ETHICS OF INTERDEPENDENCE – SOLUTION FOR CONFLICTS BETWEEN HOLISTIC AND SPECIALISTIC THINKING[1]

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Abstract: Modern amount of knowledge results in hundred thousand professions. Specialists are unavoidable. Their thinking is limited to their selected viewpoints and parts of reality, thus one-sided, but deep, perhaps. Mutually different specializations cause conflicts (»Who is right?«) and complementarity (»Everybody is right partially«), hence interdependence (= needing each other for differences). They hardly teach us (1) interdisciplinary cooperation, and (2) ethics of interdependence (= interdisciplinary cooperation feels right). Specialists with more of these capacities create even more benefit. They risk less oversights and develop more systemic/holistic thinking. (Systems theory emerged against over-specialisation and for holism, right after the two world wars and economic crisis of 1914-1945.) Specialization and holism have existed for millennia; total holism (= including all attributes) remains impossible, requisite holism (= including all essential attributes from a synergy/system of all essential viewpoints) conditions success. Many methods support interdisciplinary cooperation, including Dialectical Systems Theory, Dialectical Network Thinking, Dicision Making Standardization, etc. Specialists need will and knowledge to use them. People can solve conflicts between specialization and holism: about 17% of us are co-operators, about 20% free-riders, majority adapts to the prevailing ones, by psychology/nature. Ethics of interdependence motivates people to apply these capacities better.

Key words: co-operation, Decision Making Standardization, Dialectical Network Thinking, Dialectical Systems Theory, ethics, interdependence, specialization, synergy, systems methodologies

The selected problem and viewpoint of our considering it here

What is shared by

- Ancient Chinese philosophers with their concept of yin and yang,
- Ancient Greek philosophers of dialectics with their unity and fight of adverses,
- Leonardo da Vinci with his seven principles of creativity,
- Adam Smith with his invisible hand settling relations among the selfish humans,
- Albert Eistein with his thoughts about relativity,
- Eduardo de Bono with his six hats of different colors, reflecting types of creativity,
- Ludwig von Bertalanffy with his General Theory of Systems / Systems Theory,
- Stafford Beer with his viable systems model,
- Stuart Umpleby with his cybernetics of conceptual systems,
- Authors of complexity theory (e.g. Richardson),
- Us with our Dialectical Systems Theory (Mulej), and
- Theory of standardization of decision making (Potočan), and
- Dialectical Network Thinking (Rosi),
- Contemporary types of operation research with multicriteria methods and many computer-aided supports for them,

And the topic of conflicts from the viewpoint of the question in the title of this text?

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They all seem to deal with the conflict between the tendency to holism, which is unavoidable for survival, and the tendency to narrow specialization, which is equally unavoidable, but denies the need for holism. If we humans find no equilibrium between them, consequences tend to be very complicated and complex, perhaps even both in synergy, including world wars etc. What can we do?

Brief summary of our thesis

We recently learned (from an article review, no signature) that Bertalanffy had not been the first author claiming the need for more consideration of mutual relations, but there had been another author in mid 19th century. He was not the first either. But work of many of those who warned against too narrow thinking, which is a precious contribution has gone down the drain again and again. (See: Corning, 2003) New authors with similar warnings and suggestions had to appear again and again, such as the authors of systems theory, over millenia. They suggested holistic thinking under different labels and with different arguments. But we humans have limited capacities, by nature, although much bigger than any other living being of today on Earth, or any machine / artefact. At the same time, we humans are so creative, that we keep establishing new knowledge. On both bases we diversify our knowledge in about hundred thousand professions, they say. Thus, the proverb says well: »What I know is a drop, what I fail to know is an ocean.« That is why we are interdependent, all of us; we need each other for differences.

Thus, we humans need at the same time (1) specialization, (1.1) allowing for detailed insights, and (1.2) causing unavoidable oversights resulting in mistakes, and (2) holism (2.1) diminishing some oversights and (2.2) causing some others because »the devil rests in details«; especially a fictitious holism causes oversights. A real (= total) holism includes all existing (!) attributes, linguists say, which is beyond humans' individual capacities. So is the synergy of a narrow specialisation and holism, as long as there is no interdisciplinary co-operation. Once the latter shows up, conflicts between specialists show up: »Who is right, all cannot be right, if we differ«. Our thesis about such conflicts is depicted in Fig. 1 and 2:

Attributes of real features	Basic approach to dealing with them	Attributes of thinking necessary for requisite holism of thinking about attributes of real features
Complexity	Systemic	Consideration of attributes of the whole feature, not possessed by its single components alone
Complicated-ness	Systematic	Consideration of attributes of components, not possessed, or hidden, by the whole feature
Interdependen-ce	Dialectic	Consideration of interdependence of components causing them to make the whole feature
Real existence	Materialistic / realistic	Consideration of realism meeting the law of requisite holism, when one choses one's system of viewpoints

Figure 1: Requisite holism as a dialectical system (= network of all essential and only essential viewpoints) of consideration of a selected feature

In reality, all four subsystems in Figure 1 are partial systems, i.e. interdependent and networked. But specialists tend, for natural reasons, to specialise like in Figure 2, i.e., change partial systems to subsystems or even systems as independent entities / wholes.

Attributes of specialists	Basic approach to dealing with them	Attributes of thinking necessary for requisite holistic thinking about attributes of real features
Dealing with Complexity	Systemic – theory of complex entities	Consideration of attributes of the whole feature, not possessed by its single components alone
Dealing with Complicated-ness	Systematic – a selected specialized theory of a single part of an entity	Consideration of attributes of components, not possessed, or hidden, by the whole feature from a specific selected viewpoint / profession / science
Dealing with Interdepen-dence	Dialectic – general & special theory/ies of interdependence/s	Consideration of interdependence/s of components causing them to make the whole feature / complexity / synergy/ies
Dealing with Real existence	Materialistic / realistic – (general) theory of realistic thinking	Consideration of realism meeting the law of requisite holism, when one choses one's system of viewpoints and the part of reality to be under consideration

Figure 2: General parts of differences among specialists – case of theorists

The traditional sciences and professions go for systematics, mostly, a few of them for a sort of systemics (e.g. as attributes of an entire economy or society or country or all the world – in political economy etc.). The ones concentrating on dialectics (expressing interdependence in ancient Greek), especially the interdisciplinary one, are even closer to rare birds. Unfortunately, or fortunately, all of them are allowed to define on their own what they mean by requisite rather than total holism (even without using the word 'requisite'), as they find appropriate. Then, they feel realistic, which they are to some extent, and holistic, which they are not really, but perhaps they are so inside their own selected system/s of viewpoints. The latter may consist of a single viewpoint or of a system of viewpoints, hopefully of a dialectical one, but can no way be literally holistic. The latter would reach beyond the human capacity of everybody living today. (See, e.g.: Wilby, Allen, eds, 2005, Mulej et al, eds, 2005).

This problem is not new, one can conclude from the list of old attempts to solve it. We mentioned some of them above. Let us summarise their essence – from our selected dialectical system of viewpoints (DSV).

Brief summaries of some attempts to solve the conflict between the narrow specialisation and holism

Yin and yang are mutually different and interdependent attributes of the same whole, in ancient Chinese philosophy. Day and night, man and woman, good and bad, left and right, etc. cannot exist in separation from each other: they complete each other up in an essetial part of their attributes in which they differ. (Delgado, Banathy, eds., 1993)

Dialectics is an ancient Greek philosophy. It finds essentially the same attributes of reality (Britovšek et al., 1960). Many centuries later, F. Hegel expressed the same fact: thesis and antithesis make synthesis, in the reality of ideas. F. Engels found the same fact later in nature, not in ideas only (Engels, 1953), Marx found it in society and its economy. We do not care for his further conclusions, they are outside our selected DSV here, although the fight of classes is a type of conflicts among interdependent humans, who neglect their interdependence.

In renaissance-period humanity was blessed with e.g. Leonardo da Vinci. He was a genius in all seven areas of intelligence: logical-mathematical, verbal-linguistic, room-mechanic, musical, body-motion, interpersonal-social, intrapersonal (Gelb, 2003, 18). Gelb (2004, 10) summarised Leonardo's thinking in seven principles including: (1) permanent curiosity, (2) testing in practice and learning from mistakes, (3) sensing and continual refinement of senses,

(4) living in doubts, paradoxes and unreliability, (5) linking arts and science, (6) working on body's beauty, and (7) linking everything, systems thinking.

Adam Smith, theorist of economy from the times of England's early industrialisation, did not use the word systems thinking either, but he did require it. He is attributed giving the right of selfishness, when saying that everybody takes care of his or her own interest only, but the invisible hand of market (and God) takes care of the shared benefit of all humans. He did not speak for selfishness: (1) he first wrote his book on Moral Sentiments and, on this basis, the book on Wealth of Nations; (2) market is interdependence of suppliers, consumers, and competitors, and provides no room for selfishness. Market requires caring for others for selfish reasons: who makes his or her business partners happier than others do, receives a bigger share of the benefit as well (see: Petzinger, 2000; Corning, 2003).

Albert Einstein is already a 20th century person, but his main work was done earlier than systems theory (rather than systems thinking as informal practice). His theory generalized findings to explain and fortify the practice of informal systems thinking that has been around for millennia. (See: Thorpe, 2003) Like Bertalanffy, the father of the General Systems Theory, Einstein left the common sense aside and searched for links and attributes of the wholes that used to be overlooked. (See: Davidson, 1983; note his book's title!). Both greast minds were in conflict with specialists unavoidably.

Bertalanffy wrote explicitly that he had created systems theory against the over-specialization (Bertalanffy, 1979, p. VII). Still, if specialists use systems theory, they do so inside their own specializations rather than for bridges toward creative co-operation. (See e.g. empirical data, in Mulej et al, 2005).

S. Beer replaced the commanding type of organizational hierarchy for the one the essence of which lies in mutual informing for every organizational member to be able to cover his or her job, and all the whole with no permanent conflicts (See e.g.: Espejo, in Mulej et al, 2000).

Specialist's conflicts result from a western habit of thinking in arguments rather than in linking together. One tries, like e.g. solicitors in court, to win over each other and to assert oneself, rather than to reach a shared holistic solution. He suggests a method of cooperation in which six colors of hats show viewpoints of thinking and related roles (de Bono, 1999; 2005).

Umpleby suggest similarly: 2nd order cybernetics, that sees humans' impact in choosing what and how shall be observed, should go one step further – to cybernetics of conceptual systems. This covers consideration of mutual impact of humans as individuals and humans as society and is aimed at increasing holism (See e.g.: Umpleby, in Mulej et al, 2000).

Authors of complexity theory also expose mutual relations, including the interdisciplinary ones; they were forgotten about in practice under impact of specialization, a lot. They try, without saying so, to revive systemic thinking and to complete it up, after the over-specialization made it over-forgotten (Richardson, 2005; et al; see: Mulej, et al, 2005).

The Dialectical Systems Theory, too, saves systemic / holistic thinking from its grave. It makes a step further than other theories – to methodology of impacting human thinking by concrete (framework) guidelines. Hence, it reaches beyond offering a tool for anyone to use for any purpose of his or her own choice (See e.g. Mulej, Zenko, 2004, for a new English presentation 30 years after the first publication)

Standardization of business decision-making (Potočan, 1999, etc.) provides a basis for a dialectical-systems thinking style in business decision-making to innovate its processes.

A new systems theory – the Dialectical Newtwork Thinking (Rosi, 2004) – makes a new and completed up synergy from two established theories of systemic / holistic thinking: the

Network thinking and the Dialectical Systems Theory. It provides a basis for requisite holism by clear procedures of co-operation in solving complex and complicated business problems.

Newer versions of operation research can also help us overcome the over-narrowness and over-specialization, e.g. with methods of multifactorial analysis of innovation processes with computer programs support. (Čančer, 2003; Čančer, 2004; Čančer, Knez-Riedl, 2005; Čančer, Mulej, 2005) They can remove a further part of weak points of the dialectical systems thinking by competing up the qualitative methods with the quantitative ones.

Etc. Some more contributions could be found, e.g. in Wilby, Allen, eds., 2005, Mulej et al., eds., 2005, etc. But they are still rare compared to the ones staying inside a single science. Thus the conflict between an unavoidable narrow specialization and an equally unavoidable holism, at least the requisite holism, is persisting. One needs a rather deep insight into a part of reality, to be necessary to others, but one must also be able and willing to co-operate with others – because they have different views and insights, rather then in spite of them.

Consequences of making one's job simpler by one's specialization are complex because they cause oversighs: wars, globalization as colonialization, destruction of our natural environment etc. In other nature, self-organization works for informal holism; in humankind' society democracy is supposed to work the same way in human relations (if it avoids outvoting and argument of power replacing concertation with no abuse of power): democracy is basically an organizational tool for creativity and holism.

Common denominator: conflict of holism and specialization is an old and solvable problem

In the Dialectical Systems Theory we have for three decades represented a solution to this conflict; we call it the dialectical system. It is supported by the law of requisite holism. Its point lies in interdependence of mutually different specialists needing each other due to their complementarity. It results from their difference in an essential part of attributes. These differences are the usual source of conflicts. They show up among those who forget that differences are only the individual part of attributes existing along with the group-specific and general parts (See Figure 3). There is no conflict when individuals who differ are capable of finding each other complementary and interdependent. Hence, what matters is the legal independence rather than dependence, and practical interdependence, which is expressed also in ethics of interdependence.

Three-parts *structure* of interdependent attributes of the feature under consideration (in theory of dialectics)	**Practical *consequences* of three-parts structure of attributes of the feature under consideration (in real life)**
General part shared by *all* components and relations of attributes of the feature under consideration (= existing or ideal, thought)	*General* isomorphisms, equality, all-linking parts of attributes of the feature under consideration (e.g. humankind)
Group-specific part shared by partial groups of attributes of the feature under consideration rather then by all attributes	*Grouping* isomorphisms, different from sub-systemic groups to sub-systemic group (e.g. men versus women)
Individual part of attributes of the feature under consideration, different per every component and/or relation of attributes of the feature under consideration	*No isomorphisms*, only differences between components and/or relations (e.g. individual person)

Figure 3: ***Three-parts structure of attributes of object under consideration – a (limited) chance for co-operation or conflicts (depending on human capacity and will to co-operate)***

Specialists tend to have attributes in the left column of the Figure 4, which partly help them (for depth of insight), and partly disable them (for refusing interdisciplinary co-operation):

- The most general theorists (in e.g. economy political economy / economics) are interested in the most general parts of attributes of the real processes and other features.
- The less general, more application-oriented theorists (in economy e.g. industry economics, statistics) are interested in specific attributes of the real processes, as they have selected.
- Operational practitioners are interested in the concrete part of processes, taking the other two parts for granted (e.g. rules about necessary contents of a good contract, when making a concrete business contract; in book keeping the recorded data, while rules of classification are taken as a given fact; etc.).

Pre-industrial metaphysic/narrow specialization	**Modern dialectic – consideration of interdependence**
Isolation, independence of feature under consideration / its attributes	Interdependence of feature under consideration / its attributes
No contradiction, total harmony, equality of *all* attributes, no crucial differences between features under consideration / their attributes	Unity and fight of contradictions (= partial harmony, partial differences resulting in mutual impact) between features under consideration / their attributes
No changeability of features under consideration / their attributes	Continuous changeability of features under consideration / their attributes
Total negation (= total end/destruction of *all* rather than some selected features under consideration / their attributes	Dialectical negation (= end of outmoded rather than all features under consideration / their attributes

Figure 4: ***(Interdependent) principles of medieval metaphysic versus modern dialectic***

Practical consequences of human attributes briefed in Figures 1-4 results in problems and their solutions are briefed in Figure 5:

Traditional = unholistic human attributes, source of conflicts	**Modern = holistic human attributes, solution of conflicts**
Reliable rules, certainty, determinism ("hard systems") everywhere	Framework rules, probability, indeterminism ("soft and hard systems")
Analysis = dissection of a whole to independent parts, narrow specialization, a single viewpoint of consideration	Holism, no independent parts of a whole (in relation to the whole and to others of its components)
Consideration of parts with no relations, oversight of interdependences	Interdependences, relations taken in account (between parts and with environments)
Static, steady state, given situation	Processes, dynamics, changing, evolution
Simplification (due to lack of knowledge and horizon), no contacts or impacts	Simplification as limited as possible, lots of knowledge, contacts, impacts
Simplification (due to too many data, messages, information) by filtering and specialization to a selected part of reality and viewpoint of its consideration	Broadest and deepest possible consideration of the whole, unavoidable simplification only, transdisciplinary views and interdisciplinary co-operation of specialists
Onesided, partial insights and deeds	Network of insights and deeds
Danger of lack of co-operation between mutually different specialists having only • Capacities, • Will and	Use of e.g. dialectical systems theory (DST) – methodological support for synergy of crucial specialists by a dialectical system: • Law of Entropy must be considered,

• Possibilities and • Felt (preferential) needs, Which hardly, if at all, enable and support creative co-operation. Hence oversights rather than consideration of crucial attributes result, leading to strange attractors, unforeseeable synergies and other consequences, deviations from expectations, mistakes, troubles, problems, and failures rather than successes and/by (requisite) holism.	therefore: • Law of requisite holism, therefore • Law of hierarchy of succession and interdependence, therefore • Guidelines for subjective starting points (= attributes) supporting creativity and (requisite) holism in definition of goals, and • Guidelines for continuous creative co-operation in implementing goals by work of specialists, and • USOMID Modeling of creative work and co-operation for informal DST in action
Entangled consequences resulting from over-specialization causing a too un-realistic simplification of principles and processes of thinking, decision-making, behavior, and action.	Networking of insights and impacts toward requisite holism leading to simplification of consequences of thinking, decision making, behavior, and action, because it is requisitely holistic

Figure 5: ***Essence and consequences of (dialectically) systemic thinking in comparison with the traditional one***

Findings in Figures 1-5 can explain a crucial part of specialists' failure to accept holistic thinking as network of mutually different and interdependent specialists. We admit that we are suggesting no simple solution, but destruction of one-selves is the only alternative. And this is much less simple. Falling from a skyscraper and being alive on the level of the second floor is fine in a short term only, much less so in a more holistic perspective.

Illustration with a practical case

Business Week, European edition, deals on 11 October 2004 with innovative economy. They include an article about the Canon company's way from a nearly bankrupt enterprise to one on the world top in less than years. »First of all, there was too much complacency in all parts of central headquarters, because a 'uinifying force' was obviously missing. We grew to big, we had too many different divisions and units having full independence in their business and disregarding the common consolidated financial picture of the entire Canon«. Situation was changed by innovation of evaluation of business with connsolidated balance sheet reflecting interdependence, and by a lot of persuasion about interdependence. (www.canon.com)

Every next step in the innovation based economy enlarges the need to activate personal creativity of more or less all coworkers, and diminishes the chance for conflict solving by ordering rather than intrinsic motivation (Udovičič, 2004). This problem requires innovation of culture (Wagnes, 2005) and of corporate social responsibility (Knez-Riedl, Mulej Dyck 2005), rather then technological innovation (alone). One can use many innovation factors (Krošlin, 2004). A critical example is co-operation of research, development and marketing specialists, as well as the operational technology specialists (Kokol, 2002; Gošnik, 2005). Thus, human attributes can be innovated in terms of Figures 1-5.

Interdependence leads to co-operation. Human natures enables it: 17% of people are co-operative, 20% are not, but free-riders, 63% respond (with a wait-and-see approach); psychologists discovered this recently empirically. It means: most specialists need a co-operative leadership. (Lester 2005) It is rare (Carney, 2005; Nussbaum, 2005; etc). This new experience fits in the same club with many more that are, in practice, millennia old, and in

theory eight decades at least (See: Mogensen, Rausa, 1989). But co-operative leaders lack again and again; centralism did not die with Stalinand other dictators, companies around the world are full of them (Ackoff, 2001; Collins, 2001; Collins, Porras, 1997; Creech, 1994; Dakhli, de Clerqc, 2004; Dyck, Mulej et al., 1998; Ećimović, Mulej, Mayur et al., 2002; Etzioni, 2004; EU, 2002; EU, 2004; Gerber, 2004; Germ Galič, 2003; Jenlink, guest ed., 2004; Kralj, D., 2003; Kralj, J., 2004; Likar, 2001; Macdonald, 2004; Mayer, 2001; MAYER, 2004; Potočan, 2003; Škafar, 2004; Uršič, Nikl, 2004; Volk, 2004; Wright, 2004; Ženko, 1999; etc). Ethics of independence due to specialization might cure these dictators.

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