Ideas on System Thinking and Acting: Basic Issues, Aporetic Constructs and Application of the Metanoia Principle

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Abstract

This paper is a first draft on an upcoming series dealing with System Thinking and Acting and the connection and differences to the application on daoistic thinking models.

Straightforward thinking in a matter of one-way cause-and-effect approaches has proven to be a valuable concept for hundreds of years especially in Western Democracies, where the cultural embeddedness provided fertile soil. However this methodology has also proven to be a misconception when addressing certain "complex" issues. Leaving Aristotelian logic aside and introducing an aporetic view in this "primary paradigm of reality perception" lead to a whole new set of problem-solving methodologies.

Keywords

Aporia, Perception Paradigm, Watzlawick, Daoistic Model, System Thinking, System Acting, Metanoia, System-Archetypes

1. Introduction

First it is to state that the author does not claim to have fully understood neither the Western World's System-Theory, although he is teaching it nor the Eastern World's Theory of Daoism although he is practicing it. But dedicating time and hard thinking/practicing on both has brought some interesting insights the author would like to share.

This statement is quite an unusual beginning for a paper, since the author is quite disfavoring himself: when we believe the core statements of radical constructivism (also in this respect the author does not claim to have fully understood it) then we are told that we can only see, what we already know, or what we are very close to. A basic idea of radical constructivism: the believe in reality. Thus we already entered the realm of aporetic constructs which will be focused on at a later point. But what it further explains is, that one can only follow ideas which he or she thinks are valuable, right, interesting… Raised in the Western hemisphere one's brain is already full of pictures, situations, values etc. of living in this part in the world. Thus the understanding of some Chinese Philosophy some weird guys wrote books about several hundred years ago is a difficult task. Not so much because there are no translations or teachers or explanations but far more, that there is so much already settled in one's brain, that the very meaning cannot be transferred.

I would like to underline the statement above because it's crucial to follow the next sections with some generosity because there maybe some thoughts or standpoints which I'd would love to describe better, but are limited to the power of explicability by the means of written words.

2. Basic Issues of a Perception Paradigm

No doubt: logical thinking has proven to be a fertile concept for hundreds of years and bringing wealth to whole societies. One directional thinking in pure cause-and-effect chains lead to an understanding of quick problem-solutions. In Watzlawickian sense this brought expertise in first order change and became a driver on technical development as well as societal change. Western educated technicians got knowledge on a detail-base which was unseen before in history.

Going back to the fundaments of this type of thinking[1] the Western approach on perceiving reality can be roughly summarized in the three axioms of Aristotelian/Euclidian logic:

- Law of Identity
- Principle of Contradiction
- Law of the Excluded Middle

Whereas the first has far more intellectual impact than practical value the two latter axioms have brought a variety of tangible consequences into reality. Roughly: thinking in pure cause-and-effect chains has brought its results in everyday's life into the Western hemisphere: technical inventions, scientific research, the industrial revolution, cutting-edge medicine, jurisdiction and democracy are embedded in this form of thinking – on the hunt for detailed problem and detailed solutions. So if there were no drawbacks – no need for other concepts. But unfortunately there are, three are elaborated in the following examples:

Jurisdiction: Considering Schwarz' conflict theory jurisdiction is counted to the fourth level of conflict solving – delegation to a higher instance.[9] To make it work two parts are needed: two parties which are of different opinion and a judge who has the wisdom [7] and the power to enforce his judgment and/or his decision is respected by the two concurring parties. There is however another subject which has to be taken into account. The judge makes his decision based upon facts but is bounded to his judgment in favor of one and only one party: stating that one is right and the other is wrong.

Why does mediation has a far higher success quota on sustainable problem-solving ? Because it neglects the "logic" fact that if one is right, the other is wrong. This simple but hard switch enables a full new set of possible decisions leaving both parties satisfied with the outcome, even if it might be considered "unfair" from the outside.

In the case of divorce, beginning with the State of California in 1981, many US states have introduced a mandatory mediation before couples can go to court. Surveys show that 50-75% of the clients can reach an agreement and 60-90% are satisfied with the achieved results (compared to 40-50% in court). An indicator for the better addressing of the underlying conflicts is, that even when clients were forced to mediation, more results lead to a split and far less ended up in court again [12].

Management: Dietrich Dörner [1] provides a wonderful example of the application of first-order change when Managers were asked to plan the improvement of the living conditions of the Moros, which is a tribe in the Sahel-Zone. Their living conditions are quite bad, suffering from the Tse-Tse, illnesses and much more. Money from a development program was used to fight the Tse-Tse and this measurement let the cattle flourish. More water was needed which resulted in more deeper digging of wells which finally resulted in the exhaustion of the water reserves. Soon the grass went dry and the cattle began to eat the roots, thus destroying the second basic of the food-supply-chain. After a short period of time of being better-off the Moros eventually ended up much worse than before the "development". Fortunately this was just a planning game. What went wrong ? The managers tried to solve the obvious problems in their perception, neglecting the problems this would cause in a time-delayed feedback-loop.

Economy: Systems with permanent growth meet the system-archetype "limits of growth". Free market economy is a system, which is depending on growth. Every year the different economic research institutes publish their results on economical growth, which influence economical behavior more or less depending on the reliability of the issuing institute and the size of the respective economy. The growth of capital is often seen as the driver behind wealth: but actually there are a lot more, e.g. Romer explained in his model of endogenous technical growth, that it is far more technical development than real investments which boost the growth of the economy [8]. Unfortunately Keynes predicted that "…in the long run, we are all dead". This is right from a natural-scientific point of view – but why from an economical ? *"A system, that is coercively forced to permanent growth, cannot exist sustainably, but eventually leads to its own downfall."* [7] Unfortunately[2] people cry for the never-ending growth story but fortunately[3] the free market does not obey, otherwise Keynes would have been proven right long ago. But it is a nice example of a one-directional cause-and-effect thinking style: much is good – more is even better. But the general environment in which the market economy "occurs" contains several inside stabilizing factors: limited natural resources, different levels of availability of human resources, thinking borders, politics, natural disasters, war… and indirect stabilizing factors such as interest rates, wages, exchange rates, speculations, trust…   Such we encounter the system-archetype of "limited growth": *"A reinforcing (amplifying) process is set in motion to*

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[1] One might raise the question: If there's System-Thinking, is there another type of thinking as well ? The author tries to navigate around this semantically issue until we reach the conclusion – be so kind to give me some more pages…

[2] This depends on one's point of view.
[3] This also.

produce a desired result. It creates a spiral of success but also creates inadvertent secondary effects (manifested in a balancing process) which eventually slow down the success." [10].

Interestingly both of the human parts, namely the government on one side and the people on the other side experience the "growth factors" and what they lead to as "positive" and desirable whereas the "stabilizing factors" are encountered as "negative" and "bothersome". However it is those "stabilizing factors" which keep the system alive. The management principle of how to address this problem is given by Senge: "Don't push growth; remove the factors limiting growth" [10]. It is to state that Senge does not take the whole economy (considering this archetype) into account. To weaken the stabilizing factors will eventually lead to a more escalating cycle, where stabilizing processes are perceived as shocks.

These are just three examples out of the realm of system thinking and "straightforward" thinking, where the latter comes to its end of being an effective thinking concept.

Unfortunately many users of these concepts still think in a one directional cause-and-effect chain. If just models, constructs, and techniques are added to one's repertoire the power of getting a new set of results by widening the horizon of perception and acting is limited by far. The trial of understanding and working with Aporetic Concepts [7] leads to the engagement in system thinking, and eventually results in the adoption of this way of thinking. The key to this is not to add new ideas, but to diminish the ineffective old ones:

"In the pursuit of learning one does more day by day; in the pursuit of the way one does less every day. One does less and less until one does nothing at all, and when one does nothing at all there is nothing that is undone." [5]

This does not mean to throw away all useful ways of acting, which have proven their value. Far more this means to remove all concepts of thinking which we think are effective but are not if evaluated on their results. What does this imply on System-Thinking ? If engaging in System-Thinking one should not add a new hull to ineffective concepts, which problematically delivers already better results. Problematically because it could be misinterpreted as "efficient", but they are just more effective than the old concepts, but by no means efficient. The ambitious goal might be to have two "brains": one for "logic" thinking and one for "aporetic thinking". One of my teachers for has this ability and it is enormous seeing him in action. It leads to two advantages: to be able to watch processes as they rise and vanish, with all their feedback loops (control cycles, enhancing cycles) without losing the ability of very focused thinking in isolated terms and detailed levels. A contradiction to what was said before ? One answer: one cannot address the very same issue with both approaches at the same time. They form a paradigm – a perception-paradigm. But a process can be looked at from both positions after each other. The strength of this conception occurs when we can think separately in a logic or aporetic way, the holistic approach emerges on its own if and only if both ways of thinking are clearly separated in advance. Unfortunately this is very hard to accept for a logic human being, whereas it should be fairly easy from a theoretical point of view, as a logical working brain should be able to easily separate things, which do not belong together. Human brains however do not work on a logic basis although claimed, which can be easily observed, watching the experiments on "bounded rationality". We tend or try far more to bring all ways of thinking together, thus failing in System-Thinking is not a matter of open-mindedness but a matter of the ability of separation.

In the above paragraph "System-Thinking" was en passant replaced by "aporetic thinking". This was right and wrong. It was wrong in the sense that it is limited to aporetic thinking, but was right in the sense that it builds its foundation-stone.

System-Thinking and Acting following the concept of Ossimitz consists of four abilities [7]

- Cross-linked Thinking
- Understanding of Time-dynamics
- Thinking in Models
- System-Acting

System-Thinking is however only part of the whole concept. Following Giacobbe's definition on thinking it is only then a valuable tool if it leads directly to any form of acting [3]. I plead for using far more often or in coherence the terms System-Thinking and Acting and System-Theory and Practice.

Leaving this hierarchical already lower level aside, we find the core of System-Thinking in the concept of Aporia, which was first introduced by Gerhard Schwarz: *"Aporia are 'practically' logically impossible – however occur in practical life frequently"* [7]

One quite often cited example is the "fighting couple" [13]: A couple has marital problems to which he contributes passive withdrawal, while her part consists of nagging criticism. From his point of view withdrawal is the reaction on her nagging, while she claims only to criticize because of his withdrawal. Thus their fight consists of a monotonous exchange of the massages: "I withdraw because you nag" and "I nag because you withdraw." They perceive their own behavior as an reaction to the other's behavior. Their problem lies in their inability to metacommunicate

about their respective patterning of their interaction. This interaction is of an oscillatory yes-no-yes-no-yes nature which theoretically can go on ad infinitum and almost invariably is accompanied by the typical charges of badness or madness.

Application of System-Thinking: If there is a soft, slow and diplomatic approach to cope with this situation (process of cross-understanding) there must be a hard, fast and invasive approach as well which we find in paradox-intervention.

Cross-Understanding (Yin-Approach): Cross-Understanding refers to the "understanding across group members of the mental models of the other group members." Such understanding means "insight into," rather than "agreement with," the mental models of others [4].

Paradox-Intervention:[4] (Yang-Approach): A man about 45 was a lorry driver and his wife 38 had a part time job, and was a housewife. During the weekdays the man was driving with his lorry abroad – for savings-reason he did not call home. On Fridays, when he just passed the border – which was more or less the same time every week – his wife called, asking for when he would come home. He told her to be able to come home at a certain time. After his arrival however, he went to a local bar to drink beer with his friends. His wife was upset and when he finally arrived at home, a big fight occurred. This happened every week. All discussions, agreements etc. did not work – for he felt controlled and under pressure, whereas she felt neglected.

A mediator told her the following: the next time your husband comes home, ask him how much he drank. Then assume he had some more, add this amount and say: "Only x beer ? I know that our neighbor made some x+5 yesterday. With less you shouldn't even try to come home !"

This paradox intervention worked well, it allowed to observe the conflict out of the already deadlocked conflict-patterns. And opened a way for second-order-change.

3. A Daoistic Thinking Model

In the above paragraph two concepts comprising of four keywords are mentioned[5]: Yin, Yang, first-order and second-order change. Whereas the first two refer to daoistic thinking, the latter two form the elements of the Watzlawickian concept of change.

The daoistic model of Yin-Yang is the basic concept of thinking in the Eastern hemisphere. System-theoretically spoken Yin and Yang are two

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[4] real example; for discretion-reasons I do not depict the source.
[5] This was no coincidence. Nor a failure in a deductive approach.

placeholders, variables for any aporetic construct we can encounter. In Western thinking one main idea of the Yin/Yang model was introduced by the aporetic-concept, neglecting however its immanent dynamics by the application of the static concept of Aporia.

To get a first rough idea the Yin/Yang-Model can be compared with the examples of Aporia given in section one:

Table 1: Aporia acc. to Yin/Yang

Yin	Yang
elder	youth
peace	war
individual	society
dead	living
women	men

What first is visible: We say: "Yin and Yang", "elder and youth", "individual and society". But do we say: "peace and war", "dead and living", "women and men" ? For the latter the opposite sounds more "right". the reason lies in the daoistic perception that the basis of a system comes first: elders are the basis for the youth, women for men (because they ensure the survival of humans). This already shows that this style of thinking is different, even when compared to System-Thinking.

Yin and Yang are two polar forces which in their interaction form the cosmos. The thinking and perception of the world in an dualistic model probably dates back to 3000-2000 B.C. Using the Yin/Yang as placeholders following table can be drawn [2]:

Table 2: Yin/Yang examples

Yin	Yang
earth	heaven
moon	sun
small	big
cold	hot
humid	dry

Obviously none of this elements above consists on its own. They exist in an interaction pattern: what we call Aporia. Often elements which are counted as Yin tend to have a negative perception by Western brains: they seem to be weaker, of bad quality etc. There two thinking mistakes are already made: first neglecting the Yin factors means neglecting the basis. Second Yin and Yang are no absolute variables but relative ones. They define quality of tangibles and intangibles in relation to something, or in relation to each other. E.g. a lion is concerning his bodyweight Yin compared to

an elephant (Yang); if the lion stands on an elephant then he is Yang concerning his relative position to the elephant (Yin) [2]. But there are differences between the Yin/Yang-Model and Aporia. First they emerge from a totally different cultural background. Both emerged thus on different needs for explanations: very early in the Daoistic-Thinking; compared to this quite late concerning System-Theory. Second Aporia might have the possibility of cross-understanding, in the Yin/Yang-Model the possibility of cross-understanding is imminent. Even to the largest extend both sides hold the quality of each other – depicted by the black (white) point in the white Yang, black Yin respectively. Of course Aporia is of the same basic construction, but the perception of the construct – this is the very point – only leads to a possibility of cross-understanding, whereas in the Yin/Yang-Model it is a condition. Third – and most important – the concept of Aporia was invented in the West – looking at something from an analytical point of view and often from an ex post standpoint.

Definition: The concept of Aporia has a deductive, static quality. The concept of Yin/Yang has an inductive, dynamic quality.

Thus the two concepts describe a situation in a similar but still quite different way. Applying the concept of Yin/Yang leads soon to two-dimensional thinking – but acting in its manner requires a long process of subtracting hindering thinking and acting patterns.

An example of the application of the Yin/Yang-Model on Watzlawick's first-order and second-order change: Watzlawick described first-order change as a quick reaction on a certain issue. Most of the time this leads to a quick relief, but in the long run makes the problem even worse. An often cited example is teeth-ache: while taking pain-killers leads to a quick relief, the underlying problem becomes worse over time. Second-order change tries to diminish the root of the problem. In teaching System-Thinking my students try always to find the second-order change concerning a certain issue. The failure of this lies however in the neglecting of positive effects of first-order change: on weekends it might be better to swallow pain-killers than to find a working dentist. This example shows how System-Thinking is often perceived: "We know that first-order change is bad, and second-order change is good". This is wrong: both in the application of the concept as well as in its results. This is because the powerful concept of change of first and second order is just viewed under a one-dimensional perception.

An application of Yin/Yang on Watzlawick's change-model: *"If there is a left, there is a right. If there is a bottom, there is a top. If there is a front, there is a back. And if there is an interior, there is an*

exterior." (Elleberger) If we look at results, it might have become clear that there is a fitting first (second) order change and an unfitting: "When second-order change is needed, first-order change makes the problem worse." [7] But: When second-order change is impossible, first-order change gives relief ! And: when second-order change is impossible, second-order change leads to the death of the system. E.g. consider an incurable disease of the brain: second-order change would mean to remove it. But then…? Second-order change from a hierarchical higher point of view, e.g. changing behavioral or thinking-structures however might be an answer.

Definition: System-Thinking makes only sense when a reference point is taken into account, it demands a dynamic thinking concept – not an application of a static one.

If there are results – there must be causes. Looking at the demanding side for change there must be an active (Yang) and a passive (Yin) approach. An application of the Yin/Yang-Model on the archetype of "limited growth": in section one it was stated that weakening the stabilizing factors will eventually lead to a more escalating cycle, where stabilizing processes are perceived as shocks. The stabilizing factors form the Yin in this process, the growth factors form the Yang. Engaging in this action the Yin will be weakened and weakened. As a reaction in a first-order change matter, this might be an adequate approach, but in the long run this policy would lead to diminishing the basic of growth. As we know from Aporia, no side can exist without the other, thus the system would collapse. A state where almost only Yang, and almost no Yin exists is devastating, e.g. supernovae. A state where almost only Yin exists without almost any Yang is collapse, e.g. black-holes.

4. Use of Metanoia on "limited growth"

System-Thinking could or should be a way of perception not of using models. For this change the concept of "Metanoia" has been introduced into System-Thinking, meaning a radical change of perception and reaction (this can be applied from the outside – deductive – Yang or the inside – inductive – Yin). *"With the term 'Metanoia-Principle' we mean that handling systems needs a fundamental new kind of thinking and acting."* [7]

Closing the circle an example [11] shall be given which depicts how the application of Metanoia leads to a new perception of the observation of the archetype of limited growth on the economy: The example shows the economical behavior of a tribal population of the remote tropical island of Trinket (pop. 399), belonging to the Nicobar archipelago in the Indian Ocean. Among

the many livestock species that the Nicobarese own, pig remains the most important both in terms of social status and economic value. An average household of 9 members together invests 3.4 hours a day to meet its daily needs for essential commodities ! Still the Nicobarese produce some surplus which is used for the pig-production, which is not efficient by any economic means. The surplus results in a steady growing amount of pigs. At a certain point the pigs cause in the perception of the Nicobarese too much work. During religious and other festivities the majority of the pigs is slaughtered. Thus providing the Nicobarese with tasty food and enables them to invest their surplus in the future. While a complete utilization of all resources results in population growth and makes the society dependent on high consumption levels, the under-use of resources maintains a safety margin to avoid complete ruin. For the Nicobarese at a certain point the accumulation of wealth becomes a burden ! This shows the fundamental differences in the perception when compared to free-market economy. The first difference is that the perception of the actors in free-market economy is that surplus is never a burden. Second, when this turning point is reached, not only the interests on the capital are consumed but also a large share of the capital itself. And even more radical: this crushing of the savings is perceived as joy ! Whereas actors in free-market economy fall into deep grief in such situations. For the Nicobars this ends up in a win-win situation: at this point they can use the surplus for accelerating economic growth again which then makes sense, are secure for a while again which relaxes and eventually remove the burden of growth at a certain point again what they enjoy. This is a whole different perception of an economy. Maybe we should interpret the archetype of limited growth in a new way: enabling or enhancing growth is guaranteed when not only the stabilizing factors are removed, which leads as described above to the danger of escalation but removing parts of the capital itself, thus growth would make sense again.

5. Conclusion:

System-Thinking and Acting consists of four levels of system-theoretical applications. The center of all of them is formed by the concept of Aporia. Using the above applications on a logic brain can produce high quality results, but fail to embrace the full set of results possible if not thinking in a daoistic Yin/Yang-Model, which can only be learned by subtracting ineffective concepts. Aporia form the Western approach to think in an Yin/Yang quality, but cannot reach this while still grounded in a static perception. Logic and Aporia form two Western approaches of perceiving reality.

Daoistic-Thinking merely consists of a dynamic thinking in what we try to describe and explain by Aporia – the Yin/Yang-Model. From an aporetic point of view, logic must be completed by a different thinking style. From a logical standpoint Aporia cannot exist. Thus both even in the meta-perception fulfill their respective qualities and form two parts of the Western perception-paradigm.

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