



Different approaches of pattern management and strategic intelligence

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ABSTRACT

The world around us contains endless amounts of information. That information is mostly loose in our minds. Very often, it does not at first contact fit in with our conventional understanding, experience or any context we are used to. Hence, we may say that we are overwhelmed with constantly changing raw data, and strategic actors especially tend to be short of more rapid, up-to-date, valid and in-depth understanding of the transforming business landscape and social environment. Strategic intelligence is an emerging field of business consulting, which aims to undertake the task of revealing large, complex or complicated issues of transformation in a more understandable form. Pattern management, however, can be seen as one field or one approach of strategic intelligence. It is an approach that may, on one hand, be based more on empiric data and formal structures than other forms of strategic intelligence, but, on the other hand, it is a very heuristic approach to integrate quantitative data, reasoning and narratives. The main attempts of this article are, first, to show, what are in general the most commonly used ways of managing, finding, drawing, reasoning or anticipating patterns from our environment, and second, to locate how the concept of pattern can be understood in different ways. From the gathered knowledge, this article presents three main categories of reasoning patterns: empirical calculation (EC) is common especially in enterprise consulting. Theory proving with observations (TPO) is common especially in natural sciences, and real combining (RC) is common especially in qualitative research and in narrative.

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1. Introduction

In mainstream literature, it has been common to describe strategic intelligence as the collection, processing, analysis, and dissemination of information that has high strategic relevance. More specifically, strategic intelligence has mostly been related to military planning, to national security intelligence, and to the strategic decision making of large companies. It has been used as a concept which is closely related to business, state security and military intelligence, business strategy, strategic sourcing, strategic competition observation and analysis, strategic alliances, strategic management, strategic consulting, and to strategic development or planning [1,2].

This article aims to broaden our understanding of strategic intelligence. First, it emphasizes the possibility of a broader view of the concept. Any set of tools, services or consulting that might either help us to reveal large, complex or complicated issues or transformations in a more understandable form, or to get the most valid and up-to-date information on time—as well as any procedure which helps us to reveal something that is unseen from plain information alone—can be considered as strategic intelligence of a complex phenomena. In other words, strategic intelligence should not be considered only as a characteristic of

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military, state security and corporate strategies, but as a more general way of managing knowledge. Hence, strategic intelligence is able to use modelling, simulations, visualisations, art, narrative, semiotics, fractal or statistical mathematics, graphs, metaphors and analogies etc. because these all are in some way able to express complicated or complex issues in a simplified way.

Second, it emphasizes the importance of selecting the right forms of reasoning or pattern management for a certain type of problems in a strategic intelligence process. This presentation contains four parts. The first part is a discussion of reasons behind our current difficulties in sense-making and anticipating social and economic phenomena. The discussion focuses on themes such as the reasons why the complex world leads us to the feeling of information overflow, and what can strategic intelligence and especially its dimension of pattern management offer to the reasoning of the complex world. After the discussion of the existence of the research field and the need for certain types of methods, an idea of managing patterns of change from raw data is presented. Next, both, the forms of reasoning attached to PM, and the “truths” or theoretical objectives that are searched for in certain types of intelligence processes—i.e. is a person looking for existing, changing, invented or emerging patterns—are debated. Fourthly, all these interrelated aspects are merged into a presentation of three pattern management categories according to my qualitative real combining type of pattern management process: empirical calculation, theory proving with observations and real combining. Finally, based on the theoretical work, a few suggestions for the management and anticipation of complex issues are presented.

2. Why the complex world leads us to the feeling of information overflow

Do we tend to experience that our surrounding world is full of loose information? It has been said that an average person of the 15th century got the same amount of information about their world in their whole lifetime as we get from a single newspaper everyday [3]. The amount of information flowing constantly around us is huge, but only a small fraction of it is useful or valid for us as such. Not so long ago, information and knowledge were scarce and therefore very valuable. Nowadays, most information is free and easy to access, but a rapid understanding of it is rare [4]. Hence, due to the information overflow, almost all current actors are experiencing some forms of lack to sense-make, or at least to anticipate the transformations of social phenomena [5,6].

Why has the world become such a place? Why does it appear to be more complex, interdependent, hectic, nonlinear, co-evolutive, less stable, and full of communication and loose information [7–9]? Firstly, it can be explained with social functions and agreements that we have obtained. In other words, the contemporary world can be said to be globalised in all of its dimensions and meanings, and this has implications to everything we experience from mass media to economy [10]. Secondly, it can be explained with structures and fundamental logics or “law-like” tendencies that the transformation follows [11,12]. For example, due to the Internet and globalisation, social issues can be said to involve, more easily than before, more and more intense and larger human actor networks around them [6]. Such large scale networks can be categorized to three main levels. The entire network can be called as the macro-level of the network. On the middle-level, the whole network usually further self-organises itself into strongly networked local clusters which can be called “small worlds”. These small worlds emerge because most micro-level autonomous agents, such as humans e.g., start to link more strongly with the agents close to them [13]. Some autonomous agents are more active in networking than others, making them local nodes of the network. When most agents and nodes of an area are networked more strongly with their neighbouring agents and nodes than to the nodes in distant locations a local cluster is established. [14]. Once a local cluster starts to strengthen its local interactions through communication and other transactions, the cluster begins to live a life of its own. This happens because each cluster has many “willing and learning” agents who are able to share knowledge, learn basing on their non-linear local interactions and to rapidly change their behaviour and strategy [15]. When all of this happens simultaneously without any external control, the system inside the cluster can be called a *complex adaptive system* (CAS) [16]. Hence, CAS is a higher form of a system as it consists of many “learning and willing” systems, but evolves and renews itself as an independent entity.

This has implications to the amount and quality of information. Because the members of each network cluster share more knowledge in their local interaction, not all the clusters of the whole network have the same information. The dissonance of information increases as the whole middle-level network grows. At the same time, however, the whole network's ability to preserve information is increasing due to the local clusters, CAS, links and delays [14]. Thus, the qualitative unbalance of information and delays and gaps in sharing the information set a challenge for Data management, sense making or strategy work in the world of large networks. The challenge gets even greater if Malcolm Gladwell's point of view is considered. He claims that the spread of ideas, behaviour and the like between CAS, clusters, and the whole network can be compared to the contagiousness of viruses in a population, which makes any linear “ivory tower” predictions very difficult [13,17].

Another way to describe this “living” of such higher forms of “learning and willing” as a “law-like” tendency is to use the concept of autopoiesis, which was originally introduced by Maturana and Varela [18] in the field of biology to describe the ability of cells to self-reproduce. Autopoiesis refers to slow self-production, self-maintenance, self-renewal, and self-definition of a system's existence via the exclusion of areas that do not belong to the system (*autos* = self, automatic, *poiein* = to do, to produce, to maintain existence, to do again, to conceptualize). For instance, almost all cells in the human body are replaced over a period of two years, yet people can still be identified throughout their life.

Niklas Luhmann, a German sociologist, has expanded this theory and applied it to social systems [19–21]. He is convinced that social systems, such as companies, markets etc., are autopoietic, and the foundation of their existence and continuity lies in communication. By communication, Luhmann refers to activity or to an event rather than the spoken language of communication. Communication is based on contacts that are constantly created and renewed by the network of interaction and that cannot exist outside of the network [20]. Luhmann states that a society is a co-evolutive and indeterministic system which has no dominating centres. The society contains several simultaneous autopoietic systems all of which have only one function. The whole society self-

organises itself in interactions between these function systems. Complexity may emerge to the function systems/sub-systems (the small worlds) of society (the macro-level) only if communication in society sets boundaries and rules that define them as sub-systems. The actual process of complexity increase follows the principles of autopoiesis where all elements of a system are reproduced in a communicating network interaction of the same kind of elements. Such autopoiesis is a functionally isolated self-referring process. In other words, all operations in the system are explained by referring first to something outside its own sub-system, and then referring back to its own operations. Hence, for Luhmann, autopoiesis in society is a way to describe how (i) the sub-systems are strongly dependent on the combined performance of the other sub-systems and are therefore co-evolutive and self-referring, (ii) how the sub-systems self-reproduce, and (iii) how these processes increase the society's overall complexity and interdependency. In other words, Luhmann's theory explains how a society becomes complex, and how its sub-system, e.g. a market area, defines itself, how it renews itself and reproduces through communication, and how it adapts to co-evolution with the whole society.

3. Is strategic intelligence difficult?

By using the approaches of three different scientific traditions, the previous chapter explained why the world appears to be so complex by its structures, so hectic by its processes, and so overwhelming by its information flows. To conclude, the “living” autopoietic processes exist only via communication which increases exponentially, and the size and complexity of networks increase its abilities to produce and maintain information, but cause information delays while doing so.

What does all this mean for strategy work, foresight, or for the management of an organisation? We need to accept that no one can steer, determine or even predict the development beforehand, and it is very difficult to get all relevant information on time [14]. Furthermore, in this kind of environment, an actor cannot rely on a single strategy and single method anymore [22]. Thus, appropriation of the change and proactive strategies require ever faster, broader and more in-depth understanding of general transformations [23], and this cannot be accomplished without proper methods of observing, reasoning, understanding and influencing the complex processes. Therefore, the use of multiple methods and multiple information sources is strongly encouraged.

This article focuses on one form of strategic intelligence, pattern management. It is an approach which may be more based on empirical data and formal structures than other forms of strategic intelligence, but at the same time it may be seen as a heuristic and creative approach. I locate the domain of pattern management into three categories which reveal different sides of its existence. The first category is *empirical calculation*, which is common especially in enterprise consulting. The second one, *theory proving with observations*, is especially common in natural sciences. The third one, *real combining*, can be considered common especially in qualitative research and in narrative. The categories vary according to their approaches to reasoning, methods used and especially the understanding of the “truth” or the type of pattern that one is looking for.

4. Sense making in pattern management

Pattern management (PM) is a fairly new concept. One of the first developments was Kamran Parsaye's article [24], where he drew a line between Data management and Pattern management. According to Parsaye, when recent data is put into operational system and merged with historical data gathered over time, we have Data management. When all this data analysed over time is being merged with historical *patterns* we have pattern management. Thus, PM is not Knowledge management, data mining or construction of knowledge-based systems. PM deals with patterns after they have been discovered by data mining. Parsaye gives a simple analogy, “consider data as grapes and patterns of knowledge as wine. Data mining is then the wine-making process, (...) and the data mining tools are like wine-making equipment”.

Parsaye's definition of PM is accurate from the point of view of managing knowledge, but it is possible to have a more versatile approach here as well. David Snowden [25] has discussed the management of patterns as a more anticipatory and proactive process. From Snowden's point of view, patterns may even be seen as something more tangible than knowledge, understanding and beliefs alone.

“We need to identify the early signs of pattern formatting and disrupt those we find undesirable while stabilizing those we want. If we are really clever then we seed the space to encourage the formation of patterns that we can control. These patterns are, to use the language of complex adaptive systems theory, emergent properties of the interactions of various agents. By increasing information flow, variety and connectiveness either singly or in combination, we can break down existing patterns and create the conditions under which new patterns will emerge, although the nature of emergence is not predictable” [25].

Snowden continues: “Most humans make decisions on the basis of past or perceived future patterns, not through rational choices between alternatives, an understanding of patterns, is therefore, key to managing behaviour within organisations and in relationship to markets and environmental factors” (ibid). Therefore, patterns are not only knowledge, an understanding, and beliefs of development, but also something more tangible such as proactivity with emerging paths and trends in complex environment [26,27].

Other, even more versatile and tangible descriptions for patterns managed in the process can be given. In Kuosa [28], I have linked PM to the rugged landscape between the complex adaptive systems [7,14] and to managing knowledge of physical objects and more tangible transformation processes [23]. In this sense, pattern can be understood as a phenomenon [17] or even an object, which may not be visible or tangible as such [29], and it can also refer to an existing, changing or emerging path of transformation. Here, management transforms finding the patterns into a process. It contains all the actions of observing, reasoning and understanding the issue at hand.

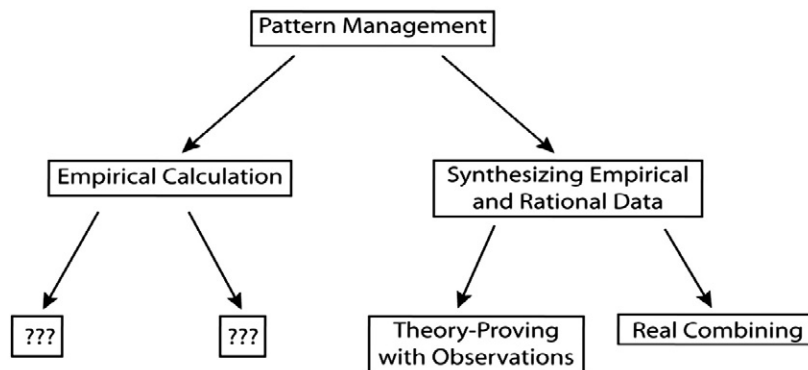


Fig. 1. Main categories of pattern management.

As an example of managing a phenomenon, a pattern can for example refer to findings in consumer behaviour. Those who buy diapers for babies will probably need to buy baby foods, milk and towels as well, and vice versa. The phenomenon of probable consumer types can also be rationally categorized according to consumers' age, sex, income, education, values, etc. In addition, the consumer types can also be drawn automatically from empirical data of customer purchases, given that many customers use loyalty cards. This kind of knowledge can be used efficiently in marketing and product placement.

5. The main categories of pattern management

PM is, above all, a common logic of observing, reasoning and understanding our surrounding world. The theory of PM is not a closed and sophisticated collection of methods and procedures or a strict system description. It involves various forms of inductive, hypothetic–deductive, abductive [37], analogy or case-based reasoning used within various fields of everyday life and science. Reasoning is an old field of philosophy with many well-established theories alongside with its controversial issues [30]. Rather than try to solve or further attend to these discussions, I attempt here to show how versatile but at the same time unifying PM can be. For classifying the different practical approaches, theoretical forms of reasoning, and objectives related to PM, I have established² the following main categories for Pattern management (Fig. 1).

First, we can divide PM into two general categories. The first one is *empirical calculation* (EC), which refers to the quantitative search for increases or decreases with a large amount of data. The second one is *synthesizing empirical and rational data* (SER). This can be further divided into two special types, which are *theory proving with observations* (TPO), and *real combining* (RC).

6. Empirical calculation

By empirical calculation (EC) I mean the quantitative search for increases or decreases in the frequencies of certain issues with large amount of data. When the work is started according to EC, there does not have to be time series or any hypotheses of the possible findings in advance, but the research theme, database and the observing method are usually very well known. In other words, EC does not refer directly to time series analysis or statistical extrapolation. The logic of EC is more open and explorative and less fixed to historical findings. Nowadays EC, or data mining by its narrow name, is mostly done by computing, but it can be done by using human observations alone.

To give a few examples, IBM and Google are companies which use EC on a large scale in their enterprise consulting work. IBM, for instance, has developed many different kinds of multi-phase data mining software tools for drawing rising peaks of development from large databases. IBM uses several methods, such as Public Image Monitoring, OmniFind, Web Fountain [31], for pinpointing the rise or lowering of discussion topics from the Internet or for drawing the most interesting Internet sites from up-to-date download statistics. In addition, Google uses its own database, which is collected from Google's own search service, in order to make sense of the changes in topics people are interested in nationally or internationally. According to the founders of Google, Sergey Brin and Larry Page, Google's next grand goal is the re-organisation of world knowledge into one web 3.0 search engine. If this attempt will succeed, there may be a new renaissance of EC ahead.

Alongside with enterprise consulting, EC or data mining has been used in technology assessment. There, EC can be done by searching developing technology topics, for example, from refereed journals, patent applications, media discussion topics, Internet downloads in order to try to estimate when the time is right to expect a breakthrough in something or to start one's own R&D project.

² The three practical forms of PM (EC, TPO and RC) became established in my own theoretical work. I started the work by observing the different approaches which people tend to have either in science, consulting or in life in general. Once I had located the general approaches, I started to compare the approaches that the people had, to the formal forms of reasoning. Alongside with this comparison, I tried to reason, what kind of "truths" or objectives the people are looking for when they use certain types of approaches. Hence, the three forms of PM became established when I eventually had clustered the methods, the forms of reasoning, and the objectives of the reasoning into coherent categories. This was a qualitative work where the research material was gathered in an open "snowball sampling", which means that most of the material was not selected or specified before the work was started. The theoretical work continued until I believed that the saturation point was reached. The used research method could be characterized as real combining type of PM which is described in this article.

EC is very much an umbrella concept. It defines general approaches and logic behind them, but does not mark exact boundaries between life and science. It does not just –confine itself to some methods—such as data mining, some other approaches of automatic calculation, or specific forms of quantitative research—as insiders or outsiders either. Hence, we might say that we are talking about different kinds of wine-making equipment here, as Parsaye suggested [24]. Nevertheless, it might be possible to try to divide EC into further subcategories.

7. Synthesizing empirical and rational data

The roots of the synthesizing empirical and rational data (SER) approach can be found in Immanuel Kant's (1724–1804) philosophy in which he wanted to combine rational and empirical reasoning. According to Kant, loose empirical knowledge is unhelpful unless we have the capability to reach conclusions and to discover the phenomena behind the findings. Thus, it is the representation that makes the object possible rather than the object that makes the representation possible [32]. Kant's approach introduced the human mind as an active originator of experience rather than just a passive recipient of perception [33]. When we see a box as three-dimensional, the shape of the box may not be part of the box's nature. There needs to be not only empirical observations from the surrounding world but also synthesizing by an intelligent agent who can put the observed pieces together in order to make findings and reasoning. Here, Kant, and G.W.F. Hegel (1770–1831), were impressed the astronomy of their own time and the Copernican revolution. And the fact that the locations, formation, size and weight of planets could be drawn from the data of indirect observations from the surrounding space by reasoning and by synthesizing theories [34].

Today, astronomy is more advanced compared to the time of Kant and Hegel, but very similar principles are still steering the rational and inductive processes of reaching for the phenomena behind the loose observations. How is the existence of black holes, wormholes, dark matter or planets in distant solar systems deduced when no one can reach the substance under investigation or even get direct observations of the subject with telescopes? The answer is that the astronomers observe and collect data from the surrounding local space. Related to the research matter, they observe the changes in radiation, bending of light, compare gravitation fields, shadows and light spectrums, reflections of infrared light, etc. [35,36]. Information about the kinds of findings that are needed to prove that a phenomenon exists is embedded in theories of astronomy. If the findings are not explained fully by the theories then the theories have to be changed. The scientific work of astronomy is one example of theory proving with observations, the first form of SER to be discussed.

8. Theory proving with observations

The approach of theory proving with observations (TPO) resembles Carles Peirce's (1839–1914) the scientific method—the three step process that all scientific method follow [37]—more than the other forms of Pattern management. This reasoning method is more complex in its structure and can involve analogies, abductive, inductive and deductive arguments. Thus, abduction is the first step in a scientific method. Here, one starts with (why)–question–answer process and tries to establish relevant hypothesis to the issue under inquiry—what actually is going on? [38] Then, by means of deductive inference, conclusions are drawn from the hypothesis—what other things it must obtain if the hypothesis is assumed to be true. Finally, when applicable, inductive hypothesis-testing is performed by seeking experimentally to detect something that has been deduced to obtain from the hypothesis. Hence in TPO or in scientific method, abduction can be characterized as reasoning from surprising ideas and questions to the best explanatory hypothesis. Therefore, abduction can actually be characterized as a weak form of inference, as it starts with clue-like signs, and reaches tentative hypothesis which have to be tested in subsequent inquiry [39,40].

As reasoning in TPO closely resembles the Peirce's scientific method, it should also be noticed here that Karl Popper's (1902–1994) approach of critical rationalism—the principle of theory's falsifiability [41]—is strongly embedded in TPO as well. According to falsifiability, a theory can be considered scientific only if there is an opportunity given for falsifying the theory by a contrary case. Nowadays, the principle of falsifiability is strongly embedded in mainstream scientific method. For instance Roland Omnes [42] defines the falsification or verification as the fourth step in any scientific method. The three first steps in his scientific method are: 1. Empiricism (to see what happens, observing empirical rules), 2. Concept formation (inventing or selecting concepts for representing Reality, principle that organises the facts), and 3. Development (imagining and examining all possible consequences of the principles and linking them together).

Astronomy has already been suggested as a form of TPO. Quite recently [36], the astronomers of Harvard-Smithsonian institute proved the existence of dark matter by locating its “finger print” from a location they called 1E0657-556.

Crime scene investigation (CSI) is another possible example here. Crime scene investigators try to figure out what really took place at the moment of a crime such as murder. At first, CSI tries to collect all valid data possibly related to the issue. They try to identify where the blood marks were found, what kind of splashes or hit angles, finger or foot prints, scratches, marks were found, who has the motive and who has the alibi. The collected information is then embedded into criminal psychological theories [43]. When all this information is put together, there will usually be several alternative scenarios for the crime. The final phases of the investigation process is a puzzle in which pieces of information must be put together in order to favour one conclusion above others by either attempting to falsify alternative explanations for the chain of events or showing the likelihood of the favoured conclusion with a set of more or less disputable assumptions. Furthermore, the favoured conclusion in CSI can be falsified by contrary observations.

Codebreaking can be seen as one form of TPO type of Pattern management. In cryptography, there is usually a mathematical model, a cryptographic key, used when a secret message is hidden into a message.

There are many forms of cryptography and codebreaking in the world. Karl Weick [4] described codebreaker's work in the following way: "The object of a codebreaker is to duplicate the exact pattern of colored pegs inserted into holes that has been created by codemaker but is concealed from the codebreaker by a shield. The codebreaker ventures hypotheses as to what the pattern might be and, on the basis of information supplied by codemaker, refines the hypothesis until the codebreaker hypothesis exactly matches the codemaker's original pattern".

9. Real combining

Real combining (RC) is another form of SER. The main difference between TPO and RC is in reasoning. TPO is based very much on scientific method, abduction and falsifiability (or hypothetic deduction). RC relies mainly on the use of analogies, metaphors and other approaches for finding interconnectedness, similarities and possibilities to combine qualitative data into meta-knowledge, with a common storyline and understanding. Reasoning in analogical thinking goes, for example, from particular to another particular, or from a theory in one field to a theory in another field. Analogy refers to picking or pointing out one similarity between two things that are otherwise different. Metaphor itself is a rhetorical concept, which comprises the subset of analogy, and it is related to comparison between thoughts. In some cases, RC may also resemble inductive reasoning, when the attempt is to find theories which explain various particular things and interrelationships.

The form of reasoning and refining understanding, which I here call Real Combining, is common in narrative and some forms of literature as well as in many academic fields, especially in qualitative research. Here, I provide two different examples of reasoning according to RC. The first one is Amazon.com, which uses automatic RC. When one starts selecting books to a shopping cart in Amazon, the programme starts suggesting new books—even from new themes—which have often been purchased or viewed by other customers who bought the same books one has already selected to his/her shopping cart. Therefore, the software used by Amazon.com makes comparisons and finds relations between various themes automatically to point out some form of meta-knowledge, i.e., subjective meta-information [6].

Another example of RC could be *The Kalevala* (1835) [44], the national epic of Finland. Elias Lönnrot used years of his life walking around Karelia, talking with people and gathering oral stories in his notebooks. In the end, he was able to conclude the common denominators of the stories and give them a literary and smoothly running storyline, creating one of the mightiest epics in the world, which in contrast to many other epics e.g. *The Iliad* and *The Odyssey* by Homer or *The Lord of the Rings* by J.R.R. Tolkien, is more heavily based on the oral tradition of the people than the creative work of the author [27].

10. Existing, changing and invented patterns

Basing on my theoretical work, there are at least three kinds of patterns: existing, changing and emerging. Any of these can be managed with the types of Pattern management we have identified. However, some types of PM are more suitable for managing certain types of patterns than others. When EC is used, the pattern or "truth" is understood as something that is changing and can be reasoned with quantitative approaches. Therefore, EC can be used for locating existing patterns or for reasoning changing patterns, such as how the consumer types drawn from actual shopping change over time.

When the TPO approach is used, there is usually a belief that one "permanent" objective "truth" can be located, or that there is at least one "permanent" "truth" that is objectively less disputable than the others. Therefore, TPO is also suitable for reasoning out existing patterns—something that can be seen as objective or tangible: a finding, a pattern, a path, an object or a phenomenon.

As RC is a more subjective and qualitative form of Pattern management, the patterns drawn according to it may be different or more subjective. Should we call the patterns or the "truth" that is looked for in RC "invented"?

The dots in the pictures of Fig. 2 represent (loose) observations, weak signals³, strong signals, pieces of insight or raw data. If the dots are very close to one another, they are believed to have some common denominators. If they are separated, they are believed to have less in common. In EC, the method of the management of observations into patterns is mostly quantitative. In TPO, the observations are used either for falsifying alternative explanations or showing the likelihood of the favoured conclusion by giving a set of more or less disputable assumptions. In RC, the method for drawing patterns from observations is mostly qualitative and structural. The observations are used as building blocks in order to obtain a common storyline or understanding of the issue.

11. Sense making of emerging patterns

In addition to the existing and changing patterns, there remains one more form of patterns: the patterns which are potentially emerging. The processes of managing emerging patterns takes us close to the fields and concepts of anticipation, pro-activity, prospective thinking, appropriation, foresight and futures research. However, it has been difficult to find any formalised descriptions or methods for such management of emerging patterns from these fields. I have not found descriptions of such an

³ The concept of weak signals refers to observations of the surrounding world which someone has subjectively reasoned to have some special foresight value. In this paper the concept is understood in a broader view. Weak signals can include any qualitative and somehow surprising observation of the world which helps us to manage the patterns of chance. The weak signals can be attached to existing or emerging patterns or it can be used to invent a certain pattern. They can sometimes be used for reasoning potentially emerging patterns as well. However, it should be noticed that the value of one single signal should not be overemphasized in foresighting. The reasoning of emergence of a certain pattern requires clustering of many different types of patterns.

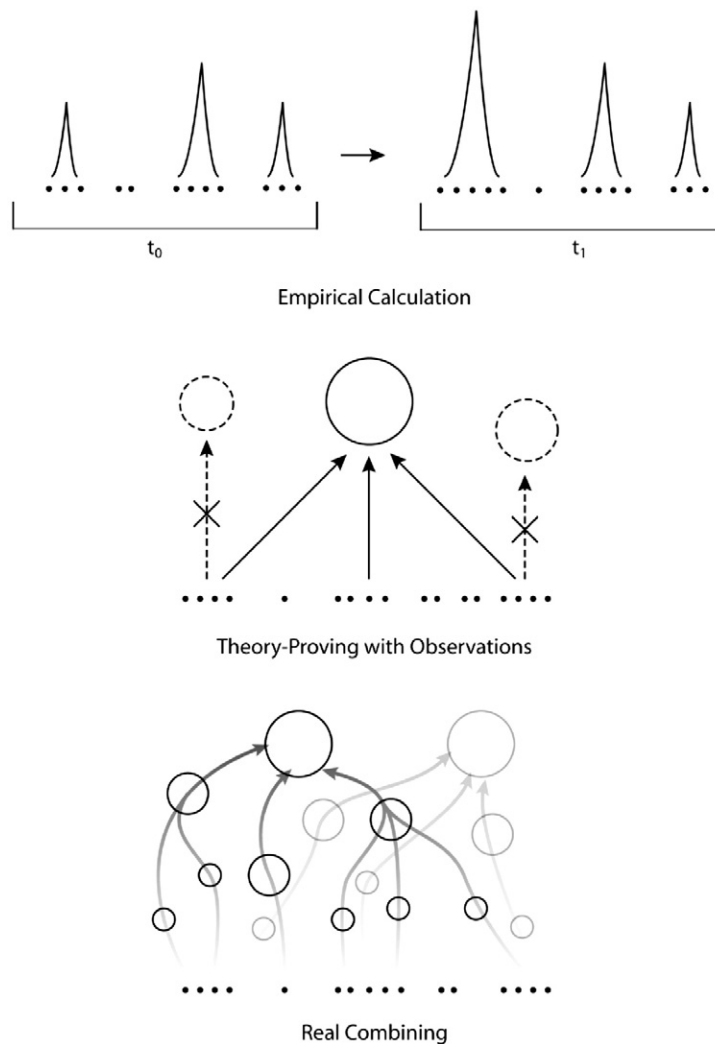


Fig. 2. Three general types of reasoning in pattern management.

approach from the fields in the most well-known or recent sources, such as [45–49]. Usually, the need for the process seems to be understood, but the methods of management are lacking, or they do not fit such a process [50–52].

Emerging pattern here refers to something that is only a potential seed of transformation at the moment, but which is shown to have good opportunities to start growing in the future. A simple physical example of an emerging “object type of pattern” could be an embryo, which is, according to all valid and accessible knowledge, believed to have a good chance of growing into adulthood. An example of an emerging “phenomenon type of pattern” could be virtual consuming. It is a minor field of consuming at the moment, but it is possible to locate many reasons, driving forces and supporting factors why it is conceivable that it will expand and partly change the world of consuming in the future. Time and place dependence is weakening in e.g. consuming, work and communication; the role of expertise has been growing in society; the youth’s values are already different from those of the elders; the continuing development of ICT; software and games seem to be becoming more realistic and interesting. This approach resembles both RC and TPO.

12. Making sense of emerging patterns

In Fig. 3, the process of managing an emerging “phenomenon type of patterns” is shown from another point view. Here, the PM process starts with EC both in Time 0 and in Time 1, and is continued with the sense making process, which may here resemble RC more than TPO. In the figure, the located patterns are not the same in t_0 and in t_1 . Some of the patterns are weakened and some are strengthened, something has emerged and something declined. When there is finally more understanding of changes in patterns in time, plus more understanding of the drivers of change, there is a fruitful stage for Sense-making emerging “phenomenon type of patterns”. It may, therefore, be possible to locate something which is unformulated or weak at the moment but which nevertheless has very strong support, demand or capacity to be developed.

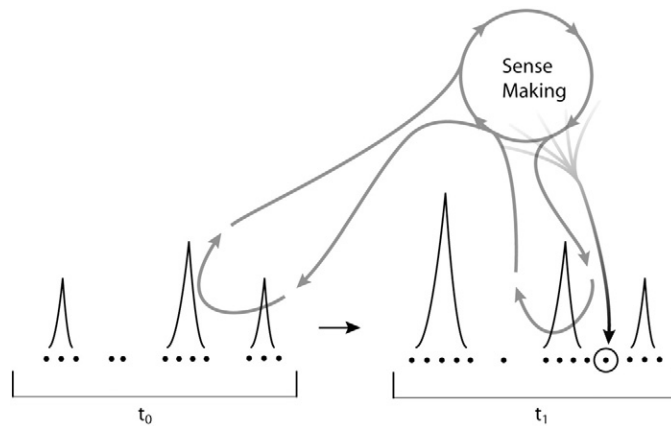


Fig. 3. Managing an emerging pattern.

The best examples of approaches and methods for managing emerging patterns I have found from the fields of Risk Assessment and Horizon Scanning, fashion and consumer behaviour intelligence, and from technological forecasting? From the domain of Futures research and foresight, the best example of such work comes from John Naisbitt's megatrend management [53–56]. However, it should be noticed that the methodology of Naisbitt has been strongly criticized, as well [57,58].

Naisbitt has a company, which goes through and analyses broad selections of world newspapers. The aim in his process has been to find knowledge, which tells us about the rising peaks behind raw data. Naisbitt and his colleagues set these peaks into a framework of platforms that claim to provide the knowledge of megatrends or other great changes [27]. Within his approach, changes are constructed from the bottom up, from the grass root level, by clustering—like in a puzzle. A new phenomenon or idea that does not manage to gain support in the ongoing development process dies away—just like useless pieces are not put into a puzzle. Missing pieces are however looked after very hard.

Another example of PM of emerging patterns is found from trend analyses made in fashion houses or clothing industry in general. Here, we can utilize Naomi Klein's [59] description of the work of trend analysts or cool hunters in fashion houses like Nike and Tommy Hilfiger. According to Klein, such fashion houses have hired signals' detectors who observe and interview especially young avantgardist individuals from marginal groups. They also observe music videos of MTV, hip hop magazines such as Vibe. By young avantgardist individuals from marginal groups Klein refers for instance to big cities' black ghettos' poor young men, strong figures, who hang around basketball courts. They are influencing opinion shapers in their communities. When these people start representing something, using certain colours, styles, patterns, shapes, designs in their community first, their style is believed to be gradually adopted by the entire community, as people are group animals. Later on, the fashion of the ghetto will have an effect on the fashion of the whole country and even international clothing markets [17]. What is fashionable among avantgardist groups in the spring might be fashion on the national or international level in the following fall. This synthesizing rational and inductive process made by the trend detectors, of course, requires very diverse observation work. The company could not trust observation just one 'ghetto' or one observing method [59]. There has to be lots of information collected from different sources, which needs to be embedded in the available theories of fashion and group behaviour.

Such trend detectors are used not only within the fashion business: Nokia [60] uses anthropologists for observing people and their lifestyles in e.g. parks, streets and shopping malls. The observers are supposed to identify early information about psychological changes in human behaviour, individual value systems, key drivers of customers (what excites and motivates people and what are the ways people want to communicate and establish groups?). By synthesizing this information at an early enough stage, there is a better chance for a mobile phone company to be prepared for emerging or immerging (declining) consumer needs [60].

Many intelligence agencies, such as the Pentagon and especially the Central Intelligence Agency [61] have developed sophisticated systems for data gathering, analyzing and outlining the risks. There, all the forms of patterns (existing, reasoned and emerging) which seem to be used simultaneously, alongside with all the forms of PM's reasoning (EC, TPO and RC). To give one example of these approaches, the CIA tries to identify possible central nodes or figures in terrorist networks by searching subjects of sent e-mails or Internet downloads and connecting this information to certain people. It also uses anthropologists for observing and interviewing local people in possible crisis areas, such as Iran [1]. The stories that people tell there are especially important in the approach. In this way, the local silent knowledge (weak signals and emerging issues) at the grass root level is gathered in order to understand the early changes in public opinion. Certain paths in common storylines is believed to tell about a certain rising phenomenon in the social context [62].

The CIA observes global statistics as well. It has a special interest, for instance, in the demand and supply chains of certain chemicals or equipment which can be considered necessary for preparing terrorist action. It has been said that, within this kind of statistical and multi-source information collection and synthesizing, the CIA has been able to expose a large-scale cocaine poisoning process which took place in Columbia. The poisoned cocaine was meant to be shipped to the North American markets. The work of the CIA could be given here as an example of multi-approach process, where all the Pattern management's forms of reasoning have been used simultaneously in order to ensure the reliability of the findings.

13. Conclusion

Reasoning is a mental process, which informs our imagination, perceptions, thoughts and feelings, and links our everyday experience with universal meanings. Thus, reasoning is a vital part of the process of sense-making, understanding and internalizing. In philosophy, there are many structured forms of reasoning under its main forms: inductive, deductive and abductive reasoning. In addition, there can be found some special approaches of reasoning such as analogies and its prominent everyday forms like case-based reasoning.

In this article, I have discussed and merged some theoretical forms of reasoning in philosophy with the findings of reasoning in some real life cases as well as with some practical methods or common sense approaches. In the process, some methods and approaches have appeared to have more common denominators with some forms of theoretical reasoning than with some others. An especially meaningful finding has been the deviation of the “aims or objects” in different approaches and processes. What kind is the “truth” or the form of the pattern that is looked for with reasoning?

Successful involvement in the present networked world, which is more hectic, interconnected, co-evolutive, unstable and full of loose and rapidly changing information, is difficult. It is especially difficult if we want to predict anything or if we are strategic actors or we want to manage an organisation proactively in this complex, evolving, rugged-landscape system. Strategic intelligence, and especially its most structured but open form, Pattern management, is a multi-approach attempt to answer or help to answer this challenge.

14. Discussion

This paper has discussed the reasons behind our experience of complexity, rapid change and information overflow in the contemporary world. I have presented the general categories of how people reason certain issues, and once they reason, what types of methods they have, and what types of answers they are looking for. Basing on the arguments, I want to state of few managerial implications.

If the strategic intelligence process of an organisation aims to help to draw a holistic view of a complex phenomenon, or if the process attempts to establish an efficient strategy to influence such issues, the organisation should not rely on a single strategy or single method. Instead, it should aim to use a many-sided approach, which embeds different strategies and methods for different sides of the issue. The issue should be understood as something that is constantly evolving, “living”, renewing itself, and that is constantly re-negotiated in a communication process. Thus, the use of linearity should be limited. Pattern management is a good way to reason certain types of patterns, but the types of patterns or “truths” that are looked for should be distinguished first. Once the objective is clarified, the right kind of management process can be selected. However, despite the fact that PM can help to get tangible insight of complex phenomena, it should be noticed that dynamically complex processes sometimes undergo fully random and chaotic periods, whose outcomes cannot be predicted in any way. Yet, stable stages can be anticipated and sometimes even predicted, and this is good news for strategic intelligence.

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