Emotional Value and Growing Economy

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Abstract—**Society shifts from one world to another with time. The current Industrial Society is getting close to its ceiling and many issues are emering. It is time now to consider and develop the next society. "Self-Actualization" is the highest need of us, humans and we get the greatest happiness and the feeling of achievement, when we do the job internally motivated and self-determined. In the Industrial Society, we worked for others, but we should consider making our life happy in the next society. To achieve this goal, we need to satify our emotion. But it is very much complicated and we cannot solve it mathematically. But we cope with the unexpected context in everyday life and it is enabled by our inborn instinct. If we make the most of our instinct, then we can increase emotional value and we can keep our economy growing. This paper points out the importance of instinct and how we can support it.**

Keywords—**Self-actualization, CX, emotion, coordination, instinct support somponent**

Time to Shift from World 1.0 to World 2.0

A. The Industrial Society is getting close to its ceiling

Our society shifts from one world to another as shown in Fig. 1. World 1.0 implieas the Industrial Society and it is getting to its ceiling and many issues are emering, such as decrasing labor force due to decreasing childbirth, depleted energy, etc. AI is expected as one of the powerful tools to solve these problems. But, in fact it is not. It consumes 10,000 times more energy than that of a human brain. So, AI is indeed powerful, but we should consider what kind of problem it is suitable for and narrow down its application. The Industrial Revolution introduced Division of Labor, so we succeeded in realizing mass production.
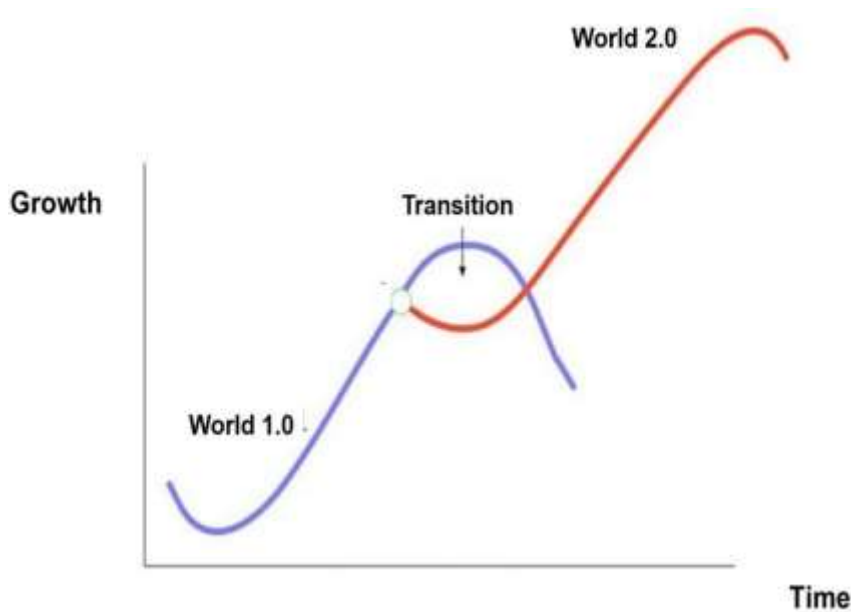

Figure 1. Growth Curve

But Abraham Maslow pointed out "Self-Actuation" is our highest need as a human [1], (Fig. 2). And Deci and Ryan proposed "Self-Determination Theory" about 40 years later and made it clear that we get the maximum happiness and the feeling of achievement, when we do the job internally motivated and self-determined. And no external reward can provide such level of happiness and the feeling of achievemetn. Further, they clarified it is deeply associated with the growth as the human [2].
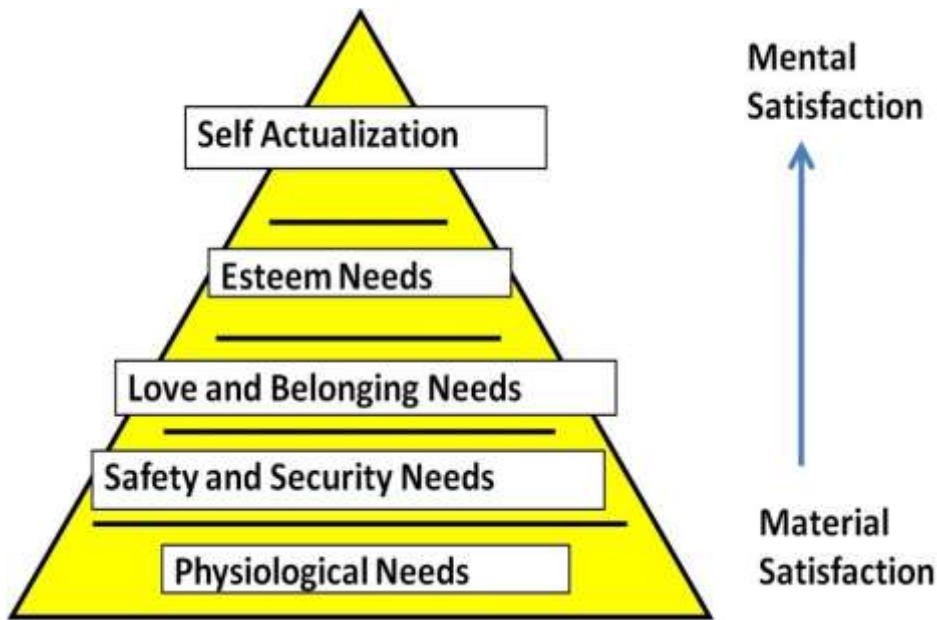
Figure 2. Maslow's human needs

So, it is time now to develop the next Society, World 2.0. As the Industrial Society is product-centric, we have been making efforts to develop rational, objective and quantitative approach to evaluate product value. Product performance was regarded as Value. But what characterizes humans is we can see the future. We want to make our dreams come true. That is why "Self- Actualization" is our highest need. Animals live for now. But we live for tomorrow.

Our economy grew with the growth of industries. In the Industrial Society, cost-benefit was our primary concern. Benfit here implies Profit. But with time, Benefit came to mean "Satisfaction". Business people came to look at the problem not only from the producer point of view. They realized that they can have more "Profit", if they can satisfy their customers emotionally. Come to think, the word "Customer" means to customize. They have regarded them as "Consumer". So the interpretatio of "Cosr-Benefit" turned 180 degrees. Thus, such word as CX (Customer Experience) indicates, the importance of "Creating Experience" has emerged as most important. To express it another way, our perspective shifts from the "Known World" to "Unkown".

Thus, "Value" also changes from tangible to untagible. Let us take "Reliaibility" as an example. Yesterday, we applied statics to evaluate reliability. But today such word as "NFT (Non-Fungible Token)" indicates the basis of value evaluation shifts from tagible to non-tangible. Trust emerges as non-tangible asset. In Africa, you can buy things with your smart phone without banking transactions. In reality, there is no bank nearby. But your trust is evaluated through smart phone, and you can buy what you want. It is true "No-Bank Economy". Economy grows without banks.

Therefore, we need to change our perspective completely. We are moving toward the Society, where "Trust" or "Confidence" in each person drives.

Emotion: From Brain to Heart

Thus, "Emotion" will be playing a leading role in the next society. But we must be aware that we have been relying deeply on our "Brain". Brain processes "Knowledge", It is the structured accumulation of past exeriences. But "Trust" is "Confidence" or "Reliance" we expect from a person. It is the world of future. We must live for tomorrow.

In the traditional economy, we focused our attention to "Brain" and made efforts to process things rationally on objective and quantitative basis. But what is coming to matter is the "Future", not the "Past".

This reminds us that we have been forgetting about "Heart". Remember William Wordsworth's poem "My hear leaps up when I behold a rainbow in the sky". When we are emotionally excited, it is the "Heart" that expresses our feelings. In other words, "Brain" corresponds to discrete mathematics. Such approaches as "Network" work there. But we must remember that our true "Death" comes after our "Heart" stops working and "Blood" stops flowing. That is why we can transplant our body organs to somebody else. "Heart" and "Blood" are analog. We have been focusing on digitalization. But we must recognize the importance of "Analog". That is why medical doctors observe blood flows for diagnosis. "Analog" plays an important role in decision making.

Instinct

Thus, we forgot the importance of "Analog". We should remember the original meaning of "Intelligence" is to "Understand". It implies "Cognitive Perception". We perceive the context and make decisions to take appropriate actions. This is what babies are doing as Jean Piaget pointed out [3]. The word "Benefit" means "bene (good+" and "fit (deed)" . Thus "Benefit" originally means not "Profit", but excellent "Cogntivite Perception". In other words, what we left behind is "Instinct". As described above, our approaches are the way of discrete mathematics. Thus, we emphasized the importance of "Brain". But as we are shifting from material to mental world, i.e., the "Emotional World". We are shifting to the "World of Continuous Mathematics". In discrete mathematics, cardinal numbers are processed. Its world is finite. So, we set boundaries and we discuss issues within these boundaries. But the continous mathematic which processes the "World of Emotion" does not have any boundaries. Its world is infinite. We can differentiate and integrate as we wish and we can discuss the gradients. We can pursue "Continuous Changes or Movements".

Mahalanobis Distance-Pattern (MDP)

The importance of "Instinct" is described. But the continuous mathemics can be applied but just for processing. Then, how can we make decisions. The answer is to leave decision making to "Instinct" and what we do is to support it. We do not know how "Instinct" does the processing. But we can help it work more effectively.
Thus, Mahalanobis Distance-Patten (MDP) is developed.

Pattern

Shuichi Fukuda and his group used to study detecting emotion from face. We tried many different image processing techniques, but they took too much time and did not produce satisfactory results.
While continuing these challenges, Fukuda suddenly realized that we can detect emotion of characters in cartoons at once and without any difficulty. At that time, cartoons were in black and white and cartoons were very simple. Still, we can identify characters' emotions easily. This reminded us of the importance of Fourier Transform (Fig. 3),
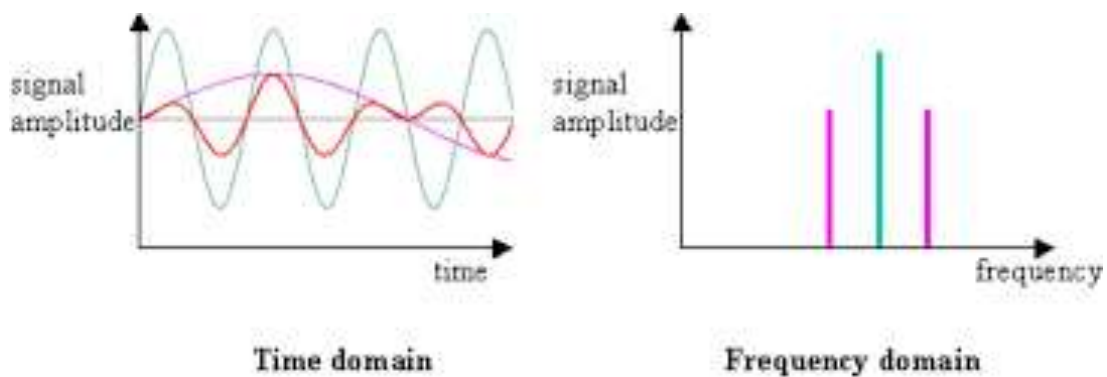

Figure 3. fourier Transform

We have been trying to detect emotion in time domain. So, face movement changes from time to time, but when we identify the emotion, we are focusing our attention in the space domain. What we are doing is to observe the patterns [4].

Mahalanobis Distance

But to make decisions, we need to prioriize. P. C. Mahalanobis, who is a researcher of design of experiments proposed "Mahalanobis Distance (MD)" to remove outliers. To remove outliers, we need to prioritize and decide which one to remove first and which one next. Thus, MD is ordinal distance. The idea is very simple. We evaluate how far away the point P is from the mean of its dataset (single dataset). And we continue removing them from the longer ones first [5].

MDP: Another Tool for Team Organization and Management

Let me explain MDP by taking swimming as an example. Water changes continuously. We cannot identify parameters, so we cannot apply mathematical approaches. But if we put wearable sensors on the swmminer or take motion images, we can get such a data sheet shown on the right. Each row corresponds to a muscle at each location. And we calculate MD between time T_1 and T_2. IF MD is decreasing, we are moving that muscle in the right way. If MD is increaing, we need to change its movement. Thus, we know how we should change our swimming style. But MDP just provides a guideline. How to coordinate our muscles and balance our body to be able to swim is left to our "Instinct".
As our bodies and how we move our muscles are different from person to person, we need to learn by ourselves. But this MDP provides a holistic perspective and help us improve our swimming style and learn to swim in shorter time (Fig. 4).
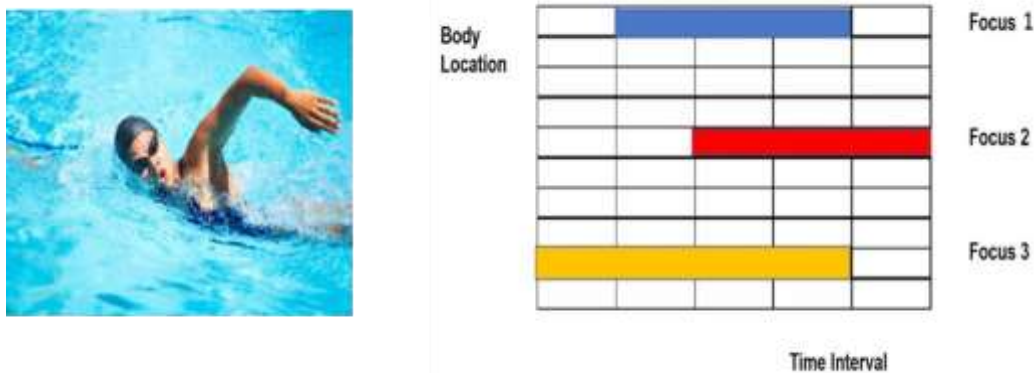

Figure 4. Mahalanobis Distance-Pattern (MDP)

MDP is nothing other than another tool for "Team Organization and Management (TOM)". In the case of swimming, each musle is a player and our whole body is a team. In business sector, "Performance Indicator" is attracting attention today and how we can identify "Key Performance Indicator (KPI)" is considered most important. But contexts in business varies widely from time to time and from case to case. So, we need more than "Performance Indicator"
VUCA is a buzzword now. This is fine, but it is nothing other than listing up difficulties. No solutions are given. And I would say we should add Complicatedness another C. What we need is a solution.
It is "Instinct". We have been focusing our attention only on verbal processing". But there are tremendous amount of data, which cannot be verbalized. Emotion is the most typical example .
Let "Instinct" take over the job of processing such hard-to-verbalize data is what this paper recommends as a most effective and trustworthy solution.

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