

S1-1 Ergonomics Study at the Development Vehicle

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The vehicle has been investigated to the comfortability level to its tripulation. This comfortability is determined at lay-out level during its planification; such that the car habitability, the operability to the user, the driving operability, the car getting in/out, the visibility and its visible field, etc. After this process the trial make car are submitted to the re-investigation about the active process of the planification lay-out and the actual driving. Recently we don't think just about the practicability in the car; the security to the drivers -easy recognition of the meters and reduction of the error in the switches operation, and the personal sensation - visible and tactile sensation-, who are quantities numerically it has been investigated. The data about the woman drivers and aged drivers has been collected for the investigation too.

S1-2 Application of Optimization Model for Designing Human - Computer Interface

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This paper discusses an industrial design procedure of Human-Computer Interface (HCIF) for the implementation of an ergonomics solution in banking terminal system.

The procedure is intended to provide, in the design stage, a methodology for solving practical ergonomics problems to optimize various configurations of the operator's human factors.

The following two factors are taken into consideration in this paper:

First, the operator's Attitudes and/or posture, and biomechanical factors while working with the system as the relations of the outside design of the banking terminal system, and second, the operator's

Control and Display factors in the operator's working area and field of vision for the functional design factors.

The final conclusion discusses those procedures, and the factors of the HCIF are evaluated by using a mock-up to perform graphic modeling by personal computer aided design.

S1-3 Ergonomic Rules for Software Design

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It is well known that ergonomic rules, including principles and guidelines, are very useful for hardware designers and widely used properly by them. However, most of software designers do not know about ergonomic rules exactly, and they do not use these rules properly yet. The questionnaire gives notice that software designers request ergonomists to support their design activities by showing and training them ergonomic rules in plain language.

Design procedure of word processing systems is shown as a case study, and it is also shown that some ergonomic rules are useful for software design in each design step. Coding method is one of the most important rules to design operation flow diagrams and screen formats to keep consistency in systems. Observation and interview methods are also useful in research and evaluation steps to know how systems are used by users and how users are satisfied.

S1-5 Human Behavioral Characteristics and Design

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Applications of ergonomics to design have been considerably advanced for morphological and physiological aspects of human characteristics, however, not yet for behavioral aspect including psychological aspect. In designing environments that are better suited for human living and work, human behavioral characteristics is not less than, or rather more

important than morphological or physiological characteristics. The relation of human behavioral characteristics with design was discussed adopting dressing and automobile as examples.

Dressing has many functions simultaneously. Behavioral consideration was applied to the signalling function of dressing. Signallings through clothing are grouped according to their function into concealment, exaggeration, generation and falsification. Uniform or badge is a signal of belonging. Individuation is promoted by various private clothes. As the functions of automobile there are moving, transit, game, dwelling (protection, habitability and signal) and signalling. The character of a car is determined by the relative importance of these factors. There comes a wave of individualization also in automobile.

S2-1 Free-Time and Physiological Anthropology

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For the past four decades, in order to make their living most of the Japanese had been obliged to devote a great part of daily twenty-four hours to their work. However, in recent years the part of free-time in their daily life has a tendency to increase in contrast to the part of working-time and work-related unfree time which has been shrinking.

With the increase in free-time, the quality of life is beginning to change. At the same time, the industrial structure, too, is changing from that of adding value added to materials and hardware to that of adding value added to non-materials such as free-time and software. For example, carbon fiber is a high tech material, but in Japan eighty per cent of the total output is used for the production of golf clubs and fishing rods.

Till recently, we have been working hard so as to have enough money to eat, but now our main concern is how to refrain from eating too much so that we may not grow fat and how to get slim once we put on weight.

Also the number of facilities where we improve our health or where we make the most of our free-time has been increasing rapidly. This is partly because our free-time has been on the increase.

The Japanese are gradually getting rich. It is said that those who get rich go through the following process in the following order: (1) One gets rich; (2) When one is rich, there is no need to work as hard as before. Consequently one has more free time; (3) By using this free time, one can make many friends; (4) When one is accepted by all the people as rich, one can be called really rich.

There appeared a new breed of rich people who strive to become really rich in the above-mentioned sense. This tendency is reflected in the increasing number of people who are individualistic, success-oriented, first-class-brand-name-oriented, health-oriented and leisure-oriented.

It is leisure which incites us to create free-time and it is also leisure which makes it possible for us to take advantage of free-time. Etymologically speaking, the word "leisure" means.

The word "leisure" is actually used to mean the following four different kinds of free time;

- (1) Recreation which is for the recuperation from the fatigue and for the easing of tension both of which build up during the working hours;
- (2) Week-end which is from night of Friday to morning of Monday in keep has time.
- (3) Vacation which is from 4 day to 4 month in free time.
- (4) Post-retirement years which is all day in free time.

Traditional physiological study of human beings was mainly conducted on men during their working time and work-related unfree time, but it can be expected that the study of men during their free-time may increase from now on. Besides, industries taking full advantage of increasing free time are expected to develop. Physiological anthropology will play an important role as a new means on study in response to such new social needs.