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Chapter 5

The Social System of Systems Intelligence – A Study Based on Search Engine Method

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This essay offers an preliminary study on systems intelligence as a social system based on four cornerstones: writings using the terminology of systems intelligence, search engines, models to describe the behavior of social phenomena, and a theory of social systems. As a result we provide an illustration of systems intelligence field as a network of key persons. The main conclusion is that the most promising area for systems intelligence as social system is to systematically apply positive psychology to develop organizational management and to solve our everyday problems.

Introduction

The social system of systems intelligence is an ambitious topic, particularly for a person without any formal studies in sociology. Moreover, systems intelligence is a novel area of science and, hence, the development of its social structures is in early phase. It is even possible to argue that there is not yet any social system of systems intelligence.

The approach of this study is based on four cornerstones: first, the literature that has used concept of systems intelligence, second, search engines, third, models to describe the behavior of social phenomena, and forth, a theory of social systems. As a result we may be able to say something novel about the development of systems intelligence as a social system.

As to the social systems this essay relies on the grand theory developed by Niklas Luhmann (Luhmann 1995). One of the main statements of Luhmann is that social systems are systems of *communication*; even the mental processes of persons participating the communication process are excluded. Another key concept is *environment* that is, from the perspective of any social system, immensely complex. Other relevant terms are *autopoiesis* and *binary code*. All these concepts are relevant for any social system, including systems intelligence as a social system.

A central assumption of this essay is that the term "systems intelligence" defines the limit of the social system of systems intelligence. Because any social system is communication (in Luhmann's theory) we can observe the social system by observing the communication that somehow includes the term *systems intelligence*. Thus if the term "systems intelligence" is observed often enough, we may justifiably argue that the corresponding communication is part of the social system of systems intelligence. Note particularly that in this phase of analysis we do not need to assume any coherent group of people that intentionally have formed a society of systems intelligence. However, for the autopoiesis of the social system (or for the survival of the concept), a formal society is obviously useful, or maybe even necessary.

The paper is organized as follows. First we introduce the technical method applied in the paper called search engine method. The method is used to derive the list of most important systems intelligence names. The names are then located into a systems intelligence map based on the information about which names most often occur with each other. The map reveals seven subfields of systems intelligence. Moreover, the names are classified based on their emotional flavor that describes how often emotional concepts appear together with the name. In order to assess the future of systems intelligence we draw another map that includes only those persons that supposedly are still active and thus are able to contribute to the creation and development of the social system of systems intelligence. Finally, we provide some preliminary thoughts about the most promising future directions for the whole endeavour of systems intelligence.

Search Engine Method

The starting point of our analysis is that the social system of systems intelligence consists of communication that regularly uses the phrase of systems intelligence. Therefore, we can just observe any communication both in formal scientific papers and in any other communication media. Fortunately, nowadays this kind of research is quite straightforward thanks to powerful search engines, like Google, Yahoo, and Live Search. There is no lack of numerical information about any subject. Still we need to be careful with the interpretation of the numbers.

I have applied a similar method to generate long tail distributions (Kilkki 2007), for instance, to describe distribution the most popular string of characters in the Internet: www, the, in, to, and, a, by, home, of, for, com, on, 1, etc. (etc is 446th on the list). The study also revealed some problems related to the number of results given by different search engines (see figure 11 in Kilkki, 2007).

The search engine method adopted in this essay is the following. First we recognize a number of names that are somehow linked with systems intelligence. Note again that the persons themselves are excluded from the social system, while the names of the persons, of course, appear in the communication process related to systems intelligence (even when the person had not ever himself used the concept of systems intelligence). The second phase of the analysis is to identify those names that most often appear together with the concept of systems intelligence. The process is quite simple except that we need to have some insight about the potential names. Once again, the web provides several useful sites that give an overview about the topic and a lot of relevant names as well. In this process the primary source has been the Wikipedia pages about systems intelligence, systems thinking, Systems Theory, and Cybernetics.

With the list of potential systems intelligence names we can start to use search engines and observe how many results we get with each name. For instance, a search “Peter Senge” “systems intelligence” produces 426 results in Google, 458 results in Yahoo, and 160 results in Live Search. Note particularly that both the whole name and systems intelligence shall be in quotation marks. Sometimes the results by different search engines significantly differ from each other, which makes it somewhat problematic to give an unambiguous definition for the importance of the name. Here we use the simple rule that systems intelligence score (SI-score) for a name is the median of the three results; for instance, the SI-score for Peter Senge is 426. The list of 38 names with SI-score of at least 50 is presented in Table 1. It is likely that some names that should appear in the list a missing. However, we can safely assume that this set of names gives a representative sample of SI-names.

Seven persons have SI-score higher than 100; we may call them the seven systems intellectuals. While only 16 out of 38 of the SI-persons are still alive, all top five SI persons are alive.

The background of SI-persons is highly varying; there are mathematicians, engineers, psychologists, biologists, etc. Many of the SI-persons have studied several sciences. For instance, Wikipedia describes Gregory Bateson as anthropologist, social scientist, linguist, semiotician, and cyberneticist. Another interesting point is that many key persons have lived extraordinary and rich life; for instance Chilean Francisco Varela spent seven years in exile in USA during Pinochet's regime, became a Tibetan Buddhist, and finally taught neuroscience at the University of Paris. We might even speculate that in order to see the world as an intelligent system one requires a kind of outsider perspective.

Drawing the Systems Intelligence Map

The second step in the study is to define the map of the systems intelligence names by observing how often each pair of names appears on the same web pages. A similar search engine approach as earlier can be used. However, at this phase only one search engine is used, in this case Live Search provided by Microsoft. For instance, according to Live Search, "Richard Dawkins" and "Stephen Jay Gould" together gives 114000 results, whereas "Richard Dawkins" and "Mihajlo D. Mesarovic" together gives only eight results. Because of these extreme variations it is not reasonable to assess the strength of relationship between two names directly by the number of results; instead, for each person we take into account the commonness order of the other SI-names. For instance, in case of Daniel Goleman, the most common names appearing with him are Howard Gardner (18600), Mihaly Csikszentmihalyi (14100), Richard Dawkins (13500), and Peter Senge (10400).

It is apparent that most of these results do not relate in any way to the concept of systems intelligence. However, it is not possible to restrict the search to those pages that also contain phrase "systems intelligence" because there are too few pages to allow any statistically significant study. Besides, the key idea is to measure the closeness of the names in general. Figure 1 shows the systems intelligence map drawn based purely on this web-closeness information, in a way that a name is primarily situated close to the name that appears most often with the name. Unfortunately, it is hard to avoid some long connectors on a two-dimensional map. Actually, an essentially better map (in the sense that there are very few long connectors) would be obtained if it were possible to use two layers, one for theoretical field, and another one for applied field. In Figure 1 the applied part of systems intelligence is dispersed to the boundaries of the map, and particularly on the left side of the map.

Table 1. List of systems intelligence names

Abbr.	Name	SI-score	Orig. discipline	Key concept
ARa	Anatol Rapoport	74	Psychology	Tit-For-Tat
ATu	Alan Turing	80	Mathematics	Turing machine
BHB	Bela H. Banathy	103	Linguistics	White Stag leadership
CFr	Charles François	55	Commercial sc.	Systemics
CSh	Claude Shannon	53	Engineering	Information theory
DBo	David Bohm	53	Physics	Thought as a system
DGo	Daniel Goleman	120	Psychology	Emotional intelligence
DMe	Donella Meadows	76	Enviromental sc.	Limits to growth
ELo	Edward Lorenz	54	Mathematics	Butterfly effect
ESa	Esa Saarinen	1180	Philosophy	Systems intelligence
FVa	Francisco Varela	63	Biology	Neurophenomenology
GBa	Gregory Bateson	101	Anthropology	Criteria of mind
GKl	George Klir	50	Computer sc.	Systems science
GWe	Gerald M. Weinberg	57	Psychology	Law of Twins
HGa	Howard Gardner	171	Psychology	Multiple intelligences
HMa	Humberto Maturana	65	Biology	Autopoiesis
HOd	Howard T. Odum	59	Ecology	Ecological modeling
HvF	Heinz von Foerster	63	Physics	Doomsday Equation
IPr	lya Prigogine	60	Chemistry	The End of Certainty
JHo	John Holland	73	Psychology	Six personality traits
JLu	Jukka Luoma	64	Engineering	
JPi	Jean Piage	89	Philosophy	Four development stages
LvB	L. von Bertalanffy	95	Biology	General systems theory
MCs	M. Csikszentmihalyi	50	Psychology	Flow
MDM	Mihajlo D. Mesarovic	53	Engineering	GLOBESIGHT
MMe	Margaret Mead	56	Anthropology	Primitive Societies
MWh	Margaret Wheatley	50	Management	Systems thinking
NLu	Niklas Luhmann	72	Law	Social systems
NWi	Norbert Wiener	79	Mathematics	Cybernetics
PCh	Peter Checkland	59	Management	Soft System Methodology
PSe	Peter Senge	426	Engineering	The Fifth Discipline
RDa	Richard Dawkins	96	Biology	The selfish gene
RPH	Raimo P. Hämäläinen	327	Engineering	Dynamic game theory
SBe	Stafford Beer	56	Business	POSIWID
SJG	Stephen Jay Gould	54	Biology	Punctuated equilibrium
TPa	Talcott Parsons	55	Sociology	Action theory
WCh	West Churchman	97	Philosophy	To secure improvement
WRA	William Ross Ashby	61	Psychiatry	Good regulator

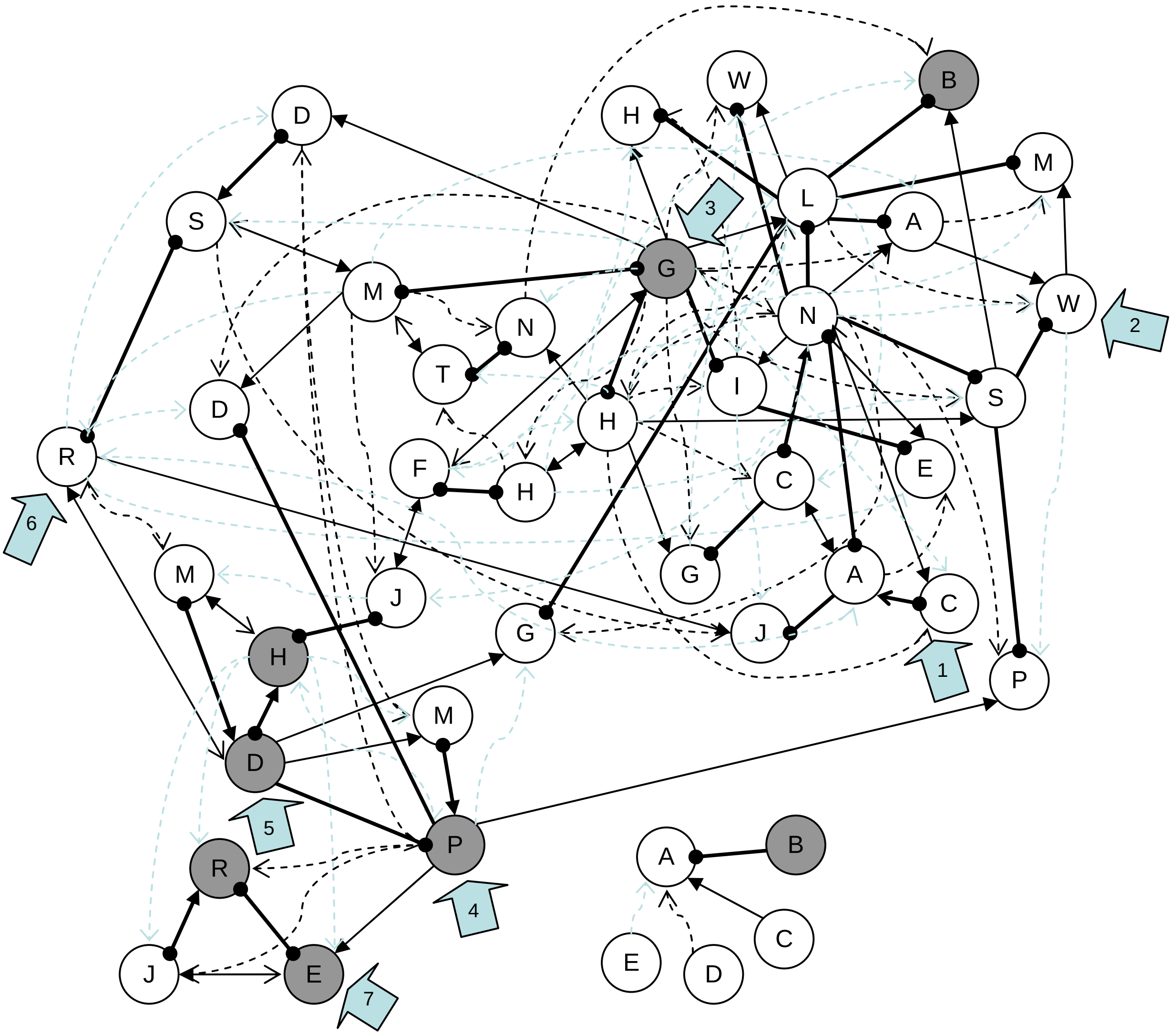

Figure 1. The map of systems intelligence. For name A, name B occurs most often with it in the web, followed by names C, D and E. B belongs to the seven systems intellectuals (SI-score > 100). Arrows with numbers indicate subfields (see list below).

We can identify several subfields with key persons as follows:

1) Mathematical basis: Claude Shannon – Norbert Wiener

2) General systems theory: C. West Churchman – Ludwig von Bertalanffy

3) Sociology: Gregory Bateson – Francisco Varela

4) Systems thinking: Peter Senge – Peter Checkland

5) Psychology: Mihaly Csikszentmihalyi – Daniel Goleman

6) Biology: Richard Dawkins – Stephen Jay Gould

7) Systems intelligence group: Esa Saarinen – Raimo P. Hämäläinen

As the Figure 1 shows there are no clear boundaries between the subfields, and some persons might even belong to several subfields. Note also that this map is very specific viewpoint defined by the concept of systems intelligence. A similar study with another concept may results in a different structure. Each subfield is just a sample of the huge area of the corresponding discipline. We may say that by using a specific concept and the search engine method, we select the highest peaks of each discipline from the specific viewpoint (here systems intelligence). Then the other step that defines the closeness of those peaks is used to draw a map across the disciplines. However, systems intelligence seems to be a specific concept in the sense that the highest peaks locate in so many diverse disciplines. Systems intelligence is a concept that has a strong creative flavor, and thus requires a multidisciplinary approach.

As to theoretical subfield, systems theory lies on a solid mathematical basis. Certainly, Claude Shannon and Alan Turing have been important for systems theory by defining the strict limits related to how information can be processed and transmitted within any system. As to the field of modern general systems theory, Lars Skyttner (1996) lists as the key persons Kenneth E. Boulding, T. Downing Bowler, C. West Churchman, Ludwig von Bertalanffy, and Joseph A. Litterer. Only Churchman and von Bertalanffy exceed the SI-score threshold of 50, Boulding was quite close with SI-score of 44, while Bowler and Litterer have quite low SI-scores. In general, it seems that most of the important contributions in these theoretical fields have made during the 20th century. Thus, it is uncertain whether we should expect any major discovery in this theoretical basis that would have a significant effect on systems intelligence – but we cannot be sure.

Sociology and biology are, of course, very active fields, although there are not any particularly young persons on our SI-list. From systems intelligence viewpoint systems thinking and psychology are most important and active fields.

Emotional Flavor

Next we consider a key question of this paper: what kind of issues does the social system of systems intelligence consider compared to other closely related fields? The approach is, once again, based on the results obtained by search engines.

To formally analyze the difference between the fields or persons, we define emotional flavor (EF) as follows:

$$EF = \frac{(R_1 \cdot R_2 \cdot R_3 \cdot R_4)^{1/4}}{(R_1 \cdot R_2 \cdot R_3 \cdot R_4)^{1/4} + (R_5 \cdot R_6 \cdot R_7 \cdot R_8)^{1/4}}$$

where R_i is the number of results given by Live Search for the search "forename surname" "ith term" (if there is no results, $R_i = 1$). The terms are

(1) happiness	(5) problem
(2) meaning of life	(6) efficiency
(3) self-actualization	(7) proof
(4) satisfaction	(8) theory

For instance, search "Gregory Bateson" "meaning of life" gives 830 results, and with other search results Gregory Bateson gets EF of 9.9 %. Thus, the more scientific and problem-oriented text appears in the web together with the given name, the smaller the emotional flavor. There are vast variations between the names from George Klir (EF = 1.6 %) to Daniel Goleman (EF = 22 %). Figure 2 illustrates how the EF values vary over the systems intelligence field. As could be expected, top scientist with theoretical background, like Claude Shannon, Alan Turing and Norbert Wiener have low EF, which means that theoretical concepts occur very often with their names. The average EF over the SI-persons listed in Table 1 is 7.6 %. For comparison we can take some randomly selected names (that is, names without any dominant person): EF for Thomas Jones is 3.7 % and EF for Paula Smith is 5.9 %.

The above analysis is based rather on names than persons, because we did not expect any own activity of the person, only that the name has appeared together with systems intelligence. Of course, for majority of the persons mentioned in the SI-list any activity would be impossible as they have not been alive during the relatively short existence of systems intelligence as a systematically used concept. As to the future of systems intelligence as a social system, it is obvious that some key persons will have a decisive role. Table 2 shows a list of persons that are still alive and are supposedly active; here we assume that person is still active if he or she is born 1940 or later. Of course, this crude criterion may leave out some people that still may affect the formation of systems intelligence as a systematic concept.

Particularly with the alive persons, it is very likely that several persons are missed, because the threshold for SI-score is as low as 10. On the contrary, it is quite probable that there are not many unidentified persons with SI-score above 30. In addition to the group led by Esa Saarinen, there are very few persons that are actively using the concept of systems intelligence: if the term appears 10 or 20 times in the same web pages as a name, it is only an indication that the person has potential to become active actor in the systems intelligence field.

The main difference between the two SI-maps shown in Figures 1 and 3 is that with all SI-persons (Fig. 1) there is a strong theoretically oriented area on the right side of the map whereas in case of active SI-persons (Fig. 3) there is not any clear area of theoretical persons. Although some active SI-persons have strong theoretical basis, such as Feigenbaum, Yorke and Wolfram, they are located rather on the boundaries of the SI-map. The centre of the SI-map is occupied by persons that primarily apply the SI-concept on personal development or on management problems.

Figure 3 also shows the emotional flavor of active SI-persons. The average EF over the active SI-persons listed in Table 2 is 11.6 % or about 50 % higher than the average EF of all SI-persons listed in Table 1. This significant difference also indicates that the most natural application for systems intelligence seems to be in the development of emotionally intelligent capabilities when participating in complex social systems.

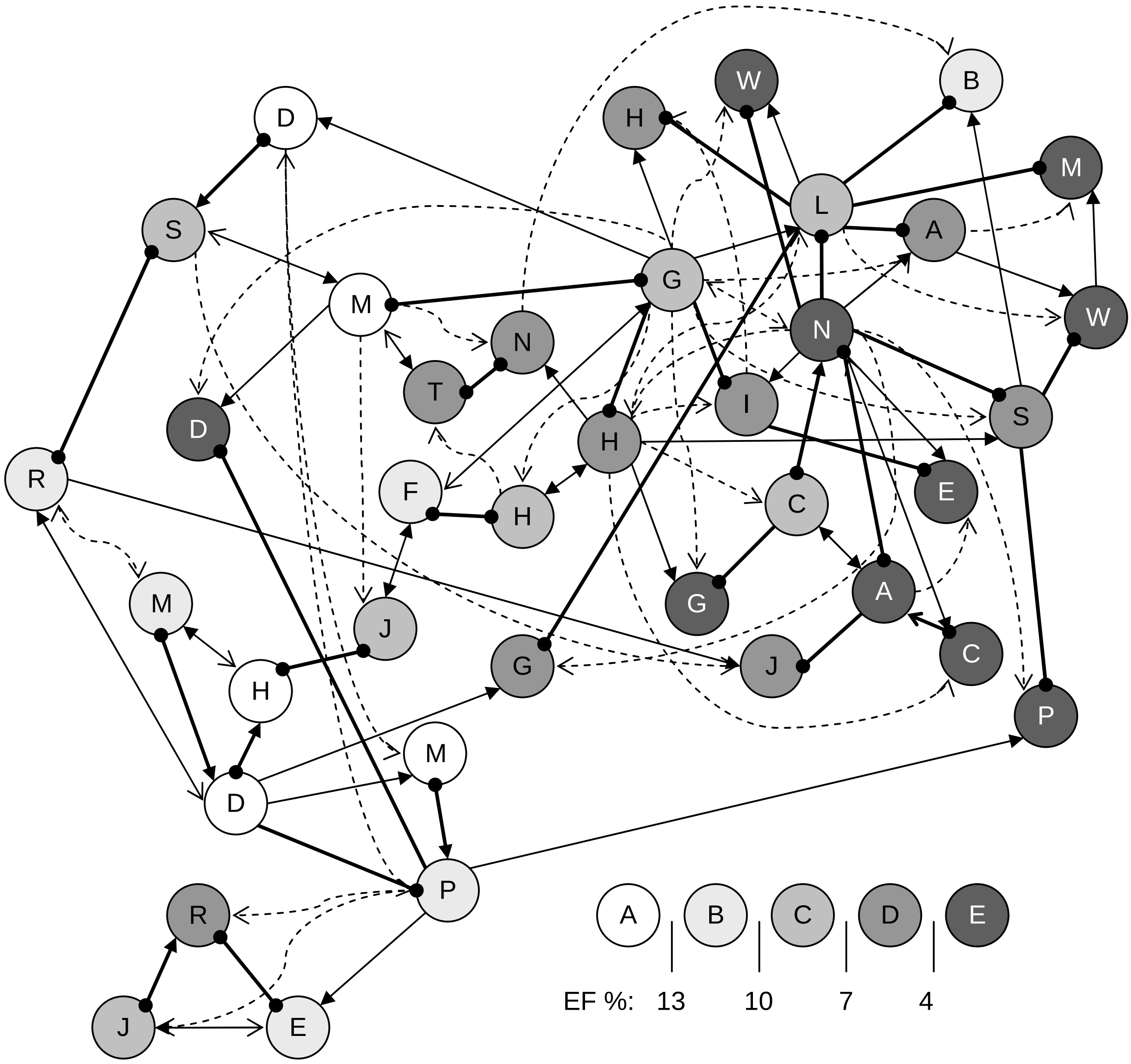

Figure 2. Emotional flavor (EF) of systems intelligence names. A: EF > 13%, B: 13% > EF > 10%, C: 10% > EF > 7%, D: 7% > EF > 4%, E: EF < 4%.

Table 2. List of active systems intelligence persons

Abbr.	Name	SI-score	Original discipline	Key concept
AdB	Alain de Botton	20	Philosophy	How Proust can change your life
BKe	Bradford Keeney	20	Psychology	Creativity in therapy
BKo	Bart Kosko	14	Engineering	Fuzzy thinking
DGo	Daniel Goleman	120	Psychology	Emotional intelligence
DHa	Debora Hammond	14	History	Health and healing
DHo	Douglas Hofstadter	26	Physics	Strange loop
ESa	Esa Saarinen	1180	Philosophy	Systems intelligence
HGa	Howard Gardner	171	Psychology	Multiple intelligences
JAY	James A. Yorke	13	Mathematics	Chaotic systems
JCo	Jim Collins	13	Business	Built to last
JLu	Jukka Luoma	64	Engineering	
LSk	Lars Skyttner	14	Systems science	General systems theory
MCJ	Michael C. Jackson	13	Philosophy	Critical systems thinking
MFe	Mitchell Feigenbaum	12	Physics	Feigenbaum constant
MGl	Malcolm Gladwell	19	Journalism	The tipping point
MLo	Marcial Losada	22	Psychology	Meta learning model
MMa	Mikko Martela	45	Engineering	
MSe	Martin Seligman	15	Psychology	Learned helplessness
PHi	Pekka Himanen	15	Philosophy	Hacker ethic
PLi	Petri Lievonen	13	Engineering	
PSe	Peter Senge	426	Engineering	The fifth discipline
RCo	Randall Collins	19	Sociology	Interaction ritual chains
RDa	Richard Dawkins	96	Biology	The selfish gene
RJo	Rachel Jones	11	Literature	Management communication
RPH	Raimo P. Hämäläinen	327	Engineering	Dynamic game theory
SWo	Stephen Wolfram	18	Physics	Cellular automata
WBA	W. Brian Arthur	12	Economics	Increasing returns
YBY	Yaneer Bar-Yam	10	Physics	Complex systems

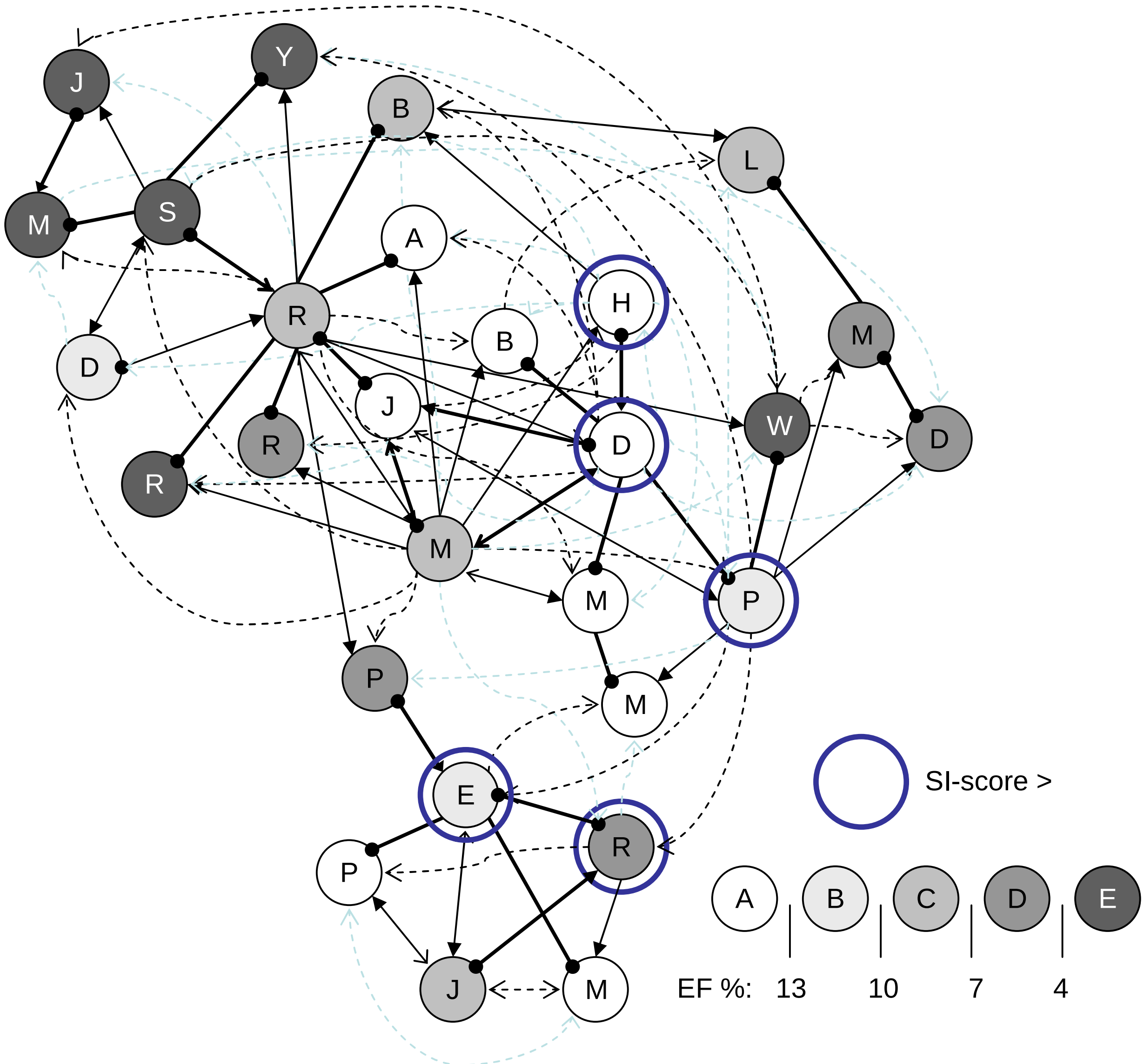

Figure 3. The systems intelligence map of active persons

Future of Systems Intelligence

Now we can consider the major question of this essay: what will be the future of systems intelligence as a social system?

Systems intelligence as a genuine social system requires a strong enough community of active people. But then the community as a social system inevitable needs to consider and maintain its own future, or its autopoiesis. One requirement for a successful autopoiesis is that the social system is able to distinguish itself clearly enough from its environment. In case of systems intelligence, the environment includes well-established areas identified in Figure 1: mathematical theories, general systems theory, sociology, systems thinking, psychology, and biology. The most important neighbours for SI are scientific community in general, systems thinking as a more pragmatic field, and psychology as a field of personal development. For a successful autopoiesis, systems intelligence must be able first to define a clear enough difference with neighbouring fields, and secondly to form close enough relationship with those fields.

Systems Intelligence as a Scientific Community

As to the relationship with the scientific community in general, the key question is whether systems intelligence wants to position itself inside the scientific community. Systems intelligence as a scientific discipline is quite a problematic approach, because for science the binary code, to apply Luhmann's (1995) terminology, is true/false. If systems intelligence wants to use this strict code, it has to consider very carefully what questions can be truly assessed by the true/false code. Furthermore, to gain recognition in the scientific field requires, first, publications in respected forums and, secondly, a lot of citations to those publications. As the competition in the scientific field is extremely hard, it is mandatory to carefully obey all the rules of scientific research and dissemination of results. A strictly scientific approach might lead to situation in which systems intelligence loses its strong holistic perspective and starts to concentrate to those specific issues that can be formally studied by scientifically respectable methods, for instance by means of sophisticated statistical techniques. As Esa Saarinen (2008) has expressed his way of thinking, "philosophy helps the manager in the challenge of figuring out what cannot be decided by facts and information." If something cannot be decided by facts, it is very difficult to apply a true/false code. Instead, systems intelligence shall look towards the opposite direction, to the outcomes of certain way of behaving.

Saarinen and Hämäläinen (2004) have defined systems intelligence as intelligent behavior in the context of complex systems involving interaction and feedback. What is true intelligence and what is false intelligence, anyway? Intelligent behavior implies the ability to cope with new situations and problems. In case of new situations in complex systems, it will be extremely difficult to scientifically prove that some behavior is intelligent. In many cases, the objective of systems intelligence is rather to develop skills that makes it possible for persons acting in a system to identify the uniqueness of the situation and then to cleverly act according to the achieved understanding for the benefit of the whole system. Due to the uniqueness of various situations, it will be very tricky to replicate studies and to gather material for statistical analysis. Moreover, it is extremely difficult to define whether the outcome of a separate action was beneficial or not, or what the consequences actually were (because it would be impossible to return exactly back to the same situation, to make another decision, ceteris paribus, and then to compare the consequences of those two actions).

Systems Intelligence vs. Systems Thinking

One of the basic remarks of systems intelligence is that the reason for many observable phenomena in complex systems is in the structure of the system rather than in any separate actions. Then a natural question to be studied is how the structure of the social system influences the success of the system. Thus if systems intelligence wants to make significant scientific contributions, a promising area is to study system structures and how they can be changed by means of cleverly selected actions. However, general systems theory has already a long tradition on the theoretical part of that area. Thus in order to provide own contributions systems intelligence needs to emphasise intelligence as a research topic. Still, to take that direction seems to resemble the fundamental approach of systems thinking.

As Jones and Corner (2007) have noticed, systems intelligence has a more personal emphasis compared to systems thinking that focuses more on objective modelling. However, if we take the two key persons representing systems thinking and systems intelligence, there is no difference between the Emotional Flavors:

- Systems Thinking: Peter Senge’s EF = 10.5 %, Michael C. Jackson’s EF = 4.9 %

- Systems intelligence: Esa Saarinen’s EF = 10.6 %, Raimo P. Hämäläinen’s EF = 4.7 %

According to Michael Jackson (2003), “systems thinking is holistic rather than reductionist and, at least in the form of critical systems thinking, does everything possible to encourage creativity”. In this respect systems intelligence and systems thinking visibly resemble each other. However, the main criterion for successful System Thinking seems to be the efficiency of management, at least if we consider the central books about systems thinking, written by Senge (1990) and Jackson (2003). Thus the final criterion for good systems thinking seems to be the benefit of the organization which the person is working with. In a commercial company the benefit means economical success. Consequently, the best systems thinking book gives the best advices to increase the efficiency of management in complex organizations. The endeavour of systems intelligence goes farther, both to the direction of individuals and to the direction of the whole society.

Systems Intelligence vs. Positive Psychology

If systems intelligence goes deeply in to the area of another disciplines, like psychology or systems theory, it had to accept the methods, concepts and principles of those disciplines. General systems theory seems to be too theoretical as a sole framework for the development of systems intelligence. Although general systems theory offers a lot of valuable insight to be applied within systems intelligence, systems thinking is already a sensible approach to apply general systems theory in practical problems. The additional value of systems intelligence, compared to systems thinking, might be based on more thorough application of psychology, particularly positive psychology.

In the systems intelligence map shown in Figure 3, the key names representing psychology are Martin Seligman (EF = 29.5 %), Daniel Coleman (22.5 %), Bradford Keeney (25.0 %), and Howard Gardner (13.4 %). Furthermore, another key name from systems intelligence perspective is Barbara Fredrickson with as high EF as 32.8 % (see also Rönkkönen, 2010).

However, rather than to directly contribute to positive psychology, the scholarly role of systems intelligence might be to transmit the message of positive psychology particularly towards all managers that have to cope with complex organizations. In this sense systems intelligence comes close to the positive organizational scholarship (see Cameron et al., 2003).

Conclusions

As a social system, it would be useful for systems intelligence to define a binary code, something similar to true/false used in scientific domain, or information/non-information applied by mass media. However, it might be that if the objective of systems intelligence is to support human flourishing, as Esa Saarinen (2008) has defined his personal ambition, it will be very difficult to define a single binary code. Niklas Luhmann (1998) stated that although most symbolic generalizations are binary coded, it is not possible to find any binary code for empassioned love. As Dustin Kidd (1999) has expressed it, love, more than any other social system, is characterized by contingency and fluidity. Human flourishing is a similar concept, evasive, and hard to formalize and compress to a binary code. But it might indeed be that a social system's autopoiesis requires binary code. Someone may even argue that a binary code will inevitably emerge when a social system grows sufficiently large.

However, I would argue that systems intelligence is as much art as it is science– art of systems, or even art of life. But how, then, can the social system of systems intelligence live in the middle area without the support of any established social structure, like science, art, or economy?

It would be useful to apply the key principles and methods of systems intelligence to systems intelligence. However, that effort is problematic if for any working inside the SI-field, for the reasons discussed by Pronin (2006) and Palonen (2010). On the other hand, it is not possible to investigate systems intelligence as a social system without intervening in the social system of systems intelligence; this is an obvious paradox. But the paradoxical nature of the effort means that we indeed need creative intelligence to sustain the endeavour of systems intelligence. An example of this kind of intelligence is presented by Ella Rönkkönen (2010) in her essay in which she applies the concept and methods of catalysts to consider the effects of positive emotions.

Therefore, a promising approach is to define systems intelligence as a framework rather than as a social system. The SI-framework makes it possible for all of us to create new insight to cope with the environment in which we live our everyday life, the extremely complex global society. The framework facilitates the transmission of insight and information between different disciplines (systems theory, psychology, sociology, etc.) and our everyday life. Persons primarily working in any other field are welcome to participate in the construction work of systems intelligence framework.

However, even the term framework per se is problematic because it does not naturally include the essential creative flavor of systems intelligence. Even more than a framework systems intelligence is a mindset that stimulates our capabilities to be aware of holistic system level phenomena and to use positive emotions to benefit both our personal life and the social systems we are living in.

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