

Systems Thinking, Dependent Co-Arising and Mental Model in Decision Making

Arun Bajracharya

The British University in Dubai

P. O. Box 345015, Dubai, UAE

Tel: +971 4 434 7872; Fax: +971 4 366 4698

Email: arun.bajracharya@buid.ac.ae

Abstract

This paper attempts to explore the relevance of the systems thinking approach with the doctrine of “dependent co-arising” which is one of the central doctrines in the teaching of Buddha. The doctrine explains how one gets trapped into the vicious cycles of suffering and how one can come out of it. The main elements of the systems thinking such as complexity, cause and effect feedback loops, non-linearity, time-scale, endogenous perspective and experiential learning are inherent in the doctrine. One of the effective leverage points explained is the bodily sensation which can be used to transform the vicious cycles of suffering into the virtuous ones. The doctrine also gives clue how the mental model gets formed, and how it can be trained so that one can make spiritually informed and better decisions.

Keywords

Systems thinking, the teaching of Buddha, dependent co-arising (*paticcasamuppāda*), mental model, spiritually informed decision making.

Introduction

Systems thinking can be taken as a discipline that helps to deal with a certain kind of complex problems. Causal thinking in terms of feedback loops, endogenous thinking, non-linearity, time-delay, and experiential learning are some of the main elements of systems thinking approach (Senge 1990). The whole set of worldview along with the tool of systems thinking greatly help to inquire into the depth of problem. It also helps to find out the leverage points where we can explore effective policy measures for addressing the problem. The great strength of the discipline is that it leads to the root cause rather than intellectualising around symptomatic solutions. However, it needs a great deal of shift of mind-set probably from the reductionist to holistic worldview, illusive myopia to foresightedness, and surpassing the habit of intuitive inquiry to counter-intuitive one. May be because of the need of such shift of mind-set, we find that the systems thinking approach is not readily appreciated by large mass of professionals and academicians. The opposite might also be true that once one takes the pain in shifting the mind-set successfully, it would be difficult not to appreciate the strength and utility of the approach.

This paper attempts to use the concepts of systems thinking approach to understand a very profound but less understood doctrine in the teaching of Buddha, which is called “dependent co-arising (*paticcasamuppāda*¹)”. First the relevance of the systems thinking and the teaching of Buddha will be presented briefly. Then the concept of dependent co-arising will be explained. A brief account of mental model in decision making with the backdrop of the doctrine will also be presented.

Systems Thinking and the Teaching of Buddha

The teaching of Buddha is taken not as a mere collection of religious discourses – rather it is taken more as the path that shows the possible scientific endeavour to liberate oneself from mental defilements and resulting sufferings (Lopez Jr. 2008; McMahan 2004). In its practical essence, it is down-to-earth-here-and-now path that is free from all supernaturalisms. Basically it emphasizes self-realization and self-liberation by observing the practice of morality, mindfulness and wisdom. Why one should do that and how – it is well explained. Explanation in terms of causality is the quintessence of the teaching (Kalupahana 1976).

The notion of causality attracts the inquiry into the possible relevance of the teaching and the systems thinking approach. Macy (1991) presented an extensive account of comparison between the general systems theory and the teaching of Buddha. She touched upon diverse facets of the general systems theory developed in the west and showed their relevance in understanding the teaching of Buddha. Shen and Migley (2007) also presented comparison between the systems theory and the teaching with detail explanations of the works of some prominent systems scholars such as Gregory (2000), Ulrich (1983), Ackoff (1981), and Churchman (1979). Thanisarro (2008) presents a deep inquiry into the teaching vis-à-vis the theory of the non-linear systems. Khisty (2006) reflects upon the relevant aspects of systemic thinking, the teaching of Buddha, and deep ecology. Generally in the literature, the relevance of mutual causality, causal structure in terms of feedback loop, and characteristics of complex systems are highlighted.

Dependent Co-Arising (*Patīccasamuppāda*)

Dependent co-arising is one of the key doctrines that are fundamental in the teaching of Buddha (Macy 1990). It explains how individual gets trapped into vicious cycles of suffering and how one can convert the vicious cycles into the virtuous ones. The cause of suffering and its remedy are expressed in terms of mutually interdependent web of cause and effect. The standard form of the causality is:

*“When this is, that is. From the arising of this, that arises.
When this is not, that is not. From the ceasing of this, that ceases.”*

In more detail, dependent co-arising is expressed in terms of the web of cause and effect relationship between twelve factors (or *nīdāna* meaning "cause, source or origin"). It is also called the law of twelve causes (Niwano 1980), and in its simple form it can be presented as:

¹ In *Pāli*, the language used by Buddha.

- Dependent on *ignorance (Avijjā)* there arises *volitional activities (Saṅkhāra)*
- Dependent on *volitional activities (Saṅkhāra)* there arises *consciousness (Viññāna)*
- Dependent on *consciousness (Viññāna)* there arises *mind and matter (Nāmarūpa)*
- Dependent on *mind and matter (Nāmarūpa)* there arises *six sense doors (Salāyatana)*
- Dependent on *six sense doors (Salāyatana)* there arises *contact (Phassa)*
- Dependent on *contact (Phassa)* there arises *sensation (Vedanā)*
- Dependent on *sensation (Vedanā)* there arises *craving (Taṇhā)*
- Dependent on *craving (Taṇhā)* there arises *clinging (Upādāna)*
- Dependent on *clinging (Upādāna)* there arises *becoming (Bhava)*
- Dependent on *becoming (Bhava)* there arises *birth (Jāti)*
- Dependent on *birth (Jāti)* there arises *decay and death (Jarāmaraṇa)*

Decay, disease, old age, physical and mental pain, and death (*Jarāmaraṇa*) are natural consequences if birth (*Jāti*) is there. Why birth (*Jāti*) is there? It is because of the universal process of continuous becoming (*Bhava*), one after the other. Why becoming (*Bhava*) is there? It is because there is clinging or strong attachment (*Upādāna*) that gives continuity to the flow of consciousness. Why the clinging or strong attachment (*Upādāna*) is there? It is because of the behavior pattern of craving on liking and disliking (*Taṇhā*). Why craving (*Taṇhā*) is there? It is because the bodily sensation (*Vedanā*) is there. Why the bodily sensation (*Vedanā*) is there? It is because the contact (*Phassa*) with tangibles and intangibles is there. Why the contact (*Phassa*) is there? It is because the six sense doors (the eye with a vision, the ear with a sound, the nose with an odour, the tongue with a taste, the body with something tangible, and the mind with a thought or an imagination – which are collectively known as *Salāyatana*) are there. Why the six sense doors (*Salāyatana*) are there? It is because the flow of mind and matter (*Nāmarūpa*) is there. Why the flow of mind and matter (*Nāmarūpa*) is there? It is because the continuous flow of consciousness (*Viññāna*) is there. Why the flow of consciousness (*Viññāna*) is there? It is because the volitional activities or mental reactions (*Saṅkhāra*) that imprint impressions on the mind are there. Why the volitional activities or mental reactions (*Saṅkhāra*) are there? It is because one is ignorant about what one is doing and how one keeps on reacting. Because of this ignorance (*Avijjā*) one keeps on generating mental reactions (*Saṅkhāra*) and keeps on rolling into the endless vicious cycles of sufferings.

The cause and effect flow from ignorance (*Avijjā*) to decay and death (*Jarāmaraṇa*) looks like a chain of one-way flow. This could also be understood as an open loop linear phenomenon. However, it is observed that the dependent co-arising is one of the most misunderstood teachings of Buddha that led to many contradictory speculations and interpretations (Macy 1991, pp. 45). The general agreement is that the twelve factors do not affect each other in one way and linear fashion. They are dependent on each other and it is very difficult to discern which affects the other and when it does so. That is why it is taken as

the web of cause and effect. It is also termed *as a tangled skein* that can better be understood as a set of interlocking feedback loops in complex non-linear system (Thanissaro 2008). The system is non-deterministic, but in such system desired effect can be achieved by adjusting certain parameter. There could be different possible entry points in such system, but the challenge is the entry point should be a practical one.

VRI (2010) points that the link between sensation (*Vedanā*) and craving (*Taṇhā*) is a practical and effective entry point. Sensation is the means by identifying which one's mind works – it is the leverage point in the system. The general behavior pattern is to crave the liking and disliking based on the sensation (*Vedanā*) one feels. Here the behavior pattern means the behavior pattern of one's mind that blindly keeps on reacting with the bodily sensations, and because of this one keeps on rolling with suffering. If the sensation (*Vedanā*) can be observed without craving (*Taṇhā*), then the link can change its path from the vicious to the virtuous one. But the question might come how one can observe the sensation (*Vedanā*) without craving (*Taṇhā*)? The answer could be once one properly observes the sensation (*Vedanā*), it will be realized that the sensation keeps on changing, it is not permanent rather it is impermanent. If it is impermanent, why one should crave for something that is just passing away, why should create suffering for oneself for something that is just passing away. When one realizes at the experiential level that there is no essence in craving and clinging for something that is so ephemeral, then the wisdom of impermanence (*anicca panna*) arises within, and the mind would be trained to observe the sensation with equanimity. Once one starts realizing the wisdom with the practice of equanimity, then the link of “Dependent on *sensation (Vedanā)* there arises *craving (Taṇhā)*” becomes “Dependent on *sensation (Vedanā)* there arises *wisdom (panna)*”. As the wisdom (*panna*) becomes stronger the behavior of *craving (Taṇhā)* and clinging (*Upādāna*) becomes weaker. It also affects in reducing the level of ignorance (*Avijjā*) which will help reduce the formation of volitional activities (*Saṅkhāra*) and further scrap them out. The resulting virtuous cycles will then roll on as shown below.

Cessation of *ignorance (Avijjā)* causes cessation of *volitional activities (Saṅkhāra)*

Cessation of *volitional activities (Saṅkhāra)* causes cessation of *consciousness (Viññāna)*

Cessation of *consciousness (Viññāna)* causes cessation of *mind and matter (Nāmarūpa)*

Cessation of *mind and matter (Nāmarūpa)* causes cessation of *six sense doors (Salāyatana)*

Cessation of *six sense doors (Salāyatana)* causes cessation of *contact (Phassa)*

Cessation of *contact (Phassa)* causes cessation of *sensation (Vedanā)*

Cessation of *sensation (Vedanā)* causes cessation of *craving (Taṇhā)*

Cessation of *craving (Taṇhā)* causes cessation of *clinging (Upādāna)*

Cessation of *clinging (Upādāna)* causes cessation of *becoming (Bhava)*

Cessation of *becoming (Bhava)* causes cessation of *birth (Jāti)*

Cessation of *birth (Jāti)* causes cessation of *decay and death (Jarāmaraṇa)*

The Mental Model in Decision Making

Mental models are given much importance in the systems thinking and system dynamics modelling approach. Forrester (1961) defined the mental model as the image of the world around us, which we carry in our head in terms of some selected concepts and perceived relationships to understand the real system. Mental models are used to develop the conceptual and simulation models, and the latter are intended to use as experimental tool to inform and reform the former.

Mind precedes all, which is one of the central pieces of the teaching of Buddha – meaning “the mental action precedes all the verbal and physical ones, and the mental action is solely responsible for the stock of mental volition and the state of one’s being” – would definitely support the given emphasis on the mental model in systems thinking approach. However, further understanding of the functioning of the mind would inform more about the endogenous insight into the concept of mental model.

Most of the twelve factors in the doctrine of dependent co-arising would appear rather as metaphysical concepts to an ordinary person. It is because one simply cannot realize the happenings as it is denoted by the factors. However, as even an ordinary layperson starts working with the leverage of sensation, one would realize that when one generates negativity in the mind one gets miserable then-and-there as experienced at the level of sensation. Likewise when one generates positivity in mind, then-and-there one feels peace and harmony within. One would also realize that living with equanimity or balanced mind is being truly happy. With these initial realizations, when one keeps on working the mind becomes more and more purified, sharper, subtler and sensitive. Such mind becomes capable of realizing higher and higher level wisdom.

So if we accept such functioning of the mind, then we can also accept that spiritually trained and informed mental model would definitely be superior in making better decisions. It trains the decision makers to be more conscious and mindful with informed practice of highly level of morality.

Conclusions

The aim of this paper is to present a practical aspect of the doctrine of dependent co-arising vis-à-vis the systems thinking approach and mental model in decision making. The doctrine presents how one gets trapped into the vicious cycles of suffering and how one can get out of it. The elements of system thinking such as complexity, feedback loops, non-linearity, time-scale, endogenous view and experiential learning are inherent in the doctrine. The leverage of properly observing the bodily sensation is very important in turning the vicious cycles into the virtuous ones. It is also important to develop the spiritually trained mental model which will be superior in making better decisions.

References

- Ackoff Russell Lincoln. (1981). *Creating the Corporate Future*. Wiley, New York.
- Churchman Charles West. (1979). *The Systems Approach and its Enemies*. Basic Books, New York.
- Forrester, Jay Wright. 1961. *Industrial Dynamics*. MIT Press, Massachusetts.
- Gregory W J. (2000). Transforming Self and Society: A Critical Appreciation Model. *Systems Practical Action Research*. 13(4):475–501.
- Kalupahana David J. (1976). *Buddhist Philosophy: A Historical Analysis*. University Press of Hawaii, Honolulu.
- Khisty, C. Jotin. 2006. Meditations on Systems Thinking, Spiritual Systems, and Deep Ecology. *Systems Practical Action Research*. 19:295–307.
- Lopez Jr., Donald S. 2008. *Buddhism and Science: A Guide for the Perplexed*. University of Chicago Press, Chicago.
- Macy, Joanna. 1991. *Mutual Causality in Buddhism and General Systems Theory*. State University of New York Press, Albany.
- McMahan, David. 2004. Modernity and the Discourse of Scientific Buddhism. *Journal of the American Academy of Religion*, 72 (4): 897-933.
- Senge, Peter M. (1990). *The Fifth Discipline: The Art and Practice of Learning Organization*, Doubleday, New York.
- Shen, Chao Ying and Midgley, Gerald. 2007. Toward a Buddhist Systems Methodology 1: Comparisons between Buddhism and Systems Theory. *Systems Practical Action Research*. 20:167–194.
- Thanissaro, Bhikkhu. 2008. *The Shape of Suffering: A Study of Dependent Co-Arising*. <http://www.dhammadalks.org/Archive/Writings/DependentCo-arising.pdf> (accessed 20 March, 2010).
- Ulrich Werner. (1983). *Critical Heuristics of Social Planning: A New Approach to Practical Philosophy*. Haupt, Bern.
- VRI. (2010). *Vedana in Paticcasamuppada*. Vipassana Research Institute. <http://www.vridhamma.org/Vedana-in-Paticcasamuppada.aspx> (accessed 20 March, 2010).