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Chapter 5 – Questions, Talking Points, Summary

Questions

Can every task undertaken on a computer be composed this way?

Are there any other ways to efficiently order tasks for a computer?

Should we be designing user interfaces to take advantage of these patterns? Is there anything we can do to ensure that they're used?

Talking Points

With current computer interfaces the efficiency of tasks performed is more a matter of training, rather then the design of the interface.

The sharing of intermediate knowledge is one way to improve the efficiency of the users of complex software system. But intermediate knowledge is hard to disseminate in may contexts.

Users don't always pick the most efficient task solution. They may do this for three reasons: they don't know, they gain nothing, or they follow habit.

Summary

Most users don't efficiently use complex software tool. There are a number of studies which show that even experienced users tend to only learn basic skills then apply those skills over and over again to achieve complex tasks. Many complex systems provide methods that these users should exploit to improve their efficiency of computation.

There are two primary methods of completing complex tasks on the computer. Method one, Sequence-by-Operation, is the simplistic method which takes no advantage of the computer to automate repetitive tasks. Method two, Detail-Aggregate-Manipulate, has the user flesh out the details of one complete task then aggregates those details together and replicates it to achieve the entire task.

Detail-Aggregate-Manipulate, however, requires that the user be aware of complex operators provided by the software system which can perform the aggregate and then operate on aggregates. This knowledge is usually embodied in a set of intermediate knowledge that isn't always taught or available to the user.

For the most part experienced users will retain their beginner skill-sets when working on tasks. There could be a number of reasons for this, but there are three stand-outs. First, the efficient strategy isn't known or obvious to the user. This may because of a poorly-designed user interface or the complexity of the task. Another is because there could be a weak relationship between the quality of results and the method used to achieve them. Thirdly, office environments are poison to the free exchange of information, since it may not be obvious to achieving business goals.

If the user is aware of efficient strategies, they may chose not to use them. The chapter points out three reasons for this: 1) the user does not evaluate efficiency, 2) the different strategy isn't really efficient, and 3) prior knowledge dominates. Reasons two and three both are the main cause of this behavior, with reason three dominating. Many users are ingrained on their habits and are loath to break them a little bit to gain efficiency. The reasons for this are rooted in psychology and aren't discussed in detail here.

There are three other powers of computer which can affect efficiency: propagation, organization, and visualization. Propagation is the ability of computers to apply changes to objects with a known and explicit dependency. A good example of propagation is a word processor which lets you modify all paragraph formats with a single setting.

Organization is the power of computers to organize and display data to the user. Chapter 5 uses the example of an object-type table instead of a tab table to store data in a word processor document. By doing it this way, the computer allows the user to efficiently port the table to another application or change data within the table.

Visualization strategies depend on the computer to display information from different sources and in different ways. An example from Chapter 5 is the ability of a piece of CAD software to display both and overview of a room and a detail of part of the same room. They are connected so that the user may select part of the room using the overview which his pulled up in detail.

By way of conclusion the authors discuss the possibility of forming a framework which identifies which strategies work the best and what limits are placed on them by the computer platform itself. This would go a long way to improving the efficiency of human-computer interaction.