

## Promoting Lifelong Learning of Complexities through Intrinsic Motivation

by Nobo Komagata - August 1, 2008

As our society becomes more and more complex, the tendency is that our roles become smaller and smaller. We hope that it is enough for each individual to know her part, assuming that the whole is the sum of its parts, i.e., the notion of *reductionism*. And in many cases, this is indeed an extremely effective approach. There are so many examples. Mass production of many industrial products, e.g., cars, became possible only after the introduction of the “assembly line” approach. People suffering from even rare disease can often stay alive, thanks to highly-specialized medical care.

However, not everything can be approached reductionistically. As people focus on their own small roles, the combined effects of a large system can easily become beyond anyone’s comprehension. There are many examples of this type as well: world hunger, global warming, health care crisis esp. in the United States, etc. To understand and solve these and other complex problems, we need *holistic* approaches, accepting that the whole can be more than the sum of its parts, drawing from multiple perspectives and building an overarching view not necessarily gained from a single perspective. Unfortunately, most people are continuously taught to focus on their own turfs, often guided by external motivations, such as financial rewards and test scores. If this situation continues, complex problems may eventually overtake us and the very existence of our species, as well as many others, could be in danger.

In order for us not only to survive but also to thrive, it is important to balance our exceedingly reductionistic mindset with more holistic one. Then, every one of us can think and act for the sake of the domains much greater than her small territory. For this main goal, there are a few points we must consider. First, it would be difficult to change people’s minds once they are fixated on reductionism throughout their lives. It would be necessary to educate people from early on about both reductionism and holism. Since most of interesting phenomena around us, be it physical, biological, psychological, or social, are great subjects for approaching from both of these ideas, complex real-life problems can be interesting educational subjects even for children. For example, children may be interested in observing ants’ life. There are so many things we can learn from such a topic: communication, social class, reproduction, etc. Although complex real-life problems are in general difficult and there may not be well-defined answers, simply exploring subjects and making discoveries would be sufficient to interest many children. However, the greatest benefit of exploring such problems is that children will be able to understand the big picture better. When the child becomes an adult, she may well need to focus on her small role. However, with her experience with complex systems throughout her life, she is more likely to be able to understand the complexity around her. If each one of us is capable of thinking in such a way, there will be higher chance of challenging complex problems being addressed and solved.

Second, the current education environments tend to be driven by extrinsic motivators, e.g., test scores and grades. Although this aspect is not limited to reductionism, the current emphasis on reductionism tends to accelerate this situation. Using complex real-life problems, students can learn more from open-ended discussions than from standardized tests. This way, students would work because they want to solve problems rather than to get a good grade. This type of intrinsic motivation would be a key for an individual to continue learning through her life. When she grows, it is likely that she explores around her own territory to learn about the complexity surrounding her small territory.

To change the tide, we all need to learn not only reductionistic approaches but also holistic ones to complex real-life problems. Since our lives are full of complex problems, this type of learning must be lifelong, which must be guided by intrinsic motivation rather than extrinsic one. Then, many of the complex problems we are facing today may no longer be threats in the future.

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