

if “ $LV > LU$ ” exists, it is needed to prolong the physical lifetime till the value lifetime is exhausted. At this time, such methods as ‘maintenance’, ‘making long life span of product and so on are often used to keep product value. Conversely, if “ $LV < LU$ ” is true, ‘upgrade’ and ‘parts reuse’ can be used to extend value lifetime to fit the physical lifetime of product. Among these methods, ‘high value added’ is very difficult to create, because high added value is usually related with *Kansei* factors (for example, customer satisfaction and attachment to product).

The above stated methods mostly take product life cycle into account to make physical lifetime (LU) longer from the eco-technology viewpoint till to keep product value, which mainly lies in the stage of ‘step 2’ (seen in Figure 3). But as for improving product value, especially creating high added value (*Kansei* value), we also should try to culture the affection such as attachment or royalty between consumer and product from the eco-mind viewpoint, to make consumer want to use product longer (seen in Figure 6). In other words, development of new methodology is needed to create high added value of product with consideration of *Kansei* value. This methodology can make product more attractive to consumer and strengthen the emotional relation between product and consumer.

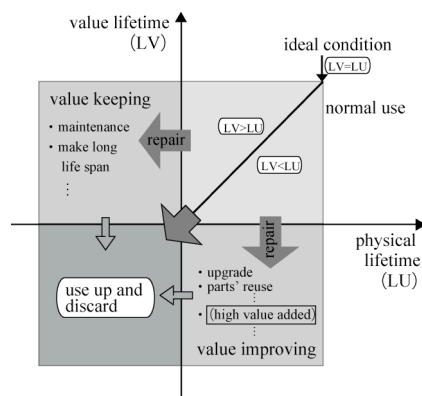


Figure 5. Relationship between physical lifetime and value lifetime in product

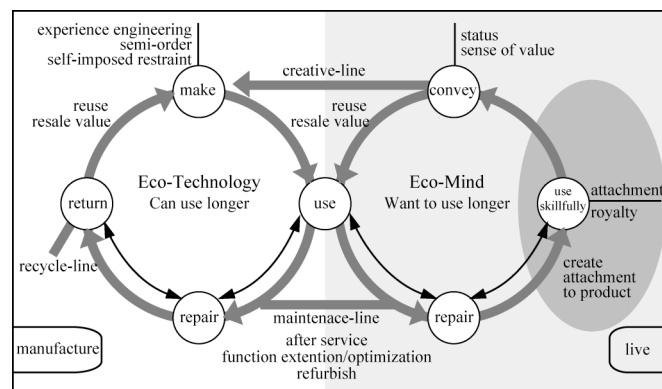


Figure 6. Two types of methods to keep/or improve product value (Coexistence of ecology and economy: eco-conscious evoking design, Japan Industrial Promotion Organization)

6. The Future Direction of How to Carry out the Research

The future research is to search for and quantify the *Kansei* factors, which can influence how long customers desire to use product. And then we need to classify and structure those factors to clarify the cause and effective relations among those respective factors. In this way, it becomes possible to develop new methodology to improve product *Kansei* value. Ultimately, we can prolong product value lifetime and achieve environment sustainability in some degree.

7. References

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