set to discuss further.

Theme of the weekly report: Provide your opinion or idea how arts help for scientific achievement

Further reading:
Aethetics; Introduction Part or more, by Georg Wilhelm Friedrich Hegel

4. System and Environment of FSM

I believe we should do something to make the FSM work and contribute in our city. It is a set of system and environment of the FSM that works for us and our city. Niklas Luhmann told that we could understand a system with either subsystems or elements in his book,

"Social Systems (1984, 1995 (English version))"; the former and latter give differentiation and complexity of the system. Whenever we take a system, there always exists a corresponding environment. Thus, we can not design a system without an environment and can not explain an environment without a system either. They do not control but influence and depend on each other.

I would take one example of the social system with an environment. Suppose a student in a University who takes two classes of organic chemistry and humanities and conducts two different term projects in this semester. The student has a system of his or her in the University and has a subsystem to study organic chemistry, another to study climate change humanities, and the other to play in a dance circle. Other students who take the same classes and play with the same circle may have different subsystems, which is the differentiation of the system. Thus, I think a subsystem needs a symbolic catchall name. Students who have different subsystems have various elements within her or his system. Subsystem has its elements as well. Elements here may include all the activities of the student regarding the classes and dance circle and the activity related materials as well. Elements of a system do not request a title like a subsystem, but, activities and relations between the elements.

I would design a system of FSM with subsystems and elements to have differentiation (i.e., identity) and complexity, respectively, and to implement the system for our community. We can make a system titled bioenergy design from feces, i.e., a subsystem, which embraces various technologies, including non-flushing toilet, anaerobic digestion reactor, and gas separation. We may develop another subsystem named water harvesting and recovery to feed appropriate waters to other subsystems. We may also have a subsystem titled artistic bioenergy which works together with scientists, engineers, and artists. We create a subsystem titled FSM. Then, we are set to bring various elements to the subsystems based on potential relations and activities. We can develop a cell phone application of FSM to connect a value of the feces, on produced bioenergy and water saving, to the existing present monetary values in our economy, for example. We can build a village restaurant where we cook using the methane heat produced from the bioenergy reactor fed with, and vegetables grown in the compost of, feces. Of course, we use FSM to eat in the restaurant. We may do research to compress the produced methane gas in a gas barrel so that it can be used for a shuttle bus operated in the village. We can connect every element with relation, through activity, to develop the system of FSM.

A system needs environments which provide the identity of the system. On our dealing with the system, we have environments, against the system, which do not have any activity and the system only depends on. A subsystem may be the environment of another subsystem. For examples, the subsystem of the village restaurant is the environment of the subsystem of bioenergy design, and the subsystem of the bus system is the environment of the subsystem of the non-flushing toilet, etc. Thus, the boundaries of systems are flexible depending on our selection of proposed activities.

Further reading:
Society Systems, by Niklas Luhmann: Chapter 1. System and Function, Chapter 2. Meaning

5. Meaning of FSM

What do you think you could become the student of the university or employee of your company? You survived the competition, but you have to understand that other persons selected you among many potential applicants and candidates, which means another person may substitute you under a different condition. We understand this is the contingency of the elements of the social system. In this perspectives, everything is thought to be not a necessity but a contingency.

We previously design the FSM social system thus can envisage various subsystems and elements. A system has as many chances of relations between elements as we can imagine, as Luhmann told. Under a condition or environment, some relationships show up as information against others. Thus, selections occur and produce meaning. I would say meaning letters in Korean has a word of taste. If the system can not have any selection within it, information does not exist as almost the only option always happens within the system. Let's visit one of the FSM social subsystems titled 'restaurant using 'bioenergy' described in the previous section. There are various relations between the elements of the bioenergy restaurant subsystem, including cooking using methane, vegetables from a village vegetable garden, composts for the garden, transportation of the vegetables from the garden to the restaurant, pricing the foods and payments, and others. It is nearly impossible to know every relation and function among the elements (i.e., temporal events), so we have to select some of those with meaning depending on situations and conditions.

Sometimes evaluation of the restaurant depends on either fresh vegetable or cooking heat or prices of the vegetables, which is information that tells us a temporal fact, reality, and expectation of the restaurant system in particular time dimension; in this way information becomes events. We convey information using mentioning and others accept based on their understanding. The intended meaning of the sender side may be different from one of the receiver side. Yes, the two meanings are different, but both the sender and the acceptor share a portion of meaning. Treating selected relation highly gives meaning over other relations. Thus, the selection is meaning which provides us an experience and subsequent memory.

The relations and functions between the elements are invisible thus can not be observed even though those exist. We have to express ourselves with our action, not with ourselves or information. We can not see information about all the relations, so have to share it through communication. The combination of the relations or the functions becomes a totality as an action then the action of the subsystem now become visible thus observable. Kant told us a similar one that a synthesis is possible from a manifold. Similarly, totality is made from complexity with elements. Totality is greater than a sum of the composing elements. Then, we have a new world with the totality but a change in time. At last, we made one subsystem, named bioenergy restaurant, then, the next subsystem follows with a difference. The following subsystem, of course, has another complexity having various elements.

The theme of the weekly report: Select one of either the subsystems of the FSM (of course, you may propose one) or element and describe potential connectivities or functions to implement in the UNIST society.

6. System of a Football Team:

In the class this week, I would like to bring an example of a football game to help you understand the concepts of system and communication. I have been football games in the Munsu Stadium, Ulsan. The Ulsan Hyundai Football Club (UHFC) team usually uses 4-4-2 tactic with which they are good but sometimes bad. We know that other football teams which use the 4-4-2 tactic surely have the different characters from the UHFC. What makes this difference? We have the answer; it is subsystem with elements, information, and connectivities. We can not count all the possible connectivities between the elements

with a subsystem which tells us complexity thus gives values to be selected. The UHFC shows excellent offense feature on a game. We can hardly notice reasons. I have doubt even the chief coach has one. The events from the elements of the subsystem are that much complex.

Suppose you are the head coach of the UHFC, how do you plan to enhance the quality of the team as you are not content with the present team? You may scout a few star players, which is a probably most efficient way. However, if we consider a steady renovation of the team, we had better think system with an identity and unity for the team. Coaches used to say the team is one. I believe they targeted mind and spirit of the players of the team, but, I mean the identity and unity of a team system. Discussing context is how to make a system, to improve the team, group, organization, project, and society.

You can design your defense system (i.e., as a subsystem) as the UHFC allow more goals than gained ones in this season. Every faint movement of a defense player has a meaning and may produce an event. The event should be new and contributing, and should have the intention to become communication as it can be information. The system comprises of not defense players but the communication of information and events; the communication with events (i.e., information) can make the defense system stronger than before. We might argue one big star player can make the defense team stronger than ever; that is true, but the star player is only one part of the system. The defense team of the start player without other defense players do not work at all.

We have to understand the concept of communication of for example either the football team or any organization or team. Communication is important in that it comprises a system. According to the Luhmann's theory, communication includes three steps: information, utterance, and understanding. Information first, then, this information is transferred to others, and the receiver accepts the information at one's disposal through understanding. The sender and the receiver of information are set to have not the same meaning after a meaning is selected and somewhat transformed.

We need to have events to be transferred to contribute our society. Otherwise, we do not have any meaning. Take a coffee shop for example. You order a coffee in the morning then barista prepares coffee for you, then, you leave the cafeteria. There is no event at all as it is normal, which does not give us any impression, sensation, or memory in the afternoon.

If you look at the barista's face and mood with care, then, you deliver some words to the barista, something may happen as an event, which may give you a meaning. It is communication.

Let us come back to where we started with the defense system of the football team. Every movement, including passing a ball, of the defense players may be either event or meaningless behavior. The events of the players make subsequent communication. If you were there to tip the ball at the moments for the defense, you could never understand their communication. However, even at the moments of interests to us, we are not easy to communicate. The communication makes the defense system stronger.

Lastly, I would bring one more example of the theme into the movie titled "Jason Bourne". Some think this is an action film. But, I found a message from the Jason Bourne how an excluded person could suffer from the system or organization or society to which he used to belong.

The theme of the weekly report:
Please think of yourself and your society with a system, and discuss what forms of communication you are making for your community.

7. Individual as opposed to system: Behaviorism

You may think that we consider the importance of system too highly compared to the individual, which is why we adopted the theory of social systems of Niklas Luhmann. I also feel we need to discuss issue or theme of the individual. Among many potential options, I prefer to select the theory of behaviorism (B.F. Skinner) as we may equivalently compare to the action that we have discussed.

One of psychology areas that analyzes state and results of a human mind, using traditional (such as causality based) and newly developed scientific methods, is behaviorism. Even there might be some controversies whether the behaviorism is science or not, it adopts methodologies which have used for other science areas, and importantly it is expected to open new horizons in natural science about human behaviors. Another advantage of behaviorism is to be able to isolate human mind rationally, in connecting pathways from stimulus to response (i.e., behavior). With the book, titled Psychology as the Behaviorist

Views (1913) of Watson, he was not strategically successful in initiating behaviorism as one of the scientific branches. But, he introduced behavioristic key terminologies, such as reflex and conditioned reflex, of which information was experimented using animals; most of the results exhibited push-pull types of behavioral causality. Russian physiologist, Pavlov, published his works at almost the same time, tried to do experiments with animals to reveal mechanisms of the behaviors, by investigating the physiological activity of cerebral cortex.

There might be other approaches to explain behaviors with causes. Those are structuralism and methodological behaviorism, with patterns of developments of behaviors occurring in time and antecedent external (not mental) events. There is another, called radical behaviorism, which tells us balancing of mentalism and methodological behaviorism. Beyond this theory, radical behaviorism provided important contribution to the theory of behaviorism, by giving importances to both genetic endowment and environment affecting human behaviors during the lifetime of an individual.

There are many different types of human behaviors, ranging from anatomy and physiology underlying behaviors to operant (voluntary with free will) behaviors. We can also divide behaviors into ones derived from either contingency of survival or reinforcement under various environments. We categorize breathing, respiration, nesting and these sort of behaviors into instinctive behaviors. Hunting, food searching, and territoriality and aggression are also in the similar categories which are formed to survive under given environment condition, but, with somewhat more sensitive respondent instinctive behaviors to the environment. All these behaviors are imprinted in organisms through a long period, from generation to generation. The science of behaviorism adds another type of behaviors, called operant behavior, to explain behaviors which are formed with the strength of the behavior, i.e., a reinforcer. Thus, behavior can be explained by contingencies of both survival (respondent) and reinforcement (operant); survival and reinforcement are both said to be contingent upon related behaviors. Certain behaviors, regarding the environment, during a period, are said to have been formed for organisms to survive. Certain behaviors are willing to recur (i.e., strengthened behavior) under the same or similar conditions that induce the behavior, with reinforcers. War-like behavior is one example. From war, humans can obtain many beneficial things, such as territory, farming land, and foods. Thus, invaders who succeeded in war are willing to attack other tribes or countries again. The organisms can learn some lessons from the consequences resulted

from their behaviors. If the consequences are beneficial to them, they are motivated by those, then, they are apt to very willingly (i.e., positively) behave under similar conditions to the previous ones. With this case, environments and conditions of the strengthened behaviors are defined as a contingency, and the consequences which induce the positive behaviors through the contingency, are named as a reinforcement.

When light elicits from a filament with switching, light is made with a reaction, but, it does not occur as it exists inside the filament before the reaction. Meanwhile, when a man behaves upon a stimulus, the behave already exists inside the human (i.e., emission from inside). These two cases remind us of the theory of color, by Goethe; he said we could feel and sense certain colors because the color already exists inside us. If a color is not in us, he believes we can not sense the color. In this sense, the behaviorism and the Goethe's theory of color share the point.

Behaviors have imprinted in our memory as genetic endowment, inherited from our ancestors, and some behaviors and memories are being also placed onto us through the period of our life, through contingency of reinforcement (COR). The contingency was defined by Niklas Luhmann as "not necessary but not impossible". Behaviorists believe behavior patterns are formed through the circle of the COR of individual, with some influences of genetic endowment. The genetic inheritance affects behavior patterns only through the COR, which is why behaviorism can be considered as one of the scientific areas with contingency, i.e., patterns with occurring probabilities. But, mentalism is somewhat different in that behavior patterns depend on mentality, and state of mind is mainly related much greater to unconsciousness (for example, Freud's and Jung's libido), than to consciousness. Of course, behaviorism may explain the role of the state of mind for the behavior patterns, but, the state of mind (or mentality) is also presented through COR. A person interacts with others and also own individuality (i.e., alter as opposed to ego). When we want to recognize how our behaviors are influenced or do affect, we have to understand the patterns of our behaviors (i.e., COR) and the state of mind as well. When we say we like to go, there are two underlying meaning through this sentence. Firstly, liking to go means want to go. 'Want' implies a lack of something. The fact that I want to drink water means it lacks water. Thus, I want to drink. Secondly, liking to go means that if I do not do this, I would have a certain difficult situation, thus, I have to drink. The state of mind, and condition as feeling certainly influence behavior with certain stimuli, i.e., contingency. Thus, the state of mind and mentality may be explained within the regime

of behavior patterns with COR, by the behaviorism, which is why the state of mind is also important but is rarely used to explain behavior, in the behaviorism.

Now, we understand how reinforcement is important for human's behavior, and we can use reinforcement and related subsequent contingency to control behaviors of persons in both individuality or group. However, people are always accustomed to reinforcement; people are motivated by some incentives for their behaviors, for the first time, then, with periodic incentives, they easily take those as a matter of course. When the desired incentive stops, people are disappointed and may become depressed, or as a situation changes with reinforcement (i.e., incentive) and people recognize they can not get any even with their endeavors (i.e., behavior), they become frustrated (and resulting mostly in attacking the system). If we want to maintain behaviors to happen under certain conditions for both a person and community, we can suggest reinforcements in different ways, using various ratio schedule (ratio of reinforcement to behavior), such as variable ratio, as opposed to fixed ratio. When people can not predict a pattern of reinforcement (e.g., incentive) relating to their behavior (as an achievement), they may exert their best, instead of taking the incentive for granted. Of course, the person can be controlled by aversive reinforcement or punishment, for negative (e.g., concealment) or stopping behaviors, respectively. In a different aspect, people can understand why they are sometimes depressed or frustrated towards community or other persons, concerning their reinforcement. A person, being controlled by COR may or may not recognize that he is being controlled, then, he would like to have his free will to control his behavior according to condition/environment, towards consequence and desired reinforcement. Behavior resulted from the free will can be defined as 'act', differently from 'behavior'; freedom, in this aspect, is understood as the state without pre-occurring event, prior behavior (i.e., act) or decision. I would suggest you think of the explanation of act, as opposed to behavior, compared to one that we discussed with the theory of the social systems.

The theme of the weekly report:
Take a few examples of behaviors and acts which you did yesterday, and explain why they are different.

Further reading:
"About Behaviorism" by B.F. Skinner, 1976 (Introduction, Chapters 1, 2, 3, 4)

8. Walden Two

B.F. Skinner wrote a novel, named Walden Two, after the Walden of Henry David Thoreau, in 1948, when the second world war ended. Even with degradation of humanity through the two world wars, pride as citizens of the country of the victory (e.g., USA) was spread. And the majority of gold and money were actually in the country, which might bring hopeful outlooks. Then, Skinner, for some reasons, decided to write the Walden Two, which brings some interests to us who are living in present modern times. The value of the novel seems rated highly even at the present rather than at the time Skinner wrote it. He might be either prophet, a man of clairvoyance, or a man who fully understands patterns of human behaviors and has standards of human judgment for their behaviors, as based on his behaviorism.

Skinner designed, in his novel, an alternative small village not religiously or philosophically (like the Utopia of Thomas More (1478-1535), but scientifically based on his behaviorism; he hoped to give a reality community body to his designed village, through applying his mechanisms of human behaviorism. He would like to develop the Walden Two by minimizing unnecessary works to be done, with 4 hours per day being believed to be enough for a living. The village system gives 4 points to who works for 4 hours. The point enables residents in the community to spend their lives, including eating, living (housing, clothing, medical service), and other cultural activities. 4 points per day and 1,200 points per year are enough for living in the novel. There are, of course, various jobs to contribute, such as scientist, medical doctor, farmer, mechanics, and others. He was also interested in how his science of education can be operated in the community. There is no strong leadership, but only designers and planning committee (6 persons) are set to work for ten years. They can get 600 points from the committee works, so, they must do other physical works as well.

Skinner says what we need is the technology of behavior, for the community, not free will of a human. The free will has been trusted as a reality of human through a long history of humankind. He believed not so but as hallucination under a big system, such as government or worldwide economy. He believed that people seem to behave with the own free will, but, actually do under some controls, like a machine or a robot, of economic, education, and politics. He also believed free will is just one of the elements of the

behavioral technology, as based on the principles of reinforcements (reinforcer contingency).

In his novel, Skinner emphasized the importance of the science of education. He thinks people can be happy only if condition (or environment) to be happy is given. Happiness itself can not be obtained, nor is education. Instead, we can gain behaviors through properly designed community and education system; otherwise, behavior is subject to other controls affected by the other systems, such as politics and economics. We can not evade the control. Thus, we have to select, which is his science of behaviorism. In the Walden II, all children are brought up in a group away from their parents right after their birth, to protect harmful effects from parents, not necessary with some regular curriculums, but, flexible programs based on the technology of teaching underlying the education system.

There have been, of course, criticism on the Walden Two. Typically, there is one telling whether a test of scientific utopian with only 1,000 residents can be extended to larger cities, like Seoul and New York. There may be two answers to the question; the first is that the test is a pilot test. A test is to verify the actualization of an idea, with science, in this utopian community. In a small community, it is relatively easy to find solutions to fundamental problems we are facing, such as inequality of wealth, job opportunity, population control, water and air pollution, etc. With a large community, competition occurs more severely, with more significant difficulty, on analysis of the problems. And, the second answer is to ask in return to the question, by saying "Is big one always effective or better?"

Further Reading:
Walden Two (1948) by B.F. Skinner

9. Human, as a person

In the movie of "the Bourne Identity (2002)", a director of the project said to his boss in CIA that Jason Bourne would return to the Institute within 24 hours with a behavior of the software program as he was programmed to do so. We probably are easy to have an identity. Thus, I believe the director, Doug Liman, titled his move with the Bourne Identity. We believe we are something to our society with identity. I have the doubt who in the world do not think he or she has own identity. I also have the doubt other people would believe

that we have the identity which is different from others'. We have already tried, but I want to try again. Let us bring any case or event in our everyday lives that can not be replaced by ones that can be done by others.

I happen to find almost all the emails I have recently received have similar patterns of the structure of words, and realize I am not the exception of the cases either. Students similarly ask about their problems which are not different from other students, and I suggest similar answers to solve the problems. The problems the students are facing are not that much different. What if we all program procedures fit the corresponding problems and questions? You, as students, send your questions or askings to your difficulties or problems that you face, to the computer system with a fancy name (for example, "Super Counselor") which have almost every solution to all the potential cases we can imagine. The same are to the classes opened in the Universities. Why not replace all the above with programmed software, like the Deep Lerner which can evolve in time so that can automatically update itself.

What is Human? It is our next question. We are not expertise in behaviorism as one of psychology but understand how our behavior can reinforce itself to some degree. However, a program software can also use the procedure of the reinforcement to evolve upon an environment as Human does. People used to tell we are creative, but they do not believe the computer is compared to human even it is powerful and efficient. I would ask them how they define the concept of creativity. They probably select the examples of scientific creativity by taking nanotechnology, biomedical technology, pharmaceutical synthesis, biogenetic engineering, and so on. I would say it is the matter of selection whether it is creative or not. We may have different meanings from different selection based on our various standards. Again, what is human?

In the novel, "the Blind Watchmaker (2010)" co-written by the writer KIM Taghwan and the neuron scientist CHEONG Jaesung, we have a boundary of a portion of machines replaced with a human body that tells whether it is human or not. It is 70% of replacement with machines for a human body. When this type of a world comes, we may have another discrimination with purity of human being. Does higher a portion of human body enhance a degree of human identity? Maybe not. But, it will probably matter. Let me bring the theme of communication that comprises our society, i.e., social system. Before our discussion, we need to remind of the communication concept for our society. I trust to a degree we can

communicate a computer or a designed program that envisages our living lives. We spend much time with our computer a day; check email, send a message to colleagues, write a report, propose a project, and play a game using the computer. We can do all these even without a computer, but we do those with a computer. From the reason, we spend different days with computers, and importantly we give information to the computer and it gives us different information in return, which we define a communication. The computer makes an event with us, changes its behavior through learning with reinforcements, and even produce certain rules based on reasons and causalities. The computer can evolve, which we call the evolution frame. We interact with computers. The computer becomes a part, as an element, of our society. I am not sure whether it "acts" or not, but, it seems so as it understands rules of the events occurring. When a robot talks with us for about 10 minutes, if it decides whether we are human or not, do you think we can pass its identification as a human? Then, what is human?

We, human, are the person. A persona, in Latin, is the mask. Thus, we communicate others with our masks. For the communication, we share information first, then, observe a reflection from other persons, and we understand each other with selected and transformed information. Thus, every communication, even under the same information and condition, is set to provide different results, from firstly the mask, secondly reflection with varying angles, and thirdly the selection and meaningful understanding.

We show our mask which is our "alter", a second ego, then, our ego observes the reply from the information receiver. The receiver also uses its "alter". We call this situation Double Contingency from the Social System Theory of Niklas Luhmann. Thus, communication is so complex that we are difficult to know all the process and formed structures. The complexity of the communications makes our society accordingly. We try to make a simple community with selected communications. But, we are also different and complex in selection, which maintains our society (a social system) as complex as we may imagine. For example, in 2013, the Gangnam style created a boom in the YouTube around the world. Nobody can hardly find a single big reason why the Psy's music and dance touched off a boom. Is there anyone? I am not the one, but I guess selected tastes shared with others arise among the complex communications with meanings. It seems a straight highway shows up suddenly from complicated and intertwined spider webs. It was a great luck.

Human being is complex, so are communication and the social system. The computer has been programmed to learn from the human and society and to evolve using the frame process. We, human, find it easy and convenient to use the computer, then, stop to think as we do not have to do. The computer can not fill holes human makes. We, human, are now producing lots of behaviors with observable patterns, i.e., habit. A habit is an object. Then, you may imagine the next.

The theme of the weekly report:
Provide your opinion of reality of the robot versus human being

10. Inside or Outside of Human?: Descartes versus Watson

Descartes (1596-1650) said "I think. Therefore, I am", which means he doubts the existence of external worlds (i.e., skepticism); with him, thought implies the doubt of the existence as he believes there is a demon in the outer world. Instead, he does not have any doubt of human's existence. How can we understand the Cartesianism of Descartes, as based on the Kant's view, i.e., from observation of an object to making concept? The existence is nothing but a thought within us. We may have two different logics: firstly, the object in the external world comes to a human to be thought, secondly, the human, before the observation, has the own capability to make the thought of an object, without regard to the object. In which side are you?

Descartes believes external worlds may deceive us. We can understand his Cartesian thoughts if we envision a variation of the reality of objects in characters (color, shape) and motions. When a matter moves, the corresponding string of its event takes up another center of space at a different time, which makes consequence much complicated, even with the same characters. Thus, Descartes suggests us not to believe any existence of objects in the external world. Instead, he recommend us to doubt everything and to use our pre-existed thought format (some logics of thoughts), as defined as introspection, to realize the existence of object and reality of interest to us. Thus, Descartes proposed a category of grammar and reality, like Kant, so that we can absorb objects in the external world and deliver those inside ourselves, as knowledge. This concept is similar to one for language, proposed by Noam Chomsky, the theory of syntactic structure in language, in that words are not accurate but too general and abstract, thus, can not represent the essence of observed objects, but, our categories can do.

There was one person who opposed the Cartesian view, who is Dr. John B. Watson (1878-1958). He said, contrary to the Descartes' saying, "we do not think but only talk or behavior." As one of the behaviorists, Dr. Watson wanted to doubt the existence of human, contrary to Descartes' supposition. He took a view of the existence of the external world, which is very useful to bring things of human into a regime of science, by taking objective behaviors of human, through direct observation of behaviors and indirect testimony of other observers. Human responses to stimulus, similar to animals to an extent, through both conscious and habitual types of behaviors. There may be a few underlying laws behind the behaviors, including the law of effect and the law of exercise. The law of effect says that response strengthens by satisfaction or gets weaker by discomfort, and the law of exercise says this reply gets connected to the situation in proportion to the frequency of previous connections. Responses can be presented in forms of language and behavior (of course, language is also a form of behavior, according to the theory of behaviorism). There is another interesting pattern of response to stimulus; if two consecutive stimuli with a short interval happen, corresponding response prefers the first one. This process is an important way of forming of human habits. However, it is informed behaviorism does not provide the explanation.

To better understand the behaviorism, it is needed to look into connectivity between stimulus and response. Between the two, there are two physiological steps, including the receptive sensory and active motor ones. Each has the respective two sub-steps, the 1st (outside world to eye) and the 2nd (eye to a brain) in receptive-sensory, and the 3rd (in a brain) and the 4th (the brain to a movement) in the active motor. There locate a cognition at the end of the receptive-sensory and a volition (free will) at the start of the active motor, respectively. Russell classified the first as physics, the second and fourth as physiology, and the third as psychology. After the four steps, we have certain types of consequences, in the forms of consciousness and habit types of behaviors, which may be processes of knowing (perception), of which forms are knowledge.

The theme of the weekly report:
What is thinking?

11. Kant, on concept

I would say the concept is only the reason why we do scientific all the research and even engineering studies. If we want to be a scientist, we have to know how to make concepts; the concept obtained within us toward Nature is a necessity to become a scientist.

Living organisms that can not produce knowledge-based concepts just follow their instincts without any intentionally programmed plan. Let me take an example of the movie titled "Tunnel (2016)". Under the disaster situation, the human (actor HA Jeongwoo) has a concept to survive with remained foods and water, but the dog which deserves to survive like the man does not have any concept of the foods.

The concept is terminology for categories of representations within our mind following our understanding of thoughts that occur concerning an object in the outer world (i.e., Nature); this is why Goethe stressed importance of observation of objects in Nature. If you simply take a sample, measure using apparatus to get data, and publish those in a journal, I would say you are not a scientist. Instead, you are a trained technician (of course, the technician is worthy job). In university level or higher level of research education, we learn and practice how to contact with Nature, which means ways to sense objects existing in Nature, and we use our sensibilities to bring the objects to us, with forms of intuitions. Here, the sensibility can be defined as our senses and also apparatus which belong to us. Once we have intuitions from the objects, using our sensibility, we have to observe those for a while, to keep those, and to make some thoughts out of the intuitions.

With this procedure, from objects to intuitions, and to thoughts, whatever we intentionally notice this or not, those occur in us. However, I would emphasize the results are very different from observations between with conscience (i.e., with practices and customs) and without conscience (i.e., without practices and customs), especially for the scientist. Every early in the morning, we can practice with objects around us, such as flower, bee, current of sea, flow of river, tree, cloud, and anything in Nature. We try to get some intuitions from the object chosen by you, and let it stay with you for a while, and try to make intuitive knowledge in your mind. For further steps from the representation of concepts, we may proceed to categorize the concepts using the four different aspects (from the critique of the pure reason by Kant). The four categories are 1. quantity (unity, plurality, totality), 2. quality (reality, negation, limitation), 3. relation (inherent vs subsistence, cause and effect, reciprocity), and 4. modality (possibility vs impossibility, existence vs non-existence, necessity vs contingency).

There is another type of concept, which we can meet in Mathematics. Mathematician never makes any concept prior to a definition. They define it then construct the corresponding concepts with realities in the world. This step is different from a method taken by scientists who observe an object in Nature first, then, produce concepts.

The theme of the weekly report: Make a knowledge-type of concept in your words based on your observation of any object that you met.

12. Pragmatism

When we had the concept of 'time' and thought we needed to actualize the time concept into the physical world, through measurement of a duration, we need to create a new concept. It was a clock. Even if the former and latter concepts are not the same, we agree we have very similar meanings and interpretations between the two concepts. It is pragmatism that combines the new ideas which can be made by necessity, and some old concepts which have been dominant, based on existing experiences of people who are sharing the present times. Thus, we can define the pragmatism as a function of combining old and new concepts (ideas), also as a trace of the human activity. That is why the pragmatism (James and John Dewey (1859-1952)) shares something in essence with humanism (Friedrich von Shiller (1759-1805)).

Thus, the pragmatism is practical and concrete. It seems not pure and similar to utilitarian, but it concerns not only consequence, as actuality, but also process and way of the actuality to make connectivity between old (in which contemporary persons (conservative in general) have strong belief, as truth) and new conceptions. The pragmatism is something like corridors of a hotel which connects all the rooms (i.e., ism for ism). Range scope of pragmatism includes firstly the methodology, and secondly the origin of the meaning of combining concepts underlying truths.

The pragmatism is interested in newly formulated concepts based on human activity occurred in imminent occasions, and believes the selected concepts are flexible depending on the situations that have different scientific and ethical values. If the concept has permanent logics, it is rationalism opposing to pragmatism.

Some examples of pragmatism actualization (concept/actuality): time/clock, heredity/DNA, the global warming/level of carbon dioxide, health/disease, wealth/money, economy/money, education/degree, communication/cell phone, etc. Pragmatism is a Guidance from Thought to Actual Concept, and from Concept to Actuality.

When we get lost in a forest, we want to find a narrow pathway which cows mostly use may guide us as there might be a town at the end of the way, depending on our past experiences. There are full of rules and principles in experiences. For example, people trust the truth of clock even though they do not fully understand operating principles of a watch, such as elasticity of spring. However, due to the commonly accepted beliefs, rationalists may say pragmatism profanes the truth concept. Here, we feel necessary to define what the truth concept itself is. There is a certain view of truth with pragmatism. The pragmatism always asks which particular difference in real life makes concept and idea, how those can be actualized, as existence with both substance and reality, and accordingly what kinds of values can be provided. The truth is not stagnant but freely varying; it reminds fine roots of a tree, extending to every concept. Thus, a criterion of pragmatism is the agreement of conception with reality and existence, i.e., possibility of actualization. If agreed, it is true, and if not, it is false.

If the concept can be described using the existence formed through the actualization, it can be true as previously discussed. There are some examples of misleading actualities even with sensible characteristics in pragmatism. I believe that certain materials can be described using atoms or electrons, the actuality is sometimes not appropriate because concepts before and after the actuality process should have consistent meanings and shared identity. We also should know that even if there is the agreement between the concept and the existence for the truth, the truth of concept alone does not matter, but a truth of combination of the concept and the represented existence (actuality) does!

With newly made theories, there have always been conventional steps to be taken. Firstly, we have to criticize whether it is rational. Secondly, it may be true, but we should check whether it is too common and does not have any meaning. Lastly, we have to make sure who invents the new theory; people who opposed it may suddenly insist they discovered the theory.

Multiple Truths: Kant prefers to use completeness rather than truth or false. There has been a debate on truth between rationalism and pragmatism. For rationalists, truth can be made but has always been there to exist, with identity, logic, and principles. On the contrary, pragmatists believe that truth is being continuously made, concerning existing and old concepts, with indirect and analogous verification. We are also doubt of the existence of absolute truth which does not have any conditions (i.e., unconditioned), especially for natural and human-related science. Truth implements its functions between facts and actualities, thus, it varies depending representations (not consistent). Or, the discrepancy between the truths of rationalism and pragmatism may exist.

Humanism plays roles like enzyme, never transform concepts too fast, but very slowly. Pragmatism coupled to the humanism is the trace of human activities of actualization. Thus, we can not complete pragmatism without human consciousness connected to all the represented experience from both individuals and a whole.

The theme of the weekly report: Provide an example of your pragmatic subject from your major or interested in you.