A Multidisciplinary Essay on Educational Leadership

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3 December 2014

Prologue

A combination of three matters led to this essay. First, I attended the Educational Leadership Interest Group at Aalto University. Secondly, I had a kind of need to gather credits related to my position as a university teacher at Aalto. Thirdly, I have read numerous non-fiction books covering a wide area of topics from psychology and sociology to economics and general system theory.[1]

My reading habit has been to make some notes and markings in the books[2]. So, I checked my earlier markings to find something related to the topic of educational leadership. When I found something interesting, I copied about five rows of text. I repeated this process for almost all of the books.[3] Note that picking ideas, though simple in principle, is quite "ego depleting" – it is hard to scan more than 20 books from different authors in a row without losing the ability to find or think anything.

As a result I collected 12 pages of brief citations from 77 books (see Annex A). Of course, the books have had some general effect on my thinking, and thus on the following text. In this essay, however, I tried primarily utilize the selected citations. Based on this tactic, I continued my effort by going through the citations and identified recurrent themes. Finally, I wrote something about each of the main themes.

Introduction

What patterns did I identify—or should I say created—based on the collection of short citations? On the highest level, the citations can be roughly classified on the following two dimensions:

1. Mind vs. systems
2. Theories vs. real examples

[1] My current "library" of books that I have read in full consists of 118 books. I have spent about 2000 hours for reading them during the last 7 years. Although a lot of reading, still it means less than one hour per day.
[2] Books are my own, most of them bought from Amazon.
[3] That part of the task took circa 10 hours.

The functioning of brain is one of the most rapidly developing fields of science partly because of the fast development of the brain scanning devices. There are plentiful of interesting findings that illuminate the basis of complex and often seemingly inconsistent behavior of human beings. The scientific studies of the complex systems started after the Second World War[4] covering areas from biological, social, and technical systems to the mind and brain.[5]

The citations I have selected for this essay can be grouped into two categories: abstract ideas that try to convey some general "law" and more practical ideas that (hopefully) are applicable to the real challenges we encounter during everyday life. Figure 1 shows the main themes selected for this essay.

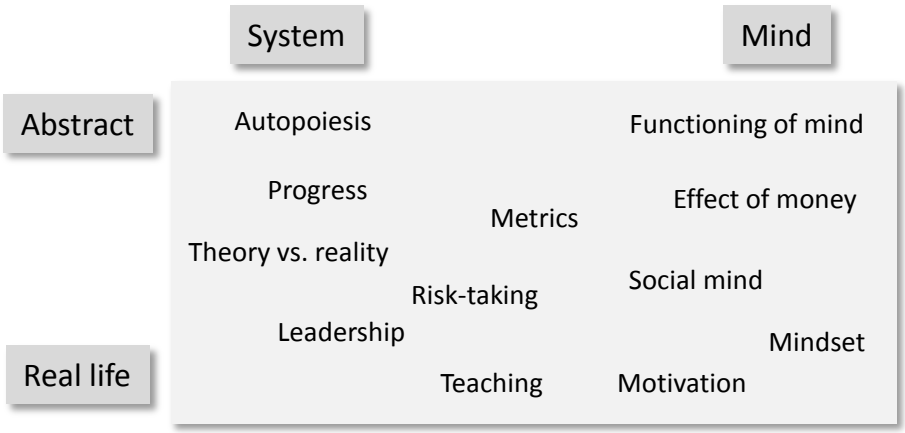

Figure 1. The themes of this essay on a two-dimensional space.

Most of our thinking is necessarily abstract. We think by using abstract concepts in order to enable the handling of the enormous complexity of reality as illustrated in Figure 2.

The mind of the person in the middle (*ego* marked by X) tries to understand the intentions and behavior of the closest persons; that is, to read the mind of the persons marked by ○. Then there are other people a little bit farther away that might become important for the ego (marked by red and blue ellipses). The ego should, at least, assess whether any of those persons causes a risk for him. Thus, he must be aware of the gender, age, and size of the person. Then there are groups of people illustrated by small clouds that may form a kind of audience for ego's actions. Finally, there are abstract structures that form the environment for the messy happening.

We may use the same metaphor in the context of academic education. Yet, I am not stating that university is as chaotic as the happenings in the picture, but surely it is complicated and social by nature. There are rules in the game but also a lot of freedom, there are different audiences, there are some rigid structures, and perhaps there is also a risk that an authority will intervene the game (and because of that there are possible exits thought by the ego in advance).

[4] An interesting historical account on the early years of cybernetics as it the field was earlier called can be found in Pickering (2010b).

[5] I do not discuss about the relationships between brain, mind and self, although it would be really interesting and even relevant topic with variable opinions, see e.g., Metzinger (2009) and Swinburne (2013).

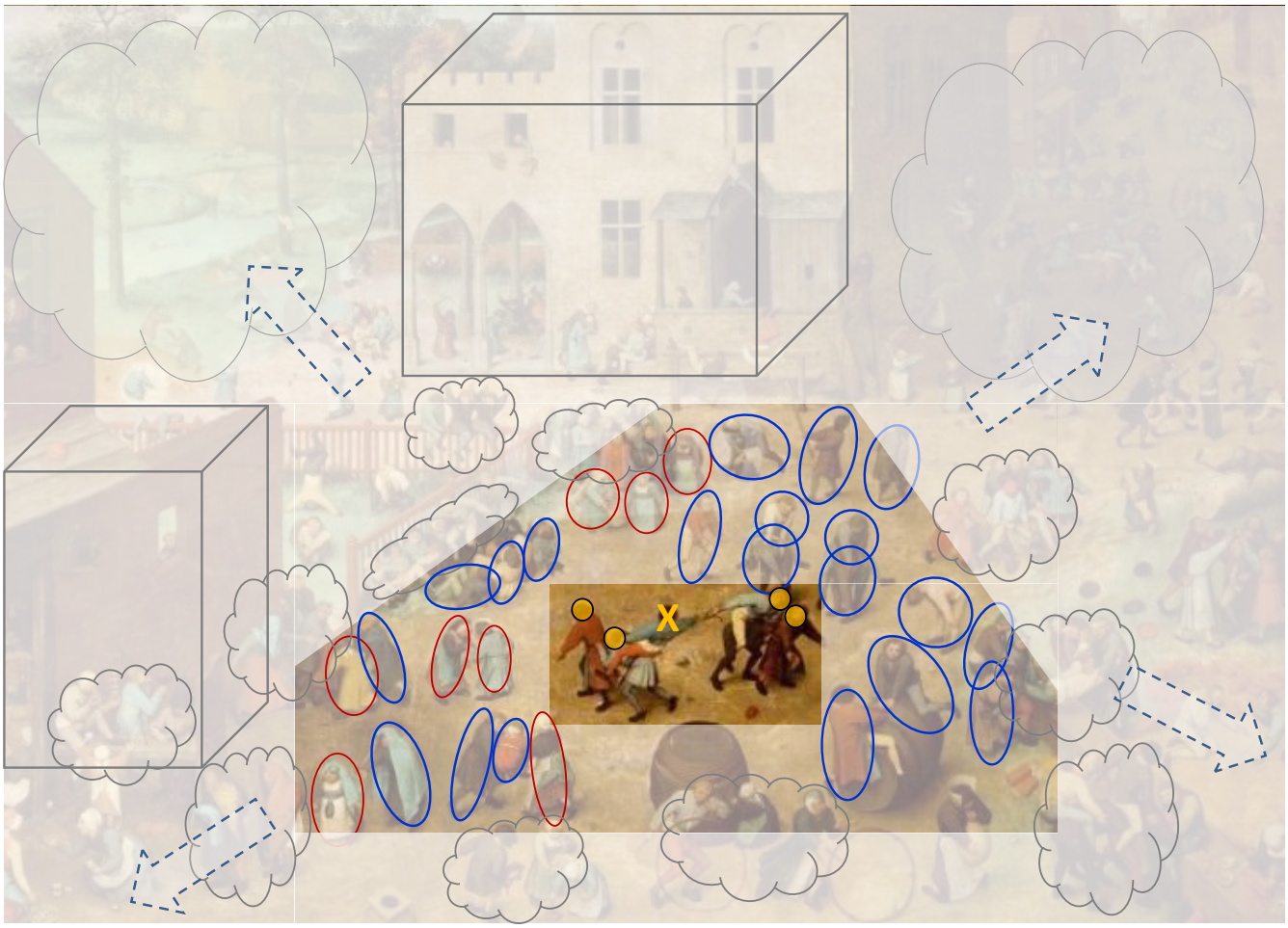

Figure 2. An illustration of different levels of abstraction (Brueghel, el viejo. Juegos de niños. 1560).

The main issues to be stressed here are, first, the need for using abstractions and, secondly, the need for reading the mind of others.

Themes

Next I will try to approach the education leadership issue based on the concepts in Figure 1 and on the simple idea presented in Figure 2.

Autopoiesis

Let us start with the most abstract and bizarre term in this essay: *autopoiesis*. Every social system has a tendency to develop mechanisms to stabilize the system and maintain its continuity. This kind of

process can be called *homeostasis* (seeking equilibrium) or *autopoiesis* (seeking continuity).[6] I have defined autopoiesis as a process whereby a system, organization, or organism produces and replaces its own components and distinguishes itself from its environment. I use autopoiesis here as a placeholder to imply all the vague and complex processes that strengthens a social system and lengthens its lifespan but that do not directly serve the declared purpose of the system (e.g., education in the context of this essay).

Educational leaders form a social system if they, first of all, believe that they form a coherent group. The leaders likely have shared interests, objectives and career prospects. In addition, they have a similar understanding about their environment consisting of other social systems (e.g., government bodies, business players, students, etc.). As a social system they communicate with each other regularly.[7]

As a result, a social system often persists even after the factual reason for its existence has disappeared. It is important to notice that this autopoietic phenomenon does not usually arise from any conscious thinking or planning; it may occur without anyone understanding what is happening. Yet, sometimes autopoietic processes are fully intentional and carefully designed and implemented (political parties are an evident example).

Changing a person or two does not usually affect the nature of the social processes at all; only the pressure from the environment of the system can force a radical change or termination of the social system. However, sometimes a key person may postpone a necessary change. Thus, to quote Max Planck:

> *science advances one funeral at a time*.[8]

This might, indeed, be sometimes true. Similarly, someone may argue that *capitalism advances one bankrupt at a time*. Maybe you can propose a similar maxim for education:

> *education advances one _____ at a time.*

This abstract concept of autopoiesis may be useful for some of you and annoying for others. In any case, you may feel that in some other social systems can occur something that can be fittingly called autopoiesis. You may also feel that nothing like autopoiesis happens in your own circles, because you do what serves the real purpose of your group or organization (we return to this topic later in this essay). To summarize:

> *A social system must demonstrate progress for its environment in order to justify its existence, or even better, growth.*

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[6] Autopoiesis was proposed by Maturana and Varela (1987) in the context of biology and later applied by Niklas Luhmann (1995) to social systems. The original book in German "Soziale Systeme: Grundriß einer allgemeinen Theorie" was published in 1984.

[7] If we believe Niklas Luhmann, social system consists of communication, not of people. I need to admit, this is quite a bold claim. It took for me a couple of books to adopt Luhmann's idea. But now I indeed often observe social systems through this and some other ideas proposed by Niklas Luhmann.

[8] Now if we trust on the communication hypothesis, in those scientific systems one person must have been a hub through which all essential communication has flown.

Progress

Motivated leaders want to enable progress in the systems they are leading. Let us first consider progress in the field of science. Why did science start to develop in Europe instead of China in 16th- and 17th-century? In many fields, China was hundreds of years ahead of Europe.[9]

One conjecture is that a key ingredient was Latin as the language of science. In Europe, there were numerous states or otherwise independent regions ruled by kings, tsars, popes, etc. Ordinary people were mostly illiterate and they did not understand Latin. This situation made it possible for a social system of "science" to emerge. Those people that had both mental and economic resources to practice science could quite freely to move from place to place. This social system of science did not directly threaten the stability of society because the great majority of inhabitants could not care less about anything scientists achieved and discussed in their own circles. Then if a (religious or secular) ruler began to limit the freedom of scientists on his territory, the scientists had usually the possibility to move on to another friendlier environment. The active interaction between scientists guaranteed that even if a scientist could not leave a hostile place, the obtained knowledge was preserved within the social system and could be used as a basis for further studies and development. As a summary it seems that:

> *The progress of science requires a sufficiently large, stable and autonomous social system with a shared idea of progress.*[10]

Active science is necessary for high-quality academic education, and vice versa. Science seems to make progress. Does this mean that education is, in general, a progressive activity? The content of education follows the progress of science and technology in a way that gives an image of progress.

What does it mean to claim that *education* makes progress? We may also ask the same question about *an education system,* such as a school. Let us define three possible criteria for the progress of education or of an educational system:

1. The organization and structures of the system have been improved.
2. Pre-defined objectives of the system are fulfilled better than earlier.
3. The opinions of different stakeholders (students, teachers, leaders, politicians, etc.) have become more positive.

It would be useful for you to consider which one of these you think is the most feasible criterion for progress in the case of educational leadership.

I would claim that that a system has made progress only if

[9] Note that Asian Universities will be surely become very competitive in future, and thus pose also a threat for western universities.

[10] Remember also that because social system consists of communication, communication continues even when all people are changed gradually. Thus the idea of progress likely appeared gradually in the communication actions within the emerging social system that did not have at the beginning any own ideas or concepts; societies were religious with typically the idea of regression rather than progression. Real progress is always dangerous to the rulers, which means that autopoietic processes are almost always conservative. Maybe, the geo-political environment created room for intellectual competition in which the winner was defined by "peers" instead of the ruler.

1) the most important outcomes of the system are better in an observable way *and*

2) there is a justified explanation why the results are better *and*

3) the explanation indicates that the positive changes are permanent (not random).

This issue of progress is acute in the case of bonus systems. A social system has a tendency to reward the members of the system based on their role in improving the outcome of the system. The first item is quite straightforward (unless someone tries to really understand what better means). The second item is often solved by simply assuming that the characteristics and hard work of the members is a valid explanation for any improvement. The third item is typically omitted, because there is no motivation within the social system to discuss about the possible randomness when things are going smoothly. When things are going less smoothly, the practical solution is to invent another reason for bonuses.[11]

However, now we are going perhaps too far to the direction general problems in modern society. Let's turn back to educational issues.[12] How can we improve the educational system in a way that fully utilizes the deepening understanding how our minds work? That leads to a fundamental question: What is the fundamental objective of educational systems? Or the question of metrics.

Metrics

Metric is, in a way, a very abstract concept. Still it may have momentous cumulative effects both in social systems and in everyday life. I have defined metric as a standard of measurement by which the most essential result of an action can be assessed.[13] Now I would give maybe somewhat broader definition: instead of "result of an action" I would say "outcome of an action or a system."

For an engineer, better often means higher performance measured, e.g., in throughput, whereas for an economist better means more profitable measured, for instance, in ROI (Return on Investment). As these examples hint, each social system typically has a dominant metric that is used to assess which actions are preferable (from the viewpoint of their specific social system). We may also think in a way that the metric together with special concepts and language form an essential part of the autopoiesis of the social system. If economists master the area of economic decisions, it is very difficult to get rid of them even when their track record is very poor. A couple of persons, or economists, can be easily changed without any noticeable change in the social system. The same is true with the upper management, army, and politics. Unless the metric is changed communication continues unchanged and autopoiesis is assured.[14]

What is the main point if this discussion from an educational viewpoint? Even though a university may use the production of scientific information as a common metric, it is primarily a collection of

[11] This is not a caricature but a realistic description of many bonus systems; see examples in Sandel (2012), Stiglitz (2012), and Taleb (2010).

[12] Still, modern academic educational systems seem to have the same problems as any other sector.

[13] This and many other definitions can be found in the Glossary and Index section of Kilkki (2012) available at kilkki.net/book.

[14] Note that Luhmann uses an even more concise concept: binary code (which should not be confused with the binary code used in the area of ICT). The most famous example of binary code is legal/illegal used in the legal system. In the case of business binary code could be profitable/unprofitable.

smaller social systems with possibly different metrics.[15] The more advanced an organization is, the more specialized parts it has. Each specialized system develops its own metric which results in problems at the boundaries between the social systems. The impact of the common metric starts to diminish while the autopoietic processes in specialized systems start to strengthen. The overall behavior of the system, e.g., a university, becomes more chaotic and more difficult to control.[16]

The limitations in the communication capability between separate social systems lead to a need of developing "objective", simple measures, like citation index, the number of students obtaining 55 credits per year, and many fiscal numbers. The tendency towards decreasing regulability might be intensified by the use of these measures that, paradoxically, were introduced to improve the regulation of the system. In addition, "objective" measures are often in conflict with the real metric used inside a social system. The consequences of these conflicts are unpredictable.

As will be discussed later in this essay, thinking money promotes selfishness. Thus, it seems reasonable to assume that thinking any objective measure as the primary goal of what someone is doing, promotes selfishness—is that really desired? Finally, we can measure and observe only what is happening now or in the past; we cannot measure anything in future. Of course, we can measure expectations about future development, but even then we are measuring *current* expectations. Thus, objective measures tend to direct our attention backwards.

All kinds of problems may appear with metrics. Yet, it is extremely important to keep in mind what we really want to achieve. Maybe we are here in order to be part of something that is important for us.[17] But what *is* important in our mind?

Functioning of mind

There are some excellent books about the functional principles of mind. In a way, the recent findings are understandable, but at the same time they often are stunning. Here I have picked five themes: modularity of mind, role of consciousness, narration machine, willpower, and our tendency to mix true and pleasant.

Modularity seems to be the key to understanding how our mind functions. There can be really amazing effects, if a certain small area in brain is either damaged or stimulated.[18] Now we easily think that there is a hierarchy in the modules of mind: the conscious ego is the leader and unconscious modules are subordinates. After reading over twenty books touching this issue, I am convinced that this is a highly erroneous picture.[19] Instead, automatic, subconscious processes or modules take care of a great majority of our actions when we believe that we are doing conscious decisions.

What is, then, the purpose of the *conscious module of mind*? According to Kurzban (2012) the main task of consciousness is to act as a press secretary that communicates with other minds. It is advantageous for the conscious mind to maintain an overly positive image of the self, particularly in all

[15] Note that a person typically belongs to several social systems at the same time.
[16] See citation from von Bertalanffy in Annex A, progress.
[17] See citation from Kaptelinin in Annex A, social mind.
[18] See citation from Sacks in Annex A, functioning of mind.
[19] As to the subject of modularity and the role of conscious mind I would recommend Kahneman (2011), Kurzban (2012) and Gazzaniga (2012).

socially important matters. We (read: our conscious minds) honestly believe the picture constructed by various subconscious modules. The whole mind does not, however, share the same image: different modules can have conflicting "pictures" about the state of affairs. Different modules will be activated depending on the context, leading to seemingly inconsistent behaviors.

One of the modules is the *narrator machine*. Whatsoever you are doing, a certain part of brain forms automatically a story that explains your behavior—and you believe that story even when the brain needs to fabricate some facts. Even if your press secretary does not necessarily like this idea of fabricated stories, it might be helpful for you to be aware of the fragility of your own stories. This also makes it more understandable that others seem to believe their implausible stories.[20]

Another phenomenon, relevant also for teaching and learning, is that there seems to be a general stock for *willpower*. Anything you do consciously consumes that very scarce resource, for instance, keeping in mind an eight-digit number (instead of a three-digit number) consumes your willpower in way that has observable effects on your behavior. Willpower can be trained, as any ability, but even more important is to make wise decisions when and for what purposes you consume your limited supply of willpower.[21]

Finally some words about *truth*. Because of the structure of our brain, it is hard for us to distinguish pleasant from true. Both assessments use the same subconscious module before reaching the conscious module. Thus thinking something that is unpleasant for you (based on an automatic assessment in one of your subconscious modules) but that you (according to another module in your mind) know is true, is a tricky experience. Your narration machine likely prefers pleasant falsehood to unpleasant truth. Some people seem to believe that they always are right; maybe because their mind is totally unable to distinguish truth from pleasant. Besides, since truth lies in the realm of abstractions while pleasantness is a part of the reality we experience, pleasantness tends to have a stronger influence on our mind and thinking than truth.

Theory vs. reality

There are two distinct purposes of abstract models. First, an abstract model can be used by an authority to control a complex system and, secondly, an abstract model can be used by an individual to understand a system when making personal decisions during everyday life.

No citizen wants to *be* a number in statistics. This is one of the reasons why populist parties become popular, particularly in those countries in which government tries to govern in a rational way (using abstract models) instead of using good stories and emotional messages. Similarly, no employee wants to be a small part of an abstract process. Still, processes shall be defined because otherwise it is impossible for a person understand what is happening in a large organization.

If we rely on Robin Dunbar[22], the maximum size of a social system without any hierarchy or division is about 150 members. However, my assumption is that a social system with 50 members might be comprehensible without much excessive abstractions, in a way that each member can be dealt with as an individual person. In a modern organization, above a limit people start to represent

[20] See Ariely (2012).
[21] More about this crucial topic can be found in Baumeister and Tierney (2011).
[22] See Wikipedia article *Dunbar's number* at http://en.wikipedia.org/wiki/Dunbar%27s_number

abstract functions, roles or processes for others (except for the closest colleagues). This kind of development is almost inevitable. The consequences of the disconnection between models and what is really happening are sometimes funny[23], but often annoying and demotivating.

There is a similar challenge in teaching. Abstract frameworks, models and concepts are necessary but real applications happen in everyday situations. In practice, we need a method that links abstract and real together. Here is my APAS-method to achieve that goal:

- **A**bstract: Think of an abstract model about something, e.g., process, architecture, or metrics. Present it in as formal way as possible.
- **P**articular: Consider the abstract model from the perspective of *an* individual in an everyday situation (in the spirit of Figure 2). Think of the needs, intentions, emotional reactions and likely behaviour of the individual.
- **A**ctive: Do something as concrete as possible, preferably physical, that is related to the issue. In example, if the abstract process requires arranging meetings, choose a time and place within a typical distance for the likely participants, walk there and try to imagine what a typical participant really thinks. If you do not have time for that kind of exercise, think again.
- **S**ocial: Interact with another person. For instance, take two roles: one for abstract and another one for reality and then improvise an argumentation between the roles. If that is not possible, try to simulate a similar situation in your mind. What is especially important is to understand different motives and intentions and to create some emotions.

Let's take an example where the gain to be obtained on the "abstract" level is hardly worth of the pain on the "reality" level: Daylight saving time. It might, indeed, be true that in a country, say France, it is possible to save energy worth of 200 million euros per year[24]. The persons proposing this most likely are honestly proud of this saving and may believe that they deserve a reward due to big savings. They think merely on the abstract level of economics. Unfortunately, they obviously have not thought the consequences on the level individuals living their everyday lives. If the average saving is only 5 euros per person, all the trouble caused by adjusting clocks certainly is much larger than the economic gain can ever be.[25] Absurd.

Please, feel free to apply the APAS-method to an abstract process in the context of educational leadership, at your own risk.[26]

Risk-taking

Risk-taking or the lack of it is an issue that I consider very important. However, I am not sure whether I can provide any original insight.

[23] See citation from Beer in Annex A, theory vs. reality.
[24] Even the savings is very debatable issue.
[25] These include poorer sleep that may cause traffic accidents and heart attacks.
[26] The APAS-method has not been ever tested, even less verified scientifically.

One of the fundamental problems of Finnish society seems to be that we are not able to create enough new business with considerable size. There are entrepreneurs and good starts, but not many examples in which significant new business is sought by taking real risks. Is there something in our academic education that suppresses risk-taking?

I belong to a generation of students that mainly aimed at careers in large, established organizations (of course, there were exceptions). I do not remember anything from my studies 35 years ago that had clearly promoted risk-taking. Somehow it even seems that both some earlier generations and the most recent generation are more prone to take risks—but that is just my feeling without any supporting data. I just argue that

> *We need a large number of trials and perseverance to build something really new. With this kind of mindset, failures are inevitable but failures also provide opportunities for learning something valuable.*

Whether this mindset leads to any financial success is another story.

Effect of money

So far we have addressed relatively abstract issues and abstract concepts. Now let us approach reality as a place where we are living in. In the real world, money is both abstract and real and its effects are deep.

Some people, particularly in countries like United Kingdom and United States, see the effects of money in an extremely positive light. For them everything can and should be measured in money so that free markets will decide the correct price. However, this is not the right place to discuss about this aspect of money.[27] For the topic of this essay, some behavioral issues are more important.

It is amazing how much pure thinking of money affects us. There are multitudinous studies that show the effect of money on the observable behavior, for instance:

> "In fact, after thinking about money these participants were less willing to help an experimenter enter data, less likely to assist another participant who seemed confused, and less likely to help "a stranger" (an experimenter in disguise) who "accidentally" spilled a box of pencils". (Ariely, 2008)

> The Chicago economist Richard Thaler reports that while 82 percent of respondents in the general population believed it was unfair to increase the price of snow shovels after a storm, among his MBA students, only 24 percent held that view. (Stiglitz, 2012)

Maybe someone thinks that these examples (and others in Annex A) just demonstrate that every intelligent people shall perceive world as a market or as a game in which there always are winners and losers. If those that primarily think money behave more rationally and rational behavior means that you will more likely be winner, it is better think money instead of other people—otherwise you will become a loser.

[27] For those that are interested in this subject, I recommend Piketty (2014) and Stiglitz (2012).

But the previous sentence was dangerous. We tend to automatically agree with the message we hear or read. Agreeing is an effortless mental operation while disagreeing is an effortful one.[28] What I want to truly stress is that we are so deeply social animals that considering others primarily as potential sources of income may destroy your life (regardless of the money you are able to accumulate).

There must be an innate module in human mind that is now used for monetary decisions, but that has been used for some other purpose before the rise of modern market society.[29] Obviously, there is a long tradition of trading all kinds of artefacts with strangers. If I have learned anything from simple game-theoretical models it is the difference between one-shot and repeated games.[30] In one-shot game (where the likelihood of having a similar game in future with the same opposite player is small) the optimal behavior, indeed, is rational, selfish and cautious (exactly as in the Ariely excerpt above). In repeated games the optimal behavior is totally different: pursue always cooperation, but still reciprocate bad behavior.[31]

Thus money seems to automatically trigger the trading-with-stranger -module in our mind, independent of whom we are interacting with. All the properties of the module come together. The repeated use of the module lowers the threshold of using it even in cases where it is not the best module to handle the situation. All of this happens automatically.

I hope that we could cultivate our social mind module instead of the trading-with-stranger-module in most everyday situations. Of course, there are a lot of examples in which trading-with-stranger is exactly the correct module to be activated, e.g., when someone is reading spam e-mails or listening at a car dealer. As for education, I would state that:

> *Business issues shall be taught also for engineering students, for sure, but it might be useful for the students (as for anyone else) to be aware of the automatic and somewhat annoying effects of thinking money too much.*

Social mind

Now you have, perhaps, spent half an hour for reading this bizarre essay. Whether or not you have enjoyed, you have likely wondered what my real intention has been. In a way, I have tried to be proactively interactive by explaining those issues that I assume would be difficult to comprehend. Still, the basic problem of any written material is unidirectionality: the author is writing and the reader is reading.

The real strength of human mind, however, lies in our capability to interpret the behavior and intention of another people, much more than in reading some abstract sentences.[32] Actually, the default module in our mind is reserved for social cognition. If you are not doing anything special even

[28] This claim is based on serious research, although I cannot just now give any reference. Keep this in mind when lecturing—and also when reading!
[29] This is just my speculation without any scientific justification.
[30] See for instance Axelrod (2006) and Bowles (2009).
[31] See the citation from Axelrod in Annex A, social mind.
[32] As to this topic I would recommend Aronson (2003) and Liebermann (2013).

for such a short period as five seconds, your brain activates the social cognition module. According to Lieberman (2013, p. 22):

> In essence*, our brains are built to practice thinking about the social world and our place in it*.

This fact must the taken properly into account also in teaching. Social aspects are always present also during teaching event;[33] the social module is working almost all the time except when the student systematically concentrates on something else, for instance, for understanding a mathematical formula or for making difficult calculations. But when the concentration weakens, the social module is immediately activated.

The optimal approach is not to suppress the social module, but to utilize it. To some extent, that is done almost always. Even in physics, we seem to think through language that is more suitable for describing interactions between people than between cold artifacts: an atom gives energy to another one or a packet is rejected by a network node. Words *give* and *reject* automatically creates certain feelings, which makes the ensuing thinking more influential and less boring. At the same time, those feelings may have undesirable effects: the idea of a rejected packet may create sympathy and desire to help the packet. While a system designer should (most of the time) ignore those feelings, they might still be useful for learning purposes.

The social mind can be utilized for learning and teaching purposes at least in the following ways:

1. Present even abstract concepts and models by means of social language (but be aware of the risks as well).
2. Think complex systems through the intentions and goals of the system designer instead of the given structures or processes.[34] That is, use social encoding for learning.[35]
3. Discuss with others about abstract topics because discussion automatically activates the social mind.
4. Prepare for teaching others about a new topic for you. It activates the social mind and improves what you will remember about the topic later on.
5. Play a game that somehow illustrates the key aspects of a complex system, preferably against other people.

If you, as a teacher, do not activate a student's social mind in a controlled way, the social mind will anyway become active and starts to pursue its own goals. In addition, I guess, those goals of the social mind are contagious. It requires a considerable amount of willpower to give up the interesting interaction with the social module of other students, and to return to the abstract teaching.

As to educational leadership, proper use of social mind is absolutely imperative.

[33] See also the citation from Barash in Annex A, social mind.
[34] In the area of networking, Day (2007) is the best example of this approach.
[35] See Lieberman (2013, p. 284).

Leadership

As leadership is not my special area, I have two options: I can try to convince you by citing credible references, or I can speculate freely based on whatsoever insight I happen have in my mind.

Let's start with the speculation. Almost every new expert recruited to an organization tries to convince others in the social system of his or her professional skills and performance (and perhaps, of his of her loyalty to the social system). This seems a reasonable assumption both from the viewpoint of social mind and from the viewpoint of autopoiesis as a crucial element of social system. In this respect, a person that has been recruited outside of the organization might be more inclined to demonstrate his or her special expertise (manager, IT support, etc.) than a person already working in the organization in another position. Expertise can either be primarily abstract (processes, architectures, outsourcing, etc.) or particularized (ICT or other technical experts). I would conjecture that recruitments from outside tend to polarize the nature of a social system either to the direction of communicating with abstract concepts and models, or to the direction of very specialized concepts and language. Both cases are problematic when the specialized system communicates with other social systems within the organization.

This is an issue that tends to create practical problems during everyday life in any large organization, like university. Once again, this does not happen because of the characteristics of any individual person or because someone has a conscious intentions but rather because of the overall dynamics of social systems. Because this kind of development is inclined to impair the cohesion of the organization, some deliberate interventions are necessary.[36]

Then as another point based on references, I will first cite Axelrod (2006, p. 110):

> The advice takes the form of four simple suggestions for how to do well in a durable iterated Prisoner's Dilemma:
>
> 1. Don't be envious.
> 2. Don't be the first to defect.
> 3. Reciprocate both cooperation and defection
> 4. Don't be too clever

Then I would like to add a sentence from Bowles (2009, p. 497):

> They found that the highest level of trustworthiness was elicited when the principal was permitted to fine the agent for untrustworthy behavior, but declined to use it, evidently a signal by the principal of trusting behavior that was then reciprocated by the agent.

Indeed, don't try to be too clever if you want to promote cooperation; cleverness is needed only if you want to succeed in a zero-sum game with strangers. Moreover, the whole matter is essentially a mindset issue, because we play those games that we first fabricate.

[36] Note that those interventions *must* disturb the communication in all relevant social systems in order to be effective.

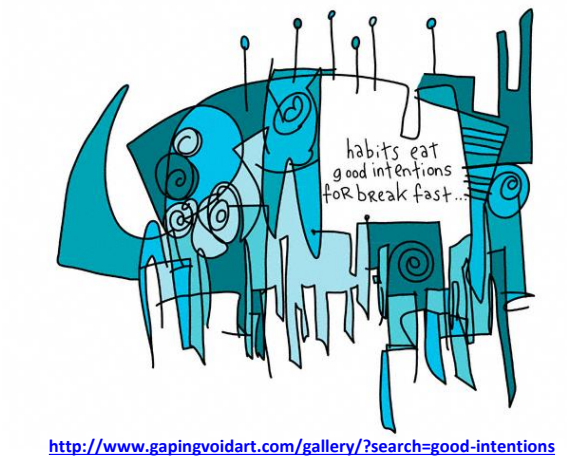
Mindset and motivation

The three main lessons I have learnt from the mindset/motivation literature are:[37]

1. There are two basic mindsets: fixed and growth.[38] Fixed mindset means that a person believes that there are fixed capabilities that dictate what any person can ever achieve. For a student with mixed mindset, the purpose of exams is to demonstrate and measure the capabilities of students. Accordingly, mistakes must be always avoided in order to keep as high opinion about one's capabilities as possible. Growth mindset means that a person believes that any skill or ability can be developed by hard work. According to growth mindset, mistakes are useful or even necessary for learning anything new. The lesson is: Always cultivate the growth mindset, because that is much more beneficial for your progress.

2. External incentives work poorly in any intellectual task; the only way, in the long term, is to begin to like or love what you are doing. External incentives might be sometimes useful to get started in a way that gives an opportunity for subconscious modules to invent internal reasons to continue the effort. But even then there is risk, because external reward diminishes the need for developing internal reason, which in turn weakens the motivation for doing the task.[39]

3. "Habits eat good intentions for breakfast." Because willpower is a limited resource it shall be used for developing or directing useful habits instead of trying to make a huge number of individual, small decisions.



http://www.gapingvoidart.com/gallery/?search=good-intentions

Teaching

As a summary, the most important findings in the context of teaching are:

1. Learning is an intrinsically social process. The social mind module seems to be the most effective part of our mind. It has to be utilized efficiently in all teaching events, not suppressed.
2. Abstract theories, real actions and emotions must the linked together. We learn genuinely only through a) acting and b) through emotions generated in a social context. Abstract knowledge is very seldom enough and that fact must be taken into account in practical teaching events.

[37] Hämäläinen et al. (2014) is a highly recommendable book about the importance of reflecting and understanding how human beings are thinking and behaving. The book is available at http://sal.aalto.fi/publications/pdf-files/being_better_better_living_with_systems_intelligence.pdf.
[38] As to this important topic, I strongly recommend Dweck (2006).
[39] See Aronson in Annex A, motivation.

3. We shall be careful with external motivators, particularly with money. Money is a poor motivator and thinking money tends to lead to selfish behaviour. Instead, we shall promote the creation of internal motivation among our students.
4. Everyone should be (at least moderately) aware of the press secretary role of consciousness. Our conscious mind is unable to assess our own situation without the bias created by the subconscious modules of mind. Furthermore, the knowledge of this fact does not alter the situation at all. Some level of understanding about this may improve our social understanding.

Epilogue

Was this effort useful? Maybe, at least it was funny to follow the flow of thoughts; there are modules that create surprising pieces of ideas if you feed them with some fresh food for thought. I would, though somewhat cautiously, recommend this kind of undertaking for anyone interested in creating novel ideas. A smaller set of material than 77 citations might still be recommendable.

My plan is to continue my reading habit after this two-week period[40] of spending most of my free time for writing down those strange ideas that were generated by my narrative mind machine. Now one of my subconscious modules is likely waiting for some social reward while my conscious mind tries to find something as interesting as this effort.[41]

Best wishes

3 December 2014 Kalevi Kilkki

[40] Most of this essay was written in October, 2014. Some minor editions were made in the beginning of December, 2014.
[41] Any feedback is appreciated, kalevi.kilkki (at) aalto.fi

References

Adams, S. (2004). *God's debris: A thought experiment*. Andrews McMeel Publishing.

Anderson, C. (2009). *Free: The future of a radical price*. Random House.

Ariely, D. (2008). *Predictably irrational*. New York: HarperCollins.

Ariely, D. (2012). *The (honest) truth about dishonesty: How we lie to everyone–especially ourselves.* HarperCollins UK.

Aronson, E. (2003). *The social animal*. Macmillan.

Arthur, W. B. (2009). *The nature of technology: What it is and how it evolves*. Simon and Schuster.

Axelrod, R. M. (2006). *The evolution of cooperation*. Basic books.

Barash, D. P. (2012). *Homo mysterious: Evolutionary puzzles of human nature*. Oxford University Press.

Bateson, G. (1979). *Mind and nature: A necessary unity*. New York: Dutton.

Baucells, M. & Sarin, R. (2012). *Engineering happiness: A new approach for building a joyful life*. Univ. of California Press.

Baumeister, R. F. & Tierney, J. (2011). *Willpower: Rediscovering the greatest human strength*. Penguin.

Beer, S. (1975). *Platform for change: A message from Stafford Beer*. John Wiley and Sons.

Berkun, S. (2010). *The myths of innovation*. O'Reilly Media, Inc.

Bertalanffy, von L. (1968). *General system theory: Foundations, development, applications*.

Bowles, S. (2009). *Microeconomics: Behavior, institutions, and evolution*. Princeton University Press.

Chesbrough, H. (2010). *Open services innovation: Rethinking your business to grow and compete in a new era*. John Wiley & Sons.

Csikszentmihalyi, M. (2013). *Creativity: The psychology of discovery and invention*. Harper Perennial Modern Classics.

Daston, L. & Galison, P. (2007). *Objectivity*. Zone Books.

Day, J. (2007). *Patterns in network architecture: A return to fundamentals*. Pearson Education.

Dweck, C. (2006). *Mindset: The new psychology of success*. Random House LLC.

Elias, N. (2001). *Society of individuals*. Bloomsbury Publishing.

Ferguson, N. (2013). *The great degeneration: How institutions decay and economies die*. Penguin.

Feynman, R. P. (1998). *The meaning of it all: Thoughts of a citizen scientist*. Da Capo Press.

Fornell, C. (2007). *The satisfied customer: Winners and losers in the battle for buyer preference*. Macmillan.

Frankl, V. E. (1985*). Man's search for meaning*. Simon and Schuster.

Fredrickson, B. (2009). *Positivity: Top-notch research reveals the 3 to 1 ratio that will change your life*. Random House LLC.

Gardner, H. (2006). *Multiple intelligences: New horizons in theory and practice*. New York.

Gazzaniga, M. (2012). *Who's in charge? Free will and the science of the brain*. Constable & Robinson.

Gladwell, M. (2006). *The tipping point: How little things can make a big difference*. Hachette Digital, Inc.

Grant, A. (2013). *Give and take: A revolutionary approach to success*. Hachette UK.

Hamel, G. & Breen, B. (2007). *The future of management*. Harvard Business Press.

Harris, S. (2011). *The moral landscape: How science can determine human values*. Simon and Schuster.

Hart, B. H. L. (1967). *Strategy: The indirect approach*. Faber.

Haybron, D. M. (2008). *The pursuit of unhappiness: the elusive psychology of well-being: The elusive psychology of well-being*. Oxford University Press.

Hobsbawm, E. (2013). *Fractured times: Culture and society in the twentieth century*. Hachette UK.

Hämäläinen, R. P., Jones, R., & Saarinen, E. (2014). *Being better better - living with systems intelligence*. Aalto University Publications. http://sal.aalto.fi/publications/pdf-files/being_better_better_living_with_systems_intelligence.pdf.

Judt, T. & Snyder, T. (2012). *Thinking the twentieth century*. Random House.

Kahneman, D. (2011). *Thinking, fast and slow*. Macmillan.

Kaptelinin, V. (2006). *Acting with technology: Activity theory and interaction design*. MIT Press.

Kilkki, K. (2012). *An introduction to communications ecosystems*. CreateSpace. http://kilkki.net/book.

Kurzban, R. (2012). *Why everyone (else) is a hypocrite: Evolution and the modular mind*. Princeton University Press.

Laszlo, E. (1996). *The systems view of the world: A holistic vision for our time*. Cresskill, NJ: Hampton Press.

Layard, P. R. G. (2011). *Happiness: Lessons from a new science*. Penguin UK.

Lessig, L. (2008). *Remix: Making art and commerce thrive in the hybrid economy*. Penguin.

Lieberman, M. D. (2013). *Social: Why our brains are wired to connect*. Oxford University Press.

Luhmann, N. (1995). *Social systems*. Stanford University Press.

Luhmann, N. (2000). *The reality of the mass media*. Stanford: Stanford University Press.

Lyubomirsky, S. (2008). *The how of happiness: A scientific approach to getting the life you want*. Penguin.

Matthews, A. (2009). *Happiness in hard times*, Hay House.

Maturana, H. R. & Varela, F. J. (1987). *The tree of knowledge: The biological roots of human understanding*. New Science Library/Shambhala Publications.

Meadows, D. H. (2008). *Thinking in systems: A primer*. Chelsea Green Publishing.

Messerschmitt, D. G. & Szyperski, C. (2005). *Software ecosystem: Understanding an indispensable technology and industry*. MIT Press Books.

Metzinger, T. (2009). *The ego tunnel. The science of the soul and the myth of the self*. Basic Books.

Minsky, M. (2007). *The emotion machine: Commonsense thinking, artificial intelligence, and the future of the human mind*. Simon and Schuster.

Mlodinow, L. (2013). *Subliminal: How your unconscious mind rules your behavior*. Random House LLC.

Norman, D. A. (2010). *Living with complexity*. MIT Press.

Nozick, R. (1997). *Socratic puzzles*. Harvard University Press.

O'Mahoney, J. & Markham, C. (2010). *Management consultancy*. Oxford University Press.

Osterwalder, A. & Pigneur, Y. (2010). *Business model generation: A handbook for visionaries, game changers, and challengers*, John Wiley & Sons.

Pickering, A. (2010a). *The mangle of practice: Time, agency, and science*. University of Chicago Press.

Pickering, A. (2010b). *The cybernetic brain: Sketches of another future*. University of Chicago Press.

Piketty, T. (2014). *Capital in the twenty-first century*. Harvard University Press.

Pink, D. H. (2011). *Drive: The surprising truth about what motivates us*. Penguin.

Pinker, S. (2011). *The better angels of our nature: Why violence has declined*. New York: Viking.

Pirolli, P. L. (2007). *Information foraging theory: Adaptive interaction with information*. Oxford University Press.

Porter, M. E. (2008). *On competition*. Harvard Business Press.

Randall, D. K. (2012). *Dreamland: Adventures in the strange science of sleep*. WW Norton & Company.

Sacks, O. (2010). *The mind's eye*. Random House LLC.

Sandel, M. J. (2012). *What money can't buy: The moral limits of markets*. Macmillan.

Schelling, T. C. (2006). *Micromotives and macrobehavior*. WW Norton & Company.

Schwartz, B. (2004). *The paradox of choice*. New York: Ecco.

Seligman, M. E. (2012). *Flourish: A visionary new understanding of happiness and well-being*. Simon and Schuster.

Senge, P. M. (1994). *The fifth discipline: The art and practice of the learning organization*. New York: Currency Doubleday.

Simon, H. A. (1969). *The sciences of the artificial*. MIT press.

Stacey, R. D. (2009). *Complexity and organizational reality: Uncertainty and the need to rethink management after the collapse of investment capitalism*. Routledge.

Stiglitz, J. (2012). *The price of inequality*. Penguin UK.

Swinburne, R. (2013). *Mind, brain, and free will*. Oxford University Press.

Talbott, S. (2004). *In the belly of the beast: Technology, nature and the human prospect*. The Nature Institute.

Taleb, N. N. (2010). *The black swan: The impact of the highly improbable fragility*. Random House LLC.

Thaler, R. H. & Sunstein, C. R. (2008). *Nudge: Improving decisions about health, wealth, and happiness*. Yale University Press.

Waal, F. B. de (2013). *The bonobo and the atheist: In search of humanism among the primates*. WW Norton & Company.

Annex A. Citations

The following citations are grouped in 12 categories (see also Figure 1):

- Autopoiesis
- Effect of money
- Functioning of mind
- Leadership
- Metrics
- Mindset
- Motivation
- Progress
- Risk-taking
- Social mind
- Teaching
- Theory vs. reality

All italics in the original text. ". ..." means that some text has not been copied here.

Autopoiesis

Bateson, p. 134

Their ideas about nature, however fantastic, are supported by their social system; conversely, the social system is supported by their ideas of nature. It thus becomes very difficult for the people, so doubly guided, to change their view either of nature or of the social system. For the benefits of stability, they pay the price of rigidity, living, as all human beings must, in an enormously complex network of mutually supporting presuppositions. The convers of this statement is that change will require various sorts of relaxation or contradiction within the system of presuppositions.

Day, p. 360

It is very hard for organizations to change culture. The history of business has shown that the few companies that do succeed do so by doing what they were founded to do, but very few are able to adapt to do the "next thing." The drag by the original proponents is generally sufficient to deflect or diffuse the new effort. It has always seemed that making such changes should be easier for companies being driven "top down," but we know they aren't. It is orders of magnitude more difficult, if not impossible, in standards organizations, that are directed bottom up. This alone makes it virtually impossible for a committee to radically change its culture or pursue a radically new direction. Too many participants have too much invested personally and commercially to want to see it displaced. This implies that should a new direction be found, it must be done by a different organization.

Laszlo, p. 49

What the reality is that affects the existence of social institutions, states, economies, and so on, depends not only what the case is, but on what its members, or its leadership, *believe* that it is. ... Likewise in the case of economic and political systems: the difference between a successful and a failing economy and government is due in large part to how people think about them.

Maturana, p. 116

In other words, since every autopoietic system is unity of interdependencies, when one dimension in the system is changed, the whole organism undergoes correlative changes in many dimensions at the same time. But obviously, such correlative changes as seem to us related to changes in the environment do not emerge because of them, but emerge in the structural drift that takes place in the encounters between organism and environment which are operationally independent.

Nozick, p. 194

The coordinating organizations might be started, maintained and participated in without the *aim* of "serving the interests of the ruling class," so a ruling class might arise through an invisible-hand process, even if later it consciously maintains itself.

Simon, p. 153

In the more complex world in which actually live, the professional engineers possess substantial discretion to give professional considerations priority over the goals of the organizations. If they choose to exercise that discretion, they must decide who the client is. In particular they must decide which of the positive and negative externalities to which the artifacts they are designing will give rise should be incorporated in the design criteria.

Effect of money

Ariely, (2008), p. 83

Thinking about money, then, made the participants in the "salary" group more self-reliant and less willing to ask for help. But these participants were also less willing to help others. In fact, after thinking about money these participants were less willing to help an experimenter enter data, less likely to assist another participant who seemed confused, and less likely to help "a stranger" (an experimenter in disguise) who "accidentally" spilled a box of pencils. … Indeed, just thinking money makes us behave as most economists believe we behave—and less like the social animals we are in our daily lives.

Lessig, p. 146

Indeed, not only is money not helpful. In many cases, adding money into the mix is downright destructive. This is not because people are against money (obviously). It is instead because, as philosopher Michael Walzer has described generally, people live within overlapping spheres of social understanding. What is obviously appropriate in some spheres is obviously inappropriate in others.

Sandel, p. 121

The American Association of Retired Persons asked a group of lawyers if they would be willing to provide legal services to needy retirees at a discounted rate of $30 an hour. The lawyers refused. Then the AARP asked if they would provide legal advice to the needy retirees for free. The lawyers agreed. Once it was clear they were being asked to engage in a charitable activity rather than a market transaction, the lawyers responded charitably.

Stiglitz, p. 201

The Chicago economist Richard Thaler reports that while 82 percent of respondents in the general population believed it was unfair to increase the price of snow shovels after a storm, among his MBA students, only 24 percent held that view. It could be partly because economics attracts those who, among the population, put less weight on notions of fairness. But there is evidence as well that training in economics shapes perceptions—and given the role that economists have increasingly had in public policy, their perceptions of what is fair and their views of trade-offs between equity and efficiency may have had disproportionate consequences.

Functioning of Mind

Baucells, p. 122

It has been found that willpower, like muscles, increase with exercise, although it also weakens if are required to use willpower continuously for an extended period of time. … Here is how the experiment works: Half the people in the experiment were asked to remember an eight-digit number (high cognitive load). The other half were asked to remember a three-digit number (low cognitive load). Next they had to choose between a fruit salad and a chocolate bar. Well, it turned out that more subjects in the eight-digit group chose the chocolate bar, compared to the subjects in the three-digit group.

Baumeister, p. 254

Just follow Chandler's regimen:

"Write or nothing. It's the same principle as keeping order in a school. If you make the pupils behave, they will learn something just to keep from being bored. I find it works. Two very simple rules, a. you don't have to write. b. you can't do anything else. The rest comes of itself."

Harris, p. 121

When we believe a proposition to be true, it is as though we have taken it in hand as part of our extended self: we are saying, in effect, "This is mine. I can use this. This fits my view of the world." It seems to me that such cognitive acceptance has a distinctly positive emotional valence. We actually *like* the truth, and we may, in fact, dislike falsehood. … It also suggests that the division between facts and values does not make much sense in terms of underlying brain function.

Gazzaniga, p. 77

When we set out to explain our actions, they are all post hoc explanations using post hoc observations with no access to nonconscious processing. Not only that, our left brain fudges things a bit to fit in a makes-sense story. It is only when the stories stray too far from the facts that the right brain pulls the reins in. These explanations are all based on what makes it into our consciousness, but the reality is the actions and the feelings happen before are consciously aware of them—and most of them are the results of nonconscious processes, which will never make it into the explanations.

Kahneman, p. 301

The brain responds quickly to purely symbolic threats. Emotionally loaded words quickly attract attention, and bad words (*war, crime*) attract attention faster than do happy words (*peace, love*). There is no real threat, but the mere reminder of a bad event is treated in System 1 as threatening. As we saw earlier with the word vomit, the symbolic representation associatively evokes in attenuated form many of the reactions to the real thing, including physiological indices of emotion and even fractional tendencies to avoid or approach, recoil or lean forward.

Kurzban, p. 150

So, to the extent conscious systems are designed for public relations, it is not that surprising that a lot of the strategically wrong representations live in these systems, and in contrast, "true" information, which might be damaging if others believed it, is kept out the press secretary system.

Modularity allows the press secretary of the mind to be ill informed, another example of the potential advantage of strategic ignorance.

Matthews, p. 25

You will always have problems—and when you haven't got big problems, little problems become big problems. … We find things to worry about.

Pinker, p. 492

With conscious mind distracted, the terrible truth came out: the participants judged themselves as harshly as they judged other people. This vindicated Triver's theory that the truth was in there all along. … Once you become aware of this fateful quirk in our psychology, social life begins to look different, and so do history and current events. It's not just that there are two sides to every dispute. It's that each side *sincerely* believes its version of the story, namely that it is an innocent and long-suffering victim and the other side a malevolent and treacherous sadist.

Randall, p. 144

In every situation, the prefrontal cortex—the only part of the brain that has the power to think about how it is thinking—had lost the vital aspect of self-assessment, unable to tell if an action was helping to solve a problem or simply making it worse. Without sleep, the brain's finely tuned mechanics had dissolved from an orchestra led by conductor into a room full of musicians playing their own beats.

Sacks, p. 69-70

Whatever language a person is reading, the same area of inferotemporal cortex, the visual word form area, is activated. It makes relatively little difference whether the language uses alphabet, like Greek or English, or ideograms, like Chinese. This has been confirmed by lesion studies such as Déjerine's, and by imaging studies. And this idea is supported, too, by "positive" disorders-excesses or distortions of function produced by hyperactivity of the same area. The opposite to alexia, in this sense, is lexical or text hallucination, or phantom letters.

Schwartz, p. 139

In the laboratory session, half of the people were asked to fill up a page analyzing the reasons why their relationships with their dating partner was the way it was. The other half filled up a page explaining why they had chosen their major. As you can probably guess, writing about their relationship changed people's attitudes about it. For some, attitudes became more positive; for others, they became more negative. But they changed. Again, the likely explanation is that what is most easily put into words is not necessarily what is most important. But once aspects of a relationship are put into words, their importance to the verbalizer takes on added significance.

Leadership

Bowles, p. 497

They found that the highest level of trustworthiness was elicited when the principal was *permitted* to fine the agent for untrustworthy behavior, but declined to use it, evidently a signal by the principal of trusting behavior that was then reciprocated by the agent. By contrast, "explicit threats to penalize shirking backfire by inducing less trustworthy behavior." They conclude that: "the psychological message that is conveyed by incentives—whether they are perceived as kind or hostile—has important behavioral effects."

Judt, p. 256

Furthermore, I had it in mind to do something that is still not very well done in most universities, whether in the U.S. or overseas. I was interested in identifying young people whose work did *not* slot neatly into particular "schools," who were *not* natural fits in established post-doctoral programs but who were just plain smart. I

wanted to offer such people resources, contacts, opportunities and ultimately promotion by giving them an opportunity to meet one another, to pursue their own work on their own terms without social or pedagogical obligation, and above all to exchange views across conventional disciplinary, or national, or generational boundaries.

Lieberman, p. 268

Every year, thousands of psychology graduate students get their PhD, but only a small fraction of those are chosen to become boss (that is, professor) who will run their lab. The odd thing is that the skill set that is essential for *becoming* the boss (that is, publishing high-quality research as a graduate student) has little to do with the skill set necessary for *being* the boss. … **(p. 283)** I believe the real solution is stop making the social brain the enemy during class time and figure out how to engage the social brain as part of the learning process. We need the social brain to work for us, not against us in the learning process.

Senge, p. 328

In the extreme, masterful design may be all but invisible, a point made eloquently by Lao Tzu some 2,500 years ago:

The wicked leader is he whom the people revile.

The good leader is he whom the people revere.

The great leader is he of whom the people say, "We did it ourselves."

Waal, p. 89

Some people crave dogma, yet have trouble deciding its contents. They become serial dogmatics. Hitchens admitted, "There are days when I miss my old convictions as if they were an amputated limb," thus implying that he had entered a new life stage marked by doubt and reflection. Yet, all seemed to have done was sprout a fresh dogmatic limb.

Metrics

Feynman, p. 90

There is a tendency, then, to use only what can be measured as a criterion. That is, the spirit of the man, the way he feels toward things, may be difficult to measure. There is some tendency to have interviews and to try to correct this. So much the better. But it's easier to have more examinations and not have to waste time with the interviews, and the result is that only those things which can be measured, actually which they think they can measure, are what count, and a lot of good things are left out, a lot of good guys are missed.

Hamel, p. 62

When it comes to supervision and control, bureaucracies rely on multiple layers of management and a web of policies and rules. Communities, by contrast, depend on norms, values, and the gentle prodding of one's peers. Individual contributions tend to be circumscribed in a bureaucracy—marketing people work on marketing plans, finance people run the numbers. In a community, capability and disposition are more important than credentials and job descriptions in determining who does what. And where the rewards offered by a bureaucracy are mostly financial, in a community they're mostly emotional. When compared with bureaucracies, communities then to undermanaged. That, more than anything else, is why they are amplifiers of human capability. …

Before you accuse me of being a starry-eyed idealist, or just plain goofy, let me be clear: I'm not arguing that we should turn every organization into some version of the Boy Scouts. I'm not naïve. I know it would be impossible

to keep people coming to work every day without the inducement of a paycheck—warm and fuzzy feelings won't put food on the table and gas in the car.

Hobsbawn, p. 268

A bad comic strip does not become better if it is drawn by a master-draughtsman; it merely becomes more acceptable to critics.

O'Mahoney, p. 222

David Maister, who wrote the "bible" on managing consultancies, had the good fortune to be able to review several strategic plans from leading consultancies, and had this to say:

> Their strategic plans could have been reshuffled and redistributed, with firm names replaced, and no-one would have been wiser… very professional service firm in the world, regardless of size, specific profession, or country of operation, has the same mission statement: outstanding service to clients, satisfying careers for its people, and financial success for its owners.

Rogers, p. 241

American farmers place a strong value on increasing farm production. Soil conservation innovations (such as contour farming) are perceived as conflicting with this production value and have generally been adopted very slowly.

Mindset

Dweck, p. 111

The researchers divided the business students into two groups. One group was given a fixed mindset. They told that the task measured their basic, underlying capabilities. The higher their capacity, the better their performance. The other group was given a growth mindset. They were told that management skills were developed through practice and that the task would give them an opportunity to cultivate these skills. … But those with the growth mindset kept on learning. Not worried about measuring—or protecting—their fixed abilities, they looked directly at their mistakes, used the feedback, and altered their strategies.

Fredrickson, p. 225

The second fact is that positivity opens your mind and expands your range of vision. Although this broadened mindscape is temporary, it creates much-needed mental space. You escape the tightness of negativity and gain elbow room for greater flexibility and seeing the big picture.

Grant, p.101

By default, givers start by viewing people as bloomers. This is exactly what has enabled C. J. Skender to develop so many star students. He isn't unusual in recognized talented people; he simply starts seeing everyone as talented and tries to bring out the best in them. In Skender's mind, every student who walks into his classroom is a diamond in the rough—able and willing to be mined, cut, and polished. He sees potential where others don't, which has set in motion a series of self-fulfilling prophecies.

Hämäläinen, p. 123

The only immediate reward for an act of kindness may simply be a feeling of satisfaction at having done the right thing. But we should not underestimate the power of this feeling. Feeling positive emotion, as we have learned earlier, is not only its own reward; it also causes greater success in life. The more positive we feel, the better our friendships, health, love relationships, and achievements. Altruistic acts help us to strengthen social ties and

develop the means we have for expressing love and care. Such outcomes often endure long after the initial positive emotion has faded away. Stimulating reciprocity by acting being the first to positively engage is one way we can act intelligently in systems.

Layard, p. 198

One gets some idea of the strain of optimizing by comparing the happiness of "maximisers" (who seek the best) and "satisficers" (who are content with what is good enough). … we do indeed find that the maximizers are less happy than the satisficers. Maximisers may indeed get some better "objective" outcome through all their searching, but even so, they are less happy.

Minsky, p. 212

I certainly do not mean to suggest that positive reinforcement is bad—but we often learn more from a failure than from a success, especially when we need to learn not only which methods are likely to fail, *but also how and why those failures occur*, as well as *what might have caused our thoughts to go wrong*. In other words, one learns much more when one investigates rather than merely celebrates.

Porter, p. 365

The U.S. car industry eventually realized that it would face extinction if it did not learn to compete through innovation. But clinging to the static mind-set too long cost billions of dollars and many thousands of jobs.

Motivation

Anderson, p. 213

Our brains are wired for scarcity; we are focused on things we don't have enough of, from time to money. That's what gives us our drive. If we get what we're seeking, we tend to quickly discount it and find a new scarcity to pursue. We are motivated by what we don't have, not what we *do* have.

Aronson, p. 206

If all I want you to do is recite a speech favoring Cuba, the Marx brothers, socialized medicine, or anything else, the most efficient thing for me to do would be to give you the largest possible reward. This would increase the probability of your complying by making the speech. But suppose I have a more ambitious goal: Suppose I want to effect a lasting change in your attitudes and beliefs. In that case, just the reverse is true. The smaller the external reward I give to induce you to recite the speech, the more likely it is that you will be forced to seek additional justification for delivering it by convincing yourself that the things you said were actually true. This would result in an actual change in attitude rather than mere compliance.

Csikszentmihalyi, p. 107

Creative persons differ from one another in a variety of ways, but in one respect they are unanimous: They all love what they do. It is not the hope of achieving fame or making money that drives them; rather, it is the opportunity to do the work that they enjoy doing. Jacob Rabinow explains: "You invent for the hell of it. I don't start with the idea, 'What will make money?' This is rough world; money's important. But if I have to trade between what's fun for me and what's money-making, I'll take what's fun."

Elias, p. 129

The opportunity individuals now have to seek the fulfilment of personal wishes on their own and largely on the basis of their own decisions, carries with it a particular kind of risk. It demands not only a considerable amount of persistence and foresight; it also constantly requires the individual to pass by momentary chances of

happiness that present themselves in favour of long-term goals that promise more lasting satisfaction, or to juxtapose these to short-term impulses.

Frankl, p. 105

I consider it a dangerous misconception of mental hygiene to assume that what man needs in the first place is equilibrium or, as it is called in biology, "homeostasis," i.e., a tensionless state. What man actually needs is not discharge of tension at any cost but the call of a potential meaning waiting to be fulfilled by him.

Lubomirsky, p. 183

However, when we are preoccupied with the goal (the graduate degree earned, the children grown up, the kitchen remodeled), we will no longer derive pleasure and contentment from the process of achieving it—that is, from the present moment. The experience of flow leads us to be involved in life (rather than be alienated from it), to enjoy activities (rather than to find them dreary, to have a sense of control (rather than helplessness), and to feel strong sense of self (rather than unworthiness).

Pink, p. 127

She has found that the single greatest motivator is "making progress in one's work." The days that people make progress are the days they feel most motivated and engaged. By creating conditions for people to make progress, shining a light on that progress, recognizing and celebrating progress, organizations can help their own cause and enrich people's lives.

Progress

Arthur, p. 210

Again here is a seeming paradox. The more high-tech technology becomes, the less purely rational becomes the business of dealing with it. Entrepreneurship in advanced technology is not merely a matter of decision making. It is a matter of imposing a cognitive order on situations that are repeatedly ill-defined. Technology thinker John Seely Brown tells us that "management has shifted from making product to making sense."

Bertalanffy, p. 70

Progress is possible only by passing from a state of undifferentiated wholeness to differentiation of parts. This implies, however, that the parts become fixed with respect to a certain action. Therefore progressive segregation also means progressive mechanization. Progressive mechanization, however, implies loss of regulability. As long as a system is unitary whole, a disturbance will be followed by the attainment of a new stationary state, due to the interactions within the system. The system is self-regulating. If, however, the system is split up to independent causal chains, regulability disappears.

Ferguson, p. 65

The answer is that, whereas evolution in biology takes place in a pitiless natural environment, evolution in finance occurs within regulatory framework where—to adapt a phrase from anti-Darwinian creationists—'intelligent design' plays a part. But just how intelligent is this design? The answer is: not intelligent enough to second-guess the evolutionary process. In fact, stupid enough to make a fragile system even more fragile.

Meadows, p. 178

Remember that hierarchies exist to serve the bottom layers, not the top. Don't maximize parts of systems or subsystems while ignoring the whole. Don't, as Kenneth Boulding once said, go to great trouble to optimize something that never should be done at all. Aim at enhance total systems properties, such as growth, stability, diversity, resilience, and sustainability—whether they are easily measured or not.

Messerschmitt, p. 61

Specification-driven programs are judged by how well they satisfy an objective specification. Satisfaction-driven programs, on the other hand, are judged by perception, judgment, and degree of satisfaction of various stakeholders.

Risk-taking

Berkun, p. 164

Be happy about interesting "mistakes." If you are doing something new, it cannot go well the first, second, or possibly fiftieth time. This is OK. Your mindset has to be "Am I learning anything from what I just did?" It might only be the lesson that the approach you tried won't work, but that's something you didn't know before. … Perseverance, as simple a concept as it is, is rare.

Chesbrough, p. 100

Companies should strive to develop processes that provide high fidelity at low cost, in a short period of time, with expectations of cumulative learning from a series of failures, before discovering a viable alternative business model. Companies need a culture that supports failure as a healthy and necessary part of innovation and reserves its condemnation for mistakes.

Fornell, p. 97

If the risk of doing nothing is high, should the change in numbers be real, something should probably be done. In my experience, it is much better to act on changes even if they may not be statistically significant.

Norman, p. 164

Numerous studies have shown the importance of effective recovery after a mistake. Some studies show that a company that corrects failures properly may be liked even more than companies that never make a mistake. This result is controversial and some more recent, carefully controlled studies seem not to confirm this finding. Nonetheless, all studies show that companies that admit their mistakes and immediately correct them benefit more than those that try to hide or deny their mistakes.

Taleb, p. xxv

So I disagree with the followers of Marx and those of Adam Smith: the reason free markets work is because they allow people to be lucky, thanks to aggressive trial and error, not by giving rewards or "incentives" for skill. The strategy is, then, to tinker as much as possible and try to collect as many Black Swan opportunities as you can.

Social mind

Adams, p. 113

"Conversation is more than the sum of the words. It is also a way of signaling the importance of another person by showing your willingness to give that person your rarest resource: time. It is a way of conveying respect. Conversation reminds us that we are part of a greater whole, connected in some way that transcends duty or bloodline or commerce. Conversation can be many things, but it can never be useless."

Axelrod, p. 110

The advice takes the form of four simple suggestions for how to do well in a durable iterated Prisoner's Dilemma:

1. Don't be envious.
2. Don't be the first to defect.

3. Reciprocate both cooperation and defection
4. Don't be too clever

Barash, p. 279

The idea is that since brains are expensive, any traits—such as artistic or linguistic skills—that require big brains and hence intelligence would have been selected for as fitness indicators. The result would have been more intelligent descendants sporting bigger brains, not so much of any practical, survival-related benefit of intelligence as such, but because their ancestors had impressed members of the opposite sex with their overall genetic quality, perhaps including disease and parasite resistance. In the process, badges of physical fitness would have morphed into traits conferring evolutionary fitness as well, through the mediation of sexual choice.

Gladwell, p. 186

This is what you get when you have small teams, where everybody knows everybody. Peer pressure is much more powerful than a concept of a boss. Many, many times more powerful. People want to live up to what is expected of them.

Haybron, p. 247

Paradigm studies in this tradition include the Milgram research on obedience, the Stanford Prison Experiment, Darley and Batson's work showing the effects of hurry on "good Samaritan" behavior, research on the "bystander effect," and Isen's study showing the impact of finding a dime on helping behavior. This represents only a tiny fraction of the literature, but the general moral is this: human behavior is extraordinarily sensitive to situational factors, particularly social factors, so that such influences can easily motivate us to act in ways having nothing to do with, or worse conflicting with, our express priorities. … Stated crudely, how we choose to live may depend substantially if not mainly on who we're with, not who we are or what we care about.

Kaptelinin, p. 223

A student was making a point about what people do at work, saying that in an auto factory people mostly make cars. Roy said something: "How do you know what they are doing? Maybe what they are making is social relationships and the cars are a side effect."

Metzinger, p. 235

Surprisingly, there is a representation of the human hand in Broca's area, a section of the human brain involved in language processing, speech or sign production, and comprehension. A number of studies have shown that hand/arm gestures and movements of the mouth are linked through a common neural substrate. For example, grasping movements influence pronunciation—and not only when they are executed but also when they are observed.

Mlodinow, p. 113

The lesson learned has obvious applications in our personal and professional lives, with regard to our family, our friends, our employees, our employers and even the subjects being interviewed in a marketing focus group: whether or not we wish to, we communicate our expectations to others, and they often respond by fulfilling those expectations.

Pickering (2010a), p. 203

I have repeatedly argued that "the social" in all of its manifestations should be seen as just as liable to mangling in practice as the technical strata of science. The plans, goals, and interests of scientists; the scale and social relations of human actors; disciplines and forms of expertise—all of these, I have argued, are themselves at stake in practice; they do not control practice from without.

Thaler, p. 55

The academic effort of college students is influenced by their peers, so much so that the random assignments of first-year students to dormitories or roommates can have a big consequences for their grades and hence on their future prospects. (Maybe parents should worry less about which college their kids go to and more about which roommate they get.)

Teaching

Daston, p. 360

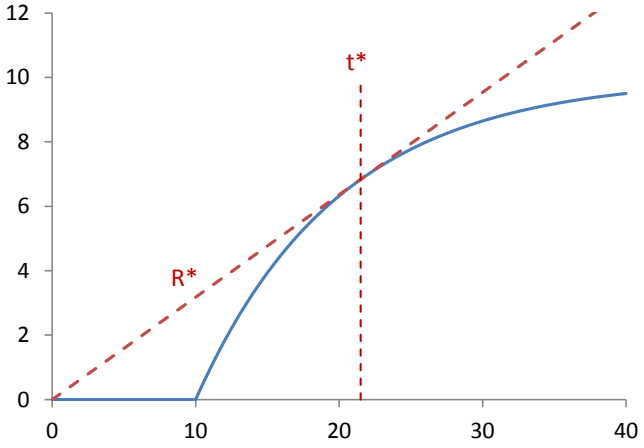
Explicitly "theoretical," the new depictions not only invited interpretation once they were in place but also built interpretation into the very fabric of the image — but they did so as an epistemic manner. Theirs were exaggerations meant to teach, to communicate, to summarize knowledge, for only through exaggeration (advocates of the interpreted image argued) could the salient be extracted from the otherwise obscuring "naturalized" representation. The extremism of iconography generated by expert judgment exists not to display the ideal world behind the real one but to allow the initiate to learn how to see and how to know.

Gardner, p. 127-8

The most serious consequence of the decision to educate for understanding is a radical foreshortening of the curriculum. If one wishes to have any chance of securing understanding, it becomes essential to abandon the misguided effort to "cover everything." Broad coverage ensures superficiality: at best heads become stuffed with facts that are forgotten almost as soon as the short-answer test has been administered. Rather, one must move toward "un-coverage," or to cite another current slogan, one must embrace the principle that "less is more."

Pirolli, p. 8

Charnov's Marginal Value Theorem states that the rate-maximizing time to spend in patch, t* occurs when the slope of the within-patch function is equal to the average rate of gain, which is the slope of the tangent line R*.



Seligman, p. 113

Rate of Learning: The First Derivative of Speed

Mental speed for any given task reflects how much material relevant to that task is already on automatic. We call this material "knowledge," how much you already know that is relevant to the task. Speed on a task can change over time, and this parallels "acceleration," the first derivative of speed in mechanics. Is there such a thing as mental acceleration, the increase of mental speed over time, how fast you can acquire new knowledge—the increase in how much of a given task can be put onto automatic over time and experience? We call this the "rate of learning": how much can be learned per unit time.

Swinburne, p. 209

As Aristotle wrote, 'we become just by doing just acts, prudent by doing prudent acts, brave by doing brave acts.' Every time we overcome a bad inclination, it is easier to resist it the next time we are subject to it. .... In these ways over time we can either make ourselves naturally virtuous beings or allow ourselves to become amoral beings.

Talbott, p. 23

Knowing gives us a power of direct recognition; we can be more fully open to the expressive qualities of the person or thing—which also means being open those same qualities in ourselves. We overcome, in the moment of knowing, the barrier between self and other. To experience the quality of a thing is necessarily to *experience* it, to find its shape and movement and significance reproduced within ourselves. This is what I mean by "resonance."

Theory vs. reality

Beer, p. 401

The second point is that you will discover how people often begin to mistake the model for the reality—and start managing the model instead. Let me give you a true instance of this too. The residents of a certain small town got up a petition to ask the railway company to put on a train at three o'clock in the afternoon to take them to the big town. Now the railway had a model of this line, and more than a mental model in this case. They had done an empirical study, and had quantified their model. The reply the residents received (this is going to strain your credulity, but I saw the letter) said that the Railway had undertaken a factual survey—and there was no one *waiting* for a train at three o'clock.

Hart, p. 323

This relativity is inherent because, however far our knowledge of the science of war be extended, it will depend on art for its application. Art can not only bring the end nearer to the means, but by giving a higher value to the means, enable the end to be extended.

This complicates calculation, because no man can exactly calculate the capacity of human genius and stupidity, nor the incapacity of will.

Luhmann (2000), p. 97

For the same reasons, no great expectations can be placed on the understanding of communication. Expectations can certainly be raised forcibly, but they then require special differentiated discourses. Normally, ambivalences and misunderstandings are borne along as well, as long as they do not block communication; indeed, understanding is practically always a misunderstanding without an understanding of the mis.

Osterwalder, p. 251

Depending on your organization's management style you may want to avoid overemphasizing the conceptual aspects of business models. Stay practical and deliver your message with stories and images rather than concepts and theory.

Key dangers: over-researching disconnect between research and objectives; Biased research because of precommitment in a certain business idea.

Schelling, p. 140

Economists are familiar with systems that lead to aggregate results that the individual neither intends nor needs to be aware of, results that sometimes have no recognizable counterpart at the level of the individual. The creation of money by a commercial banking system is one; the way savings decisions cause depressions or inflations is another.

Stacey, p. 96

I think that the key notions here are 'experience' and 'everyday interaction'. All we can actually experience in a direct social sense is our everyday, local interaction with each other—we cannot directly experience a 'global

whole' such as British Airways, but we can experience interactions with staff employed by that organization. And that interaction is local where acting locally means interacting with only a tiny proportion of a total population and doing so on the basis not of directly and simply applied diktats from a central authority but on the basis of thematic narrative patterns that have emerged historically in our community and our own lives and continue to be sustained and transformed in our interaction with others.