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An Example of Phenomenological Utility Model

By Shigenori KAMATA

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Abstract

Currently, “work style reform” is attracting a lot of attention in Japan. There are two main themes. One is to reduce long working hours and another is to raise the rate of paid leave taken. It seems difficult to explain why Japanese workers supply excess labor. This paper introduces a phenomenological perspective and presents an example of a behavioral model of an ordinary person who is not a rational individual assumed in traditional economics. The Phenomenological Utility Model presented in this paper suggests that Japanese workers have either a low affinity for leisure or feelings comfortable at work, although this has still not been verified by empirical data. I hope that this hypothesis provides a first approach to the way of making decisions for the *Seikatsusha* as advocated by Mifune (1997).

Key words: Phenomenological Utility Model, Affinity, *Seikatsusha*, Unpaid Overtime, Paid Leave.

1. Introduction

In the phenomena related to Japan’s “work style reform,” most economists have not been able to explain low usage rates of annual paid leave. According to the Ministry of Health, Labor and Welfare’s “2021 Comprehensive Survey on Working Conditions,” for example, the average annual paid leave usage rate for all industries was 56.6%. Due to recent government promotions and recommendations, the figure has risen to over 60% limited to large companies, but it remains difficult to say that the usage rate has taken off the long-standing rate of around 50%.

A more puzzling phenomenon is the existence of unpaid overtime. It is already well known internationally that Japanese companies enforce long overtime hours that can lead to death from overwork, but the Japanese government has permitted long overtime works as long as proper procedures are followed.

However, unpaid overtime is clearly a violation of the Labor Standards Act. For this reason, there is very little data available, but one of the few statistics is the number of cases of the guidance provided by the Labor Standards Inspection Office, which is published every year. According to this report, in 2021, 1,069 companies were corrected to pay more than 1 million yen per company, and the number of affected workers reached 64,968². It goes without saying that these figures are just the tip of the iceberg.

The problem is that economists can not adequately explain the generous labor behavior of workers in Japan. The problem that I am pointing here applies to Japanese workers as well as almost all workers working at Japanese companies, including foreign workers, especially technical intern trainees.

If we want to explain such worker behavior on the basis of traditional economic theory, it is possible to assume that work-

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ers expect some fringe benefits. But what are those benefits and how are they paid? Few researchers have been found that the fringe benefits are indeed distributed to those who worked long hours or unpaid extra hours. Conversely, firms may also be able to impose tangible and intangible penalties for actively taking annual paid leave, refusing unpaid overtime work, and accusing the situation inside. If this is the case, do workers continue to work at companies, assuming such punishment and accepting the salary with unpaid work?

On the other hand, we must also pay attention to the high rate of turnover within three years after entering the workforce from new graduates. Even if we narrow it down to only university graduates, one-third of them leave their jobs within three years, almost consistently every year, so there is no fact that all workers will remain dissatisfied and stay in their workplaces.

In other words, we now face the fact that more than one third workers just leaving school or university quit their jobs within three years of experience or, otherwise they are losing their right to annual paid leave and accepting long overtime but also unpaid overtime.

Instead of explaining these phenomena by introducing individual factors such as fringe benefits and whistleblowing costs, in this paper, we propose a hypothesis to explain them using phenomenological concepts. Concretely, in daily life, people have different feelings of affinity toward various tangible or intangible objects such as other people, facilities, systems, and landscapes. Feelings of affinity are essentially different from the concept of the preference that economists have considered. One of the biggest differences is that a sense of affinity is feelings after making a decision and using objects while the preference is an attitude before decision-making. That is, results of use for objects make their affinities disclose, not based on expectation calculations. Therefore, a sense of affinity may be independent of economic gain or loss or interest, and has not traditionally appeared as economic explanatory variables.

The utility function presented in this paper has the property of giving a higher evaluation to objects with which one feels a sense of affinity, and giving a lower evaluation to objects with which one does not feel it. For this reason, the utility of a specific individual gained from objects with which they feel a sense of affinity can be overestimated or underestimated compared to the evaluations made on the standpoint of other homogeneous people (evaluation from an anonymous person). When this type of the utility function is applied to employment issues in Japan, one of the causes of workers who die from overwork may be indicated that they had an unusually strong attachment to their companies.

2. Daily Life and Equipmentality

In the standpoint of 20th century phenomenologists, one is convinced of the existence of the living world (as Husserl calls it) based on experience, but each person's consciousness is within such a living world. In other words, each person is aware not only of the world constructed by natural and objective laws that are common to all, but also of the subjective world constructed based on experiences that differ from person to person. In Heidegger's case, these are worlds constructed of "equipments" (concern to objects), and human consciousness (Dasein) exists within such "equipmentality" which makes items of equipment. This is what Heidegger calls "being-in-the-world".

The meaning of equipmentality here includes a relationship that how useful an object (goods, person, building, nature, system, culture, custom, etc.) is to you as well as how easy the object fits you. This relationship can be measured by a psychological distance to the object. We prefer to call it a sense of affinity, instead of words such as serviceability, conduciveness, usability, manipulability that Heidegger has pointed³.

This is superficially similar to the individual "preference" assumed in the traditional economic theory of utility, but it is a sense based more on human cognition. Our utility theory usually focuses solely on the function of a product, whether it is an agricultural product or an industrial product. For example, a compact car manufactured by Company A and by Company B are often considered to be the same goods, and the difference between them is at most due to equipped items or data available in catalog. Therefore, in this case, it believes that the order of preference is determined by their performance in catalog. On the other hand, even in the theory of utility, determining the order of preference between products with completely different purposes, such as bread versus cannons, can reflect the difference of ideology and ethics on each person.

However, from the standpoint of phenomenology, an individual preference to an object is disclosed from relationships between all objects that constitute his living world. And relationships between objects, the worldhood of the world, continues to change at any time. For example, a man who is a carpenter has several hammers. But even similar hammers have different grip comfort, subtle differences in shape, and even design and color, which bring about differences in the fitness of use in circumstances. For another example, there are several jeans of the same model number from the same manufacturer hanging on the wardrobe. Nevertheless, it is a common experience that for some reason I always reach for one of the jeans and never reach for the others. If you think about it, it might be the jeans you were

wearing when you happened to have some kind of lucky event. Of course, these factors are completely ignored in the traditional economic theory of utility, even though they are frequently experienced in daily life.

It seems very important to apply this phenomenological perspective to the current problem of decision-making to a labor supply. This is because for most people, work occupies a large part of their daily lives, and the meaning and the relationship to work are built in everyday life, even more than the choice for jeans. Naturally, it is enough anticipated that a favorite job, workplace, and even the neighborhood surrounding the workplace can affect an employee's sense of affinity with the current employment relationship, leading to overestimation or underestimation of one's treatment.

3. A simple way to express phenomenological utility

As mentioned above, the equipmentality (cognitive relationship between objects, or the worldhood of the world) that we are trying to model here is supposed to change endogenously based on daily experiences. In other words, the relationships of one's world should change at the same time as each decision is made, including the case of withholding judgment. For example, there are significant changes in the equipmentality (one's worldhood) in whether to retire or accept rehiring at the end of one's career. However, in this paper, as a starting point for phenomenological utility theory, the relationships between various objects, that is the equipmentality, is already determined by relationships established in the past, and does not change due to a new decision making. Therefore, assume a sense of affinity that is a cognitive evaluation to the object based on the equipmentality is given as exogenous variables. Of course, this assumption is not realistic but what is made just for simplifying a construction of the theory.

3-1. Utility evaluation of catalog performance

In economic decision-making, it seems that people usually think about the priority of preference by having some kind of catalog value in mind. This may be based on the manufacturer's official catalog offered from car dealers when making a decision when purchasing a car or on discount flyers inserted in newspapers when shopping for ingredients at a supermarket.

In the former case, Company A's compact car has basically the same purpose and performance as Company B's, with slight differences in interior, design, manufacturer's brand power, and rarity of distribution. There are consumers who think or do not think that the same things as other people are good. It would be common that recognizing these factors and taking into account

the price with some fringe benefits, we make choices.

In the latter case, there is no catalog provided by the manufacturer, but consumers can find ingredients suitable for making curry rice or for making chop suey within their own cooking repertoire through a few flyer ads. People know it from experience, and they could simulate in their head of what would happen if they purchased those ingredients. Today's dinner catalog (menu candidates) lists such as curry rice, chop suey, chicken hot pot, and the order of preference is determined based on the relationship with budget constraints.

In this paper, we refer to one as a utility evaluation or utility function based on catalog values. Rational decision-making in traditional economics uses this utility function directly to solve optimization problems.

3-2. Reevaluation of catalog performance

However, for people living in the real world, when making decisions, it is common for them not completely to trust catalog values. Actually, people know from experience that catalogs just emphasize the merits of items and do not mention the demerits of them at all, such as purchasing a car or choosing a restaurant menu.

Furthermore, even when cooking dinner at home, it is often not possible to purchase all the ingredients necessary for the ideal menu. Additionally, some consumers may buy a week's worth of food in bulk, cook it, and then freeze it in smaller portions. In that case, whether or not you really want to eat the preserved meal later is another story. You may have experiences of eating out or buying different ingredients and cooking them anew. In our daily lives, we are always full of the uncertain and the unexpected, and there is a high possibility that we cannot expect as high as the performance listed in the catalog.

I am not arguing here that catalog values should simply be discounted by uncertainty. What to emphasize is the fact that one may re-evaluate catalog values to see if they are reliable before and after determining their preference rankings. When buying a car or food, this might be expressed as a feeling of "I don't want to regret" or "I made a mistake." (If the evaluation was higher than expected, it might be expressed "better than expected".)

Apart from this, in the example of jeans as above, it believes that "a sense of affinity" to the object in the equipmentality also affects the re-evaluation of the catalog value. It seems that a person who has the affinity to the object is to evaluate catalog values of it more favorably. In other words, such a person would easily overestimate the target.

We must distinguish between a rating of performances in catalogs and a sense of how well the object fits. This is because

the performance in the catalog depends on the seller's claim, and the fit arises from the buyer's perception. Consumers who have lived in the real-world long term listen to manufacturers' claims with mixing pessimism and optimism. Therefore, we will call living people (Seikatsusha in Japanese) who Mifune (1997) defined as "people who worry about unnecessary things," to distinguish them from the concept of consumer, in other words, the rational economic man.

Of course, in daily decision-making, even if one falls in a state that love is blind, it is just a matter of personal preference, and there may be no need to view it as a particular problem. However, in issues such as employment decision-making, a certain kind of exploitation (although not dealt with in this paper, it can be called two-part tariff) is possible, and consumer surplus may be squeezed out.

For example, imagine that there are theme park A and theme park B, and a person feels an affinity for the concept of the former but does not feel anything special about the concept of the latter, nevertheless the two theme parks may have the same performance. Then it is easy to imagine that even if a higher ticket price is set for the former, customers would be willing to accept it.

If we replace theme park A with workplace A, we can predict that there is a high possibility that workers who feel a sense of affinity with company A will accept it, even if they are forced to work harder at company A.

3-3. An image of phenomenological utility function

3-3-1. Utility function of catalog surface

An intuitive image of a phenomenological utility function will be shown in the following. In traditional economics, the notation of the utility function is anonymous, even if subscripts are attached to identify the individuals. Now, let the income earned by working L hours at an hourly wage w be Y . That is, $Y = wL$. Then, the utility obtained from this income can be expressed as $U(Y)$ or $U(wL)$ where the notation U is a utility function with $U' > 0$ and $U'' < 0$. The formulation of utility in this way usually does not matter what company you work for. This is because the source of utility is your income and because your hobby regarding your company or workplace is not reflected in your utility. This is just one assumption made by the analyst.

Now, the decision of how long to work can be formulated as a utility maximization problem in which a worker derives the optimal allocation between leisure time H and the consumption amount of a composite goods C , with the price of the goods p and the total time constraint $\bar{T}$:

$$\text{Max } U = U(C, H) \quad \text{s.t. } wL = pC \text{ and } \bar{T} = L + H \quad \text{①}$$

equivalently,

$$\text{Max } U = U\left(C, \bar{T} - \frac{p}{w} C\right).$$

In the last equation, the amount of consumption C is the only factor that determines the magnitude of utility, except exogenous variables such as the price of the goods p and the wage rate w . It doesn't matter what company one works for, but how much one can consume and how long one can rest in terms of consumption units.

The formulation may be justified when anonymous individuals assume to buy and sell anonymous goods and services. The evaluation in catalogs is an inorganic evaluation of consumption in a virtual world. This is similar to the following: when a person gives advice to a third party and says, "If I were in your position, I would make this evaluation."

3-3-2. Utility function at the cognitive level

However, each person living in the real world has various preferences, even if those are what others seem irrational. Deciding how long to work, it is rather common to think that the magnitude of utility (assessment of income) changes depending on human relations within the workplace and the freedom of the job, even though there are no differences in other conditions such as personnel treatment.

If we try to formulate this as an optimization problem in traditional economics, we have to change the form of the utility function depending on each workplace (for example, a function U at company A, but another function V at company B), otherwise we have to introduce some variables of cost or fringe benefit into the budget constraint.

This is a very Ptolemaic theory, and it looks like that we are constructing a model on an ad hoc to explain the phenomenon in front of us. In the first place, it does not explain the law of how the parameters in the utility function change depending on whether you work at Company A or Company B. In addition, as will be discussed in Section 4, it is not explained what differences in the landscape near the workplace, in human relationships within the workplace, or in the worker's home affairs affect the worker's utility. In order to analyze such factors, it is necessary to express them by inserting the relevant parameters in each utility function, or by introducing new variables to the budget constraint equation.

Instead of this artificial way of explaining, in this paper, it assumes that living people, not consumers in traditional economics, reevaluate the catalog utility evaluations based on their equipmentality, that is, their senses of affinity to the object. Again, this re-evaluation does not mean an abstract or a virtual

evaluation like “How attractive usually are the working conditions at the company listed in this job posting?” Rather, this is an evaluation that takes into account relationships such as: the actual location of the workplace (such as a prestigious building in a sophisticated office district), the company’s popularity and brand power (something you can be proud of it to your friends and relatives), and the fact that many graduates of the same university have joined the company in the past. This contains an evaluation factor, such as the atmosphere and interpersonal relationships within the workplace, contents of the job, and troubles with customers, which could have not been recognized until you spent your time at the workplace.

Then, in this paper, we assume that the re-evaluation of catalog values can be described as shown in Figure 1 and 2.

First, Figure 1 shows the utility function we often see in economics textbooks. If x and y are different goods, such as apples and oranges, the utility is expressed in different forms of function, U and V . People who plan to consume the object evaluate its utility in the virtual world created by advertisers. This corresponds to evaluating the utility based on a car manufacturer’s catalog or a supermarket advertising flyer.

When applied to the problem of labor supply, it is the stage in which job applicants are evaluating the utility by looking at the working conditions written on the job posting. But whether a worker is really able to get the utility does not know until the worker is working there.

Next, Figure 2 shows the stage where one’s consciousness is looking at the utility in the catalog (the face value of the utility) and reexamining it. The catalog plane in Figure 2 is drawn the utility in the catalog equivalent to one in Figure 1, which is written is tilted with respect to the vertical plane that is called the consciousness plane. The vertical axis of the consciousness plane represents the magnitude of the utility evaluation in one’s consciousness, and its evaluation value is what is projected from

the catalog plane onto the consciousness plane.

Let’s explain as the example of oranges, which are often used in economics textbooks. It vaguely explains in a text that eating one orange will give you 10 benefits, eating two will give you 15, eating three will give you 18, etc. It does not explain how oranges will be consumed. Probably meant to be eaten normally. This situation is depicted as the utility function $U(x)$ in Figure 1.

What happens if the oranges came from a famous production area? For many people, the utility function will shift upward. Economists would say that branded oranges are substantially another commodity. Therefore, the utility function $V(y)$ is additionally drawn in Figure 1.

So, what happens if someone in your family buys a juicer mixer? Perhaps the utility you can get from branded oranges would be further higher. How would you depict such a situation in Figure 1? In economics, this is called a combination good or an interaction good. This means that we do not need to accept the additive separability of the utility function. But by what law do they combine? Why are these goods combined? Is it a technical reason or a psychological reason?

In contrast, in Figure 2, the angle of the catalog plane to the vertical plane, θ , expresses the affinity for oranges. Naturally, the smaller is the inclination angle of the catalog plane, the bigger is the evaluation of the utility in the catalog projected onto the plane of consciousness. The projection of the utility function from this catalog plane to the plane of consciousness is formulated as follows, assuming that the original utility function is $U(x)$:

$$W(x) = U(x) \cos \theta. \quad (2)$$

At this time, the angle θ ($0 \leq \theta \leq \pi/2$) from the vertical plane (plane of consciousness) is an index that expresses the affinity to the object in your real world. In the previous example, if

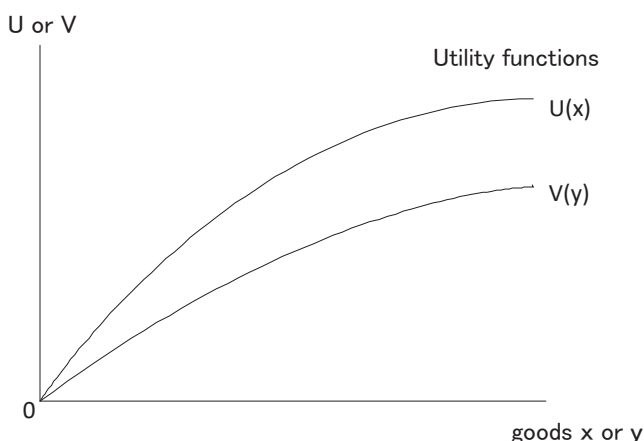


Figure 1. Utility evaluation in catalog plane

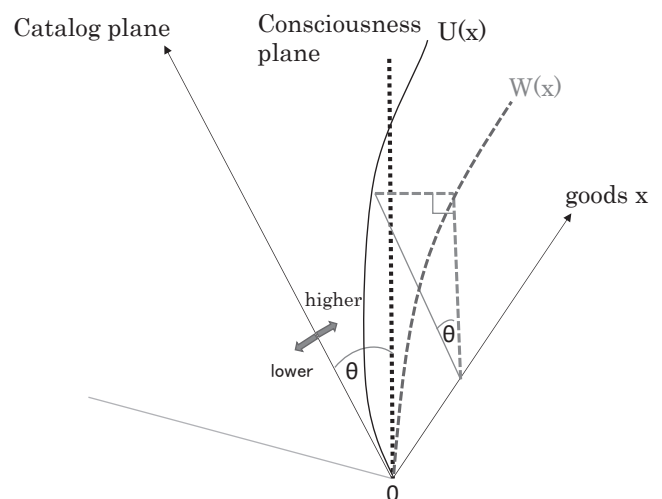


Figure 2. Re-evaluation of the object in consciousness

you have a juicer mixer at home, the utility from oranges may increase. In this way, θ is a variable that changes when you notice a new equipment or when the relationships to the existing equipment change, even though the performance of the object itself has been unchanged.

Such reassessment does not only occur before decision making. After you actually used it, you may realize that it doesn't suit your lifestyle. This is a state of regret, and θ is considered to be larger than when it was purchased.

On the other hand, you may find that it is easier to use than you expected. In that case, the angle θ will become smaller, and therefore the re-evaluation of the utility will become higher.

3-4. Some simple numerical examples

Finally, let's simulate the relationships between the affinities to the object and the utility evaluations by using the simple labor supply model of the type shown in equation ②.

Now, consider the same problem as shown in equation ① by specifying the Cobb-Douglas type utility function. The income earned by working L hours at an hourly wage, w , is expressed as Y . Also, if the consumption of a good is C , its price is p , leisure time is H , and the total time constraint is $\bar{T}$, then the maximization problem is

$$\begin{aligned} \text{Max} \quad & U = \alpha \log C + (1 - \alpha) \log H \\ \text{subject to} \quad & Y \equiv wL = pC \\ & \bar{T} = L + H \end{aligned}$$

or equivalently,

$$\text{Max} \quad U = \alpha \log[w(\bar{T} - H)/p] + (1 - \alpha) \log H \quad \text{③}$$

which is maximized with respect to H .

The solution to this catalog plane is simply $H^* = (1 - \alpha)\bar{T}$.

Next, this problem is re-evaluated from a conscious perspective. Strictly speaking, we should insert the affinities into both consumption, C , and leisure time, H . Here, we consider only the affinity to leisure, H , purely for simplicity. Then the problem added the reevaluation to leisure time H into formula ③ is expressed as

$$\text{Max} \quad W = \alpha \log[w(\bar{T} - H)/p] + (1 - \alpha)\{\log H\}^* \cos \theta. \quad \text{④}$$

The optimal solution for the leisure on the conscious plane, $\bar{H}$, is

$$\bar{H} = \frac{(1 - \alpha) \cos \theta}{\alpha + (1 - \alpha) \cos \theta} \bar{T}. \quad \text{⑤}$$

The above equation implies that even if the size of the utility

distribution ratio α remains unchanged, the farther the affinity of leisure, H , is, the more the working hours, L , will increase, as the smaller θ means the distance to leisure. This is shown in the appendix at the end.

The results of simulation using the equation of ⑤ are listed in Tables 1 to 3. Table 1 shows changes of the optimal leisure time, $\bar{H}$, due to changes in the distribution ratio α and the affinity to leisure, θ . The time constraint, $\bar{T}$, for one month is set to 480 hours. It is assumed here that 8 hours out of a 24-hour day are for sleeping, taking a bath, meal, etc. that is the physiologically necessary minimum time, and the remaining 16 hours times 30 days can be allocated between work and leisure.

Table 2 shows the utility, W , in the case of the optimal leisure times, $\bar{H}$, assuming that the hourly wage, w , is 1,500 and the price of the consumption, p , is 1. It can be seen that the smaller the distribution ratio, α , (the larger the weight of consumption), the larger the change in total utility, W .

Table 3 shows the amount of consumption, C , achieved by working for one month at an hourly wage of 1,500. Compared to the case where the utility function includes only the distribution ratio, α , as a parameter (corresponding to the shaded case of $\theta = 0$ in Tables 1 to 3), the simulation results are wider and more realistic.

Specifically, pay attention to the case where the allocation ratio, α , is 0.1 or 0.2 in Table 3. This is the type of worker who originally weights leisure. Then if they have the smaller θ (the higher affinity) of leisure H , they certainly enjoy leisure while spending less than 100,000 per month.

However, for some reason, if they feel insecure about their leisure time and the value of θ becomes larger, they may work as hard as others (see $\theta = 75^\circ$, note that not Rad, in Table 3) or work harder than others (see $\theta = 89^\circ$ in Table 3).

Table 3 suggests that even though they would be so-called gig workers, they will not drastically reduce their working hours when they feel anxiety about their leisure. Simply, in that case, their utilities can never be high (see $\theta = 75$ and $\theta = 89$ in Table 2).

4. Towards empirical analysis

When applying phenomenological utility, an important issue is how to create indicators to measure the affinity to the object. We believe that the affinity to the object can be determined through a questionnaire survey in term of the object. But, for Example, if I ask elementary school students what kind of job they want to do in the future, they may answer that they want to work at a cake shop or become a police officer. Also, if I ask the same question to university students who are about to start job hunting, they might answer that they want to work in sales without quota in

Table 1. Optimal Leisure Hours

		[Setting values]					$T = 480$ (= (24-8) hours/day $\times$ 30 days)			
$\theta \backslash \alpha$		0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
0		432	384	336	288	240	192	144	96	48
15		430	381	332	284	236	188	141	93	47
30		425	372	321	271	223	176	130	85	42
45		415	355	299	247	199	154	112	72	35
60		393	320	258	206	160	120	85	53	25
75		336	244	181	134	99	71	48	29	13
89		65	31	19	12	8	6	4	2	1

Note: The case of $\theta = 0$ has the same result as the normal maximization problem that does not take into account the affinity to leisure.

Table 2. Total Welfare

		[Setting values]					$w = 1,500$		$p = 1$	
$\theta \backslash \alpha$		0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
0		6.580	7.136	7.757	8.426	9.137	9.889	10.682	11.524	12.431
15		6.394	6.974	7.618	8.310	9.044	9.817	10.631	11.493	12.417
30		5.849	6.500	7.213	7.973	8.773	9.609	10.484	11.403	12.380
45		4.985	5.750	6.575	7.443	8.347	9.285	10.256	11.264	12.322
60		3.866	4.785	5.758	6.769	7.810	8.877	9.971	11.093	12.251
75		2.583	3.694	4.846	6.024	7.223	8.437	9.668	10.914	12.180
89		1.400	2.732	4.070	5.411	6.753	8.097	9.442	10.789	12.136

Note: The case of $\theta = 0$ has the same result as the normal maximization problem that does not take into account the affinity to leisure.

Table 3. Amount of Consumption (30 days)

		[Setting values]					$w = 1,500$		$p = 1$	
$\theta \backslash \alpha$		0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
0		72,000	144,000	216,000	288,000	360,000	432,000	504,000	576,000	648,000
15		74,278	148,035	221,278	294,011	366,240	437,969	509,205	579,952	650,216
30		81,872	161,287	238,353	313,174	385,847	456,462	525,105	591,859	656,799
45		97,773	188,067	271,707	349,403	421,766	489,328	552,552	611,841	667,552
60		130,909	240,000	332,308	411,429	480,000	540,000	592,941	640,000	682,105
75		216,257	353,760	448,903	518,647	571,965	614,048	648,110	676,244	699,873
89		622,261	673,017	691,827	701,632	707,650	711,719	714,655	716,872	718,607

Note: The case of $\theta = 0$ has the same result as the normal maximization problem that does not take into account the affinity to leisure.

the automobile industry or in system development without long overtime hours in the IT industry. This way of asking questions simply explores the image of the abstract world in our minds, and is useful for constructing a utility function in a catalog, but it does not provide clues to one's sense of familiarity with the job or the workplace.

Below, we will consider what questions to ask as indicators of the affinity that can be applied to the problem of overtime works.

There are two ways to find out one's affinity to the job or the workplace: one is to ask about one's affinity directly, and the other is to indirectly know one's affinity to work by asking about one's affinity to leisure, because people often have the alternative choice between working and resting.

We first collect objective data on general attributes and working environments with items shown in Table 4, and then we obtain the data necessary to construct a utility function on the catalog plane and to reevaluate it on the conscious plane with items shown in Table 5. These questions include questions about one's attitudes and values regarding "work and leisure" and "work and family." Furthermore, questions ask both about "the affinity to the workplace" and about "the affinity to leisure time."

The last question in Table 5, which asks whether there is a third place, provides an important clue. Because nobody is actually able to enjoy leisure time without it, even if he or she wants to focus on it.

Table 4. Questionnaire items (questions regarding objective factors)

Attributes of Question	Items of Question	An Example of Choices for Answer
Elementary Attributes	Sex	Male / Female
	Age	20s / 30s / 40s / 50s / 60 to 64
	Household	Single / Living separately for working / Living with family (Head of household) / Living with family (Non-head)
	Job Change	Experienced / No experience
Objective Employment Environments	Working Style	Commuting to work in an office or a factory / Remote working outside of home / Remote working at home / Combination of the above
	Average Commuting Time a Month (Round Trip)	Zero (Completely working at home) / Less than 1 hour a day / Over 1 hour but less than 2 hours / Over 2 hours but less than 3 hours / Over 3 hours but less than 4 hours / Over 4 hours
	Years of Service under Current Employment Contract	less than 1 year / Over 1 year but less than 3 years / Over 3 years but less than 5 years / Over 5 years but less than 10 years / Over 10 years
	Average Overtime Hours a Week (Overtime Hours + Hours Worked on Holidays)	Less than 20 hours a week / Over 20 hours but less than 30 hours / Over 30 hours but less than 45 hours / Over 45 hours but less than 60 hours / Over 60 hours but less than 80 hours / Over 80 hours but less than 100 hours / Over 100 hours
	Percentage of Paid Leave Taken Last Year	0% / Over 0% but less than 25% / Over 25% but less than 50% / Over 50% but less than 75% / Over 75% but less than 100% / 100%
	Total Gross Income for One Year (Before Taxes and Including All Allowances) in thousands of yen	Less than 1,060 / Over Less than 1,060 but less than 1,300 / Over 1,300 but less than 2,000 / Over 2,000 but less than 4,000 / Over 4,000 but less than 6,000 / Over 6,000 but less than 10,000 / Over 10,000 but less than 15,000 / Over 15,000
	Current Position	Equivalent to President · Executive · Manager · Director / Equivalent to Section Manager · Director / Equivalent to Chief · Section Chief / Non-Management position

Table 5. Questionnaire items (questions regarding subjective factors)

Attributes of Question	Items of Question	An Example of Choices for Answer	Purpose of Question
Elementary Work Ethic	Please fill in the figures of average time distribution during the day (days with work) so that the total is 24 hours.	Spending () hours at workplace (including commuting) / () hours with family (location doesn't matter, including meals) / () hours with people other than your family (location doesn't matter, including meals) / () hours alone at home (including meals) / () hours alone outdoor (including meals) / () hours of sleeping	Determining the weight between work and leisure
	Please fill in the figures of average time distribution during the day (days without work) so that the total is 24 hours.	Spending () hours at workplace (despite not being paid or having no work) / () hours with family (location doesn't matter, including meals) / () hours with people other than your family (location doesn't matter, including meals) / () hours alone at home (including meals) / () hours alone outdoor (including meals) / () hours of sleeping	Determining the weight between work and leisure
	Please rank each of the above spending times in descending order of your psychological priority.	time spending at workplace / time spending with family (location doesn't matter) / time spending with people other than your family (location doesn't matter) / time spending alone at home / time spending alone outdoor / time spending in sleeping	Determining the weight between work and leisure
Subjective Employment Environments	Human relationships at the workplace	very difficult / somewhat troublesome / not too much trouble / good / unable to answer it	the affinity to the workplace
	What do you think about the landscape of your workplace (the exterior/design of the company building, the view from the windows of your workplace, etc.)?	very favorite / somewhat favorite / somewhat dislike / very hate / unable to answer it	the affinity to the workplace
	Are there any places you are interested in on your commute route to your current workplace or around your workplace? (For example, your favorite store is nearby, there is a famous historical site that you are proud of, or there is a place where a regularly event that you look forward to is held.)	strongly affirm / somewhat agree / rather deny / strongly hate / nothing in particular	the affinity to the workplace

Attributes of Question	Items of Question	An Example of Choices for Answer	Purpose of Question
How To Spend Holidays	How do you spend your days off?	I have fixed lifestyle habits such as sports, hobbies, and travel / I often do nothing in particular / haphazard and irregular	the affinity to holidays
	Who do you spend your holidays with?	I often spend time with my family / I often spend time with co-workers / I often spend time with friends and acquaintances other than my co-workers / I often spend time alone/nothing in particular	the affinity to holidays
	How much do you spend on holidays in total in a year (including membership fees, dues, transportation expenses, shopping expenses at outlet malls, pachinko fees, etc.)?	over 50% of annual income / over 30% but less than 50% / over 10% but less than 30% / over 5% but less than 10% / Less than 5% / nothing in particular	the affinity to holidays
	What does leisure mean to you in life?	I work to enjoy my leisure time / I value work and leisure equally / Work is the main thing, and I have leisure time to refresh myself / I don't particularly need leisure time / I don't know	the affinity to holidays
Cozy Places	Do you have a place (third place) other than your workplace and home where you feel at ease (e.g., fan club, volunteer activities, hobby club, etc.)?	yes / no / unable to answer it	the affinity to holidays

5. Instead of conclusion: Differences in existing utility hypotheses

Mifune (1997) called the household that should be studied in economics the *Seikatsusha*, and described it as “a human being who thinks about unnecessary things.” Although this concept included the rational economic man who is the premise of the theory of utility in traditional economics, it was a concept that greatly exceeded it. The issue is how to model the part beyond the rational economic person, but in this paper, we use the concept of equipmentality that have been discussed in phenomenology and present an example of a decision-making model.

The model presented in this paper has the following characteristics. The structure of the world that people live in is made up of relationships as a composite of things. These relationships are explained not only by the usefulness of objects but also by the sense of affinities with them. In other words, we have proposed an attempt to reflect the characteristic of *Seikatsusha* who tend to think about unnecessary things, through their affinities to objects. Despite the basic values unchanged, if a sense of affinity to the object changes, one may perceive it as garbage. On the other hand, as the issue with the long overtime, if a boss creates an atmosphere in the workplace where long overtime is the norm, subordinates may easily accept overtime.

Even with existing utility functions, if we do not assume separability, it is possible to explain synergistic effects like bread and butter, and reciprocal effects like smartphones and cars. To do so, it is necessary to introduce many parameters and explanatory variables to clarify individual interests and profit and loss ac-

counts. That would not be impossible, but it would be extremely arbitrary and not appropriate. In fact, no matter how rational an individual may be, it is unrealistic to assume that all decisions are made based on an examination of interests. Rather, it seems that most decisions in daily life are made based on mood, so it is natural to add parameters that indicate mood as well as parameters that indicate values.

Lastly, the model presented in this paper is just a starting point for a phenomenological utility approach and must be further developed. In particular, it is assumed in this paper that the affinity to an object is a fixed given. But it would normally change from moment to moment. If so, the current decision-making changes with the transition of their affinities. Turning the equipmentality (the affinities to objects) into endogenous variables is essential in considering more realistic consumer models, but this remains unresolved in this paper.

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References

- ¹ This paper was presented at the Research Conference of Chubu Division, Tempaku Campus, MEIJO University, the Japan Society of Household Economics on December 10th 2023. I would like to thank the discussant, Professor Chiho Oyabu, Gifu University, for her helpful comments and the chairperson, Professor Shinobu Ito, Meijo University, for pointing out my presentation materials' mistakes.
- ² From the Ministry of Health, Labor and Welfare website: "Results of correction of unpaid overtime through supervision and guidance (FY2021)" (in Japanese). The total amount of premium wages paid was 6,507,810,000 yen, 6,090,000 yen per company, and 100,000 yen per worker. By industry, manufacturing industry accounts for 18.3%, commerce industry 17.1%, and health industry 14.8%.
- ³ See Heidegger (1962) p97.

Appendix

In this appendix, we show that increasing affinity for work, that is decreasing affinity for leisure, increase working hours.

Now, the working hours L is $L = \bar{T} - \tilde{H}$, so from formula ⑤,

$$L = \bar{T} - \frac{(1 - \alpha)\cos\theta}{\alpha + (1 - \alpha)\cos\theta} \bar{T}$$

Differentiating this with respect to θ , we get

$$\frac{dL}{d\theta} = \frac{\alpha(1 - \alpha)\sin\theta}{[\alpha + (1 - \alpha)\cos\theta]^2} \geq 0$$

within $0 \leq \theta < \pi/2$.

That is, if θ increases that the affinity for leisure H becomes farther away or in the same meaning, that the affinity for work L becomes closer, the decision maker does not reduce working hours H .