

## CHAPTER 5

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# ARTIFICIAL INTELLIGENCE CALLS FOR INNER ALIGNMENT (AI FOR IA)

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### INTRODUCTION

Following a statement from Albert Einstein, that “a new type of thinking is essential if mankind is to survive and move toward higher levels” (*New York Times*, 1946), we suggest to systematically and systemically extend our way of thinking, triggered by Artificial Intelligence and the dynamics it is bringing.

We are increasingly bombarded with an incessant information flow in a world that is characterized by volatility, uncertainty, complexity, ambiguity (Bennett & Lemoine, 2014), diversity and dynamics, also referred to as VUCADD (Köster, 2016). It is the rhythm of the 21<sup>st</sup> century we need to adapt to.

We are increasingly relying on Information Technology to help us making sense in times of disruption. Artificial Intelligence (AI) seems to provide answers to our VUCADD-world problems (Figure 5.1). At the same time, AI triggers fears of being made redundant, or even finally being dominated by machines. AI seems to question human mankind in its very existence.

The challenge is to focus again on the human being. Let us follow Einstein’s insight and change our way of thinking in line with the shifts in our environment.

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*Principles of Responsible Management Education (PRME) in the Age of Artificial Intelligence (AI)—Opportunities, Threats, and the Way Forward*, pages 63–89.

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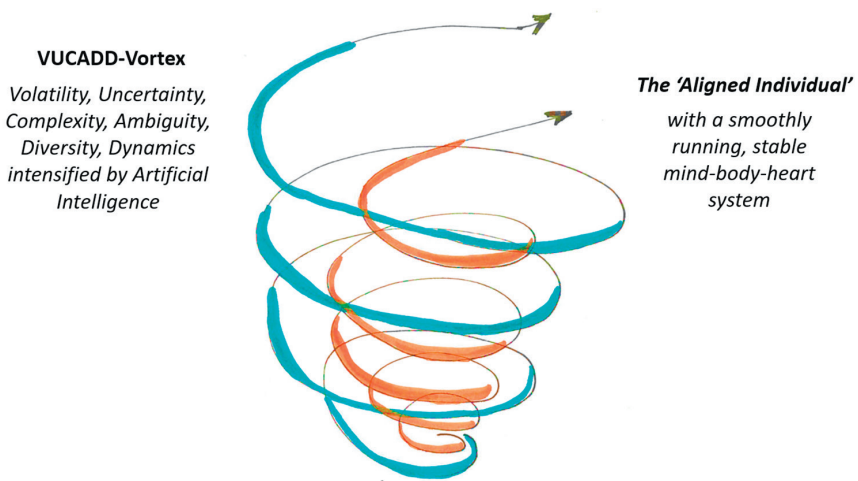


FIGURE 5.1. VUCADD Vortex and the 'Aligned Individual'

Let us look at the human being as a huge processor of information. We process a great variety of stimuli from the outside and the inside, for instance visual impressions, audio impressions, olfactory impressions, haptic experiences, and emotions.

Given the importance of this era's currency, information, we better use all the information we have. To do this in a systematic and smart way, we have to be aware of and be able to manage the three main information processing sub-systems of any human being: the mind, the body, and the heart. Sub-system alignment is the pre-requisite for leveraging the human's full potential.

Fast-paced change urges us to speed up if we want to remain relevant and have an impact. Speeding up a system only works when the system runs stable. The system runs stable if it is well aligned and working smoothly. We need "Aligned Individuals" in the sense of balanced individuals whose internal systems are well synchronized and who are well connected to their outside environment. We need individuals who can relate with AI rather than being afraid of it. We need individuals who understand and use AI wisely instead of being used by it.

This is especially requested from leaders and decision makers in all spheres of life: businesses, politics, and society in general. Hence, Higher Management Education has the clear purpose of facilitating the development of Aligned Individuals who leverage their full potential along with AI to solve the grand challenges of today.

In this book chapter, we first give an outline of AI to build common ground. We discuss how Computational Thinking is related to computer-based technologies such as AI and how it can be used on an individual level for self-alignment. We explain the main elements of an "Aligned Individual" as well as the align-

ment path. Finally, we depict the implications for Higher Management Education: embracing the purpose of becoming incubators for self-aligned individuals with an understanding of Computational Thinking, pioneering teachers leading by example, and education organizations becoming agile learning platforms that engage, intrigue, and connect—people and technology.

## ABOUT ARTIFICIAL INTELLIGENCE

Let us start with creating a common understanding of AI, a term that is widely used without clarification and contextualization. This is also true for intelligence in general.

### *What is (Human) Intelligence?*

The term intelligence has its origin in the Latin verb “*intellegere*” (understand), a combination of “*inter*” (between) and “*legere*” (read, collect). The term can be understood as the ability to perceive and to realize some sort of deeper meaning and inter-connections. In Ancient Greek philosophy, the word “*phronesis*” meant a type of wisdom or intelligence that included feelings, as well as aspects of ethics, prudence, and mindfulness (Cassin et al., 2014). The *Cambridge Dictionary* defines intelligence more narrowly as “the ability to understand and learn well, and to form judgments and opinions based on reason” (*Cambridge Dictionary*, 2019).

There were numerous attempts to make intelligence more tangible. One of the first researchers who tried to measure human intelligence was the French psychologist Binet. Together with Simon, he developed the Binet-Simon-Test in 1905. It was the first empirically robust intelligence test used to classify the ability of children in the age between 3 and 15.

In the 1980s, the concept of intelligence was broadened again, for example by Gardner (1993) who developed the theory of multiple intelligences identifying eight kinds of intelligences: visual-spatial intelligence, verbal-linguistic intelligence, logical-mathematical intelligence, musical intelligence, interpersonal intelligence, intrapersonal intelligence, bodily-kinesthetic intelligence, and naturalistic intelligence. For the purpose of this article, we adhere to Gardner’s broad definition of intelligence as it provides an adequate frame for understanding the Aligned Individual.

### *What is AI?*

The term was coined by John McCarthy in 1956 when “AI” started to become a field of research. There is a multitude of definitions of AI including formalized mathematical descriptions (Legg & Hutter, 2007). In summary, we can say that AI-systems have the ability to interact with an environment, to achieve goals, to learn from experience and be flexible to changing environments and changing goals (Poole et al., 1998).

*Different Levels of AI*

At present, we distinguish between three different levels of Artificial Intelligence (O'Carroll, 2020):

***Weak AI***

It comprises of all AI-systems that are currently known. These systems focus on a very narrow problem domain, which means that they can perform only very specific tasks. They simulate human behavior and quite often perform better than humans in that limited field. They pretend to think like humans, which frequently is sufficient to impress human beings. Their true success factor, however, is high speed computation of large amounts of data. Some of the most successful AI techniques are based on analyzing large data volumes. A prominent example is so-called "Deep Learning," a technique that uses neural networks, a connected set of special functions that is trained on a large amount of data until it is able to find solutions to similar questions within the same problem domain. "Deep Learning enables data-driven decisions by identifying and extracting patterns from large datasets" (Kelleher, 2019, p. 5). This technique is widely known for its success in language processing and facial recognition.

***Strong AI or Artificial General Intelligence (AGI)***

AGI does not only "pretend" to act like human beings, but indeed is able to think and act like humans in any environment. AGI can handle any problem in any domain in a way a human specialist would do. In particular, AGI can adapt to any changing environment, any task, and can even decide which goal to achieve. AGI-driven technologies are expected to behave like humans in a way that humans are not able to detect AI. There is an ongoing debate whether AGI needs self-awareness and consciousness in order to intrinsically behave like humans. Whether consciousness is needed or not for a fully working AGI-system, it will certainly take decades to develop and implement it.

***Super AI***

These are systems known from science fiction that do everything considerably better than any human. At present, these systems exist only in our imagination. It is not known whether these systems can be realized at all.

The borders between the different categories of AI are blurred. Currently, all existing AI-systems are based on weak AI, even the most advanced image recognition systems, chatbots, and autonomous driving vehicles. Super AI is still a subject analyzed in theory. But for how long?

*Historic Milestones in the Development of AI*

The genesis of Neural Networks began in 1943, when McCulloch and Pitts developed a simplified model of a neuron and showed that networks of these neu-

rons could perform any computable operation. But it was not until the 1980s that the development of neural networks gained momentum.

As AI researchers wanted their systems to compete with human intelligence, some of them started to create chess playing systems. “Mac Hack VI” was the first computer chess program to play in a chess match in 1967. In 1997, IBMs “Deep Blue” was the first chess-playing computer that was able to win a match against a world champion, Garry Kasparov. Deep Blue’s success was based on its ability to compute more than 100 million positions per second using a hardware-based system to evaluate and weight these positions. World-class chess players had helped to develop the rules for deciding which move to make. In 2011, IBM’s natural language AI-system “Watson” constantly outperformed two of the most successful human champions in three special episodes of the popular US TV quiz show Jeopardy!. In 2017, the computer program “AlphaGo Master” was the first to win a match against the world’s Go champion Ke Jie. Whilst AlphaGo Master used data from real matches for deep learning, its successor AlphaZero is able to interact with itself. This constitutes a major step towards AGI, because AlphaZero managed to develop genuine strategies with the sole input of basic Go rules by playing matches against itself.

Another example for the creation of new knowledge by AI is how deep learning works: neural networks divide a problem into thousands of sub-problems, each of it being solved by the functional representation of a specific neuron. Currently, the structure and meaning of the grid of sub-functions that constitute a trained neural network is not comprehended. This means, neural networks can be considered as a kind of black box that we might get new insights from to shape the future.

AI as technology driver not only makes our lives easier and more comfortable, but we can also learn from it. That is one major reason why it is so important to have at least a basic understanding of the current developments in the AI-world and about its underlying techniques.

## **ABOUT COMPUTATIONAL THINKING**

Information Technology and the mathematics applied therein has much to offer. Understanding the ideas that make AI work can be beneficial to other fields, be it in research, business, or private life. In this section, we will explain how it can enrich our way of problem solving and decision making.

### *What is Computational Thinking?*

In 1980, Papert coined the term “Computational Thinking” and emphasized the importance of teaching children about computers and its underlying mathematical principles (Papert, 1980, p. 183). Denning and Tedre defined Computational Thinking as “the mental skill and practices for designing computations that get computers to do jobs for us and explaining and interpreting the world as

a complex of information processes” (Denning & Tedre, 2019, p. 4). Since from a practical point of view, information can be described as anything that has a meaning and/or is related to something, being skilled in Computational Thinking is beneficial in any field where problems arise and decisions have to be made.

The basic idea of Computational Thinking is that a deeper understanding of the theories and practical results related to information processing enables individuals and organizations to understand conceptual dependencies of several problems they are faced with and enhance their tool set for finding better solutions. Since the need for fast and reliable decision making is increasing in VUCADD-times, one can no longer afford to ignore the knowledge and thinking that is available from and heavily used within the IT-world. And if we want to find solutions to the grand challenges of today, Computational Thinking is of paramount importance. Examples are to be found in the shift towards a circular economy as part of achieving goal 12 of the Social Development Goals (SDGs), or in the reduction of carbon footprint to meet SDG goal 13 (United Nations, 2019b).

### *How does Computational Thinking work?*

A programmer, when solving a problem, needs to be very clear about the problem, relevant inputs, steps to be taken in order to create the solution, the resources available, and the meaning of the possible outcomes. However, a quick reality check with individuals and organizations in many societies shows that problem solving does not necessarily follow those logical steps. There is room for learning.

Computational Thinkers have an overview of the entire process as well as a sound understanding of the difficulties and possible outcomes of each task. If something goes wrong or in case of sudden changes, they are able to shift tasks to other resources, replace tasks by improved ones, redefine the desired solution or even cancel the project in an early phase and start another one.

Computational Thinkers are experienced in choosing the tools that are most appropriate to meet the constraints that usually come with a problem and the process of creating the desired solution. They always have the greater picture in mind and know for instance whether the solution has to be generated as fast as possible at any cost or whether there are limited resources. They will be aware of the fact that some constraints and limitations can be circumvented, for example, by choosing different tools for selected sub-tasks.

Apart from the skills outlined above, Computational Thinkers are able to deal with errors. They are able to deal with these situations in a routine manner. They focus on creating stable systems and adapt concepts like error correcting codes (ECC) known from Computer Science for avoiding and correcting errors.

Computational Thinking must neither be confused with skills in computer programming, nor with the skillset of a computer scientist. It is about transferring techniques developed by computer scientists, mathematicians and physicists to solve problems in any field such as business administration.

### *Computational Thinking in Education*

In a global world, decisions are complex and always embedded in a net of interdependencies. Thus, decision makers in business and politics can highly benefit from being versed in problem solving and decision making. Some countries have acted upon this insight and started to integrate Computational Thinking in the syllabus of their schooling systems which facilitates quality education (SDG4).

The United Kingdom included programming skills and Computational Thinking as a subject in its national curriculum (Department for Education, 2015). In 2016, the U.S.A. has started a campaign to teach computer science skills from kindergarten to 12<sup>th</sup> grade (Smith, 2016).

Singapore is a country that goes beyond the young generation with the initiative to transform itself into a Smart Nation by using AI technologies (Balakrishnan, 2019). Part of this initiative are programs to teach basic knowledge of data processing skills to the entire population (Smart Nation, 2019).

Given the broad use of AI and the fast development of new techniques and applications, higher management education has to gear up in terms of content and structure. There are limited initiatives at business schools around the world to either design dedicated programs on Computational Thinking or incorporate Computational Thinking into the existing syllabus. In Europe, the Executive Academy of Vienna University for Economics and Business is among the early movers with dedicated short programs for higher management education, not only in the field of Computational Thinking, but also in the field of leadership and personal development (WU Executive, 2019).

## **AI AND HUMAN INTELLIGENCE**

As stated above, human beings have an ambiguous relationship to AI with the prevalent anxiety of being ruled by machines one day. The underlying attitude is “victim or master.”

Let us depart from this either-or thinking and take a both-and approach: AI can contribute to the development of human beings by:

- Performing time consuming tasks;
- Providing new knowledge (e.g., derived from deep learning);
- Pushing humans to acquire more knowledge about how humans function (to feed AI); and
- Motivating humans to focus on their strengths (e.g., interpersonal and intrapersonal intelligence).

In a VUCADD world, many organizations realize that emotional intelligence (Goleman, 1995) related to interpersonal intelligence is increasingly crucial to cope with accelerating change. Traditionally, emotional intelligence is not reflected in classical degrees of higher management education. Consequently, we see a gradual shift in recruitment policies of leading organizations that open up

for a variety of intelligences that are not part of the classical syllabus of higher management education. Companies like Google, Whole Foods, Hilton, Apple and IBM have realized that people without higher education degrees usually required for a certain job may be similarly suitable or even better qualified since they have shown the ability to make their way in the world without this degree (Glassdoor Team, 2018). Skills like being able to lead a team just on the fly and being able to step back and give room for another one who came up with a better idea or who is better qualified to lead the team through a current process, are getting more important (Friedman, 2014).

A shift towards emphasis of emotional intelligence often means turning from ignorance to hyper-sensitivity which is not helpful either. We need a balance of different intelligences a human being has. Only balanced systems are stable and can speed up in the required velocity.

### *How Can Balance Be Established?*

Let us assume the perspective of Computational Thinking. Humans are confronted with an increasing stream of large data volumes. The information enters our system mainly via physical sensors, such as the eyes, the ears, and the tactile system, along with related areas of our brain that associate meaning to the incoming data e.g., by translating physical data like pressure, light and sound into information. The information is then filtered or further processed. Some information is stored, other information is transferred to sub-systems in order to generate responses like a movement of the body, an emotion or the creation of an idea.

The entire system is very complex. To date, human mankind is not able to understand the details of all processes and interdependencies. By the way, this is one reason why AGI does not work yet.

Humans have to process those huge volumes of information without being able to fully understand them. This reflects a great ability of human beings: we can navigate in an environment that we do not fully understand, using a vehicle (body) and processors (mind, heart) that we also have a limited understanding of. What we need for good navigation, though, is awareness on a meta-level. We need awareness regarding the channels of incoming information, and awareness regarding the general functioning of the system inside us including its general interdependencies. In other terms: we need monitoring skills on an abstract level.

As mentioned above, from the perspective of Computational Thinking, we can identify at least three major sub-systems that define human beings, namely the mind, the body, and the heart. Each of these sub-systems is able to process information and to communicate with the other systems. And each of it comes with individual abilities and is specialized in processing certain information. It is obvious that the overall system works best if each of the sub-systems is able to do its job. Like any group of processors or any co-working team, each sub-system has to provide relevant information to the others and provides support if another sub-system is in danger of clogging or overheating due to heavy load.

If one part of the system is not working well due to overload, it affects the other sub-systems. The overload is spilling over. A break-down of the heart-system due to persisting anxiety, for instance, causes the mind-system to take over. Consequently, the mind system becomes congested and starts to malfunction as it is not made for heart-system tasks. The output of a stressed mind-system will be sub-optimal decisions, just to name one negative effect. If there is no system adjustment, none of the basic tasks will be performed properly, and the entire system will be nearly stuck. Unfortunately, this is the situation of too many individuals in today's world.

Against this background, it is paramount that we acknowledge the equal importance of all three sub-systems. There is no superiority or inferiority of any sub-system. All parts of the system need to be aligned in two ways:<sup>1</sup>

1. Positional alignment, i.e., we have to ensure that the three sub-systems are smoothly working in parallel.
2. Support, i.e., we have to ensure effective support or collaboration with the aim of co-creation.

Each sub-system plays its role to make the individual a unique human being. In order to best use the overall system, we have to be able to monitor our three sub-systems. Monitoring means

- To recognize and control each system;
- To track the status of each system; and
- To understand the communication and interaction tools of each system such as signals indicating noise or disturbances between the sub-systems.

In order to be able to perform those monitoring tasks, individuals have to develop self-awareness, or intrapersonal intelligence (Gardner, 1993). Monitoring is the basis for interventions in case of potential system malfunctions or misalignments. If misalignments are pronounced and persistent, they block the access to relevant information reducing the effectiveness of the overall system.

The monitoring goal is to safeguard the stability of the overall system. A stable overall system can combine information from all three sub-systems in unprecedented ways. This unleashes creativity. Creativity helps human beings to develop solutions for the grand challenges human mankind is facing. A stable system is crucial to deal with the vast amount of incoming information, providing sufficient space for reaction and action empowering individuals to enjoy life and shape our future. Moreover, a stable system greatly reduces stress that often results from being overwhelmed and feeling unable to act adequately in time.

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<sup>1</sup> This is in contrast to Kegan's development stages where he characterizes the social mind as being aligned in the sense of following external rules (Kegan, 1982)

How can we develop our systems to the point of alignment where human beings benefit most from being human? This is outlined below.

## THE ELEMENTS OF INNER ALIGNMENT

What kind of skills are needed to align the human mind-body-heart-system? Individuals need to acquire and expand:

- Self-monitoring competencies;
- Inner dialogue and communication skills;
- Computational thinking skills; and
- Immersive learning abilities.

Köster (2018) has developed a methodology including templates to be used for this self-exploration with the purpose to gain clarity about the bigger picture.<sup>2</sup> The templates help to structure the mapping process making it more efficient and effective.

### *Mapping Sub-System 1: The Mind*

Our mind communicates in thoughts. Typically, thoughts are evasive. We are not trained in tracking and tracing them. Yet, they keep us busy with constant mind chatter, occupying resources of our mind sub-system and consuming energy.

It might be most insightful to identify so-called thought carousels, namely loops of thoughts we do not want to think but can't stop thinking. They tend to come again and again, without any benefit. Being aware of these thought carousels gives us information about what pre-occupies us and has the power to bias, infect and even block other thoughts that could be positive and creative.

So-called tag-words support the tracking activities. We define words and phrases that we use in thoughts we want to identify, such as "...one has to...", "...yes, but...", "...all engineers tend to..." in order to get a clearer picture of our thinking habits.

The purpose of the tracking exercise is to collect as much information as possible in order to become more aware of the programs stirring our thoughts, so called mental models or beliefs. Mental models are shaped by our own experiences, the values of our parents and other family members, the belief system of the society we are born into, the dominating religion, the curriculum of the school and university etc. Growing up in a society means unconsciously uploading "mental programs."

By clustering our mental models, we get easier access to them and can bring them to awareness (Rao, 2006). Identifying and tracking our thoughts provides us with a map: we see what we are constantly thinking as the mind is constantly

<sup>2</sup> The entire set of templates for mapping the three sub-systems can be retrieved from <https://joy-academy.eu/en/resources/>

THOUGHT TRACKER LEVEL 1 – EXAMPLES

| Description of the thought                                                                 | What triggered this thought?                           | In what situation did this thought occur?                                      | Do you welcome this thought? Yes or no? Why?                                    |
|--------------------------------------------------------------------------------------------|--------------------------------------------------------|--------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
| <i>I have to mow the lawn.</i>                                                             | <i>Don't know.</i>                                     | <i>I was in my office – just about to start a new task<br/>I'm not fond of</i> | <i>No. It distracted me from the task.<br/>It took even longer to start it.</i> |
| <i>Hopefully my daughter has already done her homework by the time I'm home from work.</i> | <i>I was thinking about what I have to do tonight.</i> | <i>Lunch break</i>                                                             | <i>It was ok.</i>                                                               |

FIGURE 5.2. Thought Tracker Level 1

MENTAL MODEL SPOTTER – EXAMPLES

| How the world works                                                                                 | What is true about work                                          | What is true about personal relationships          | What is true about me                             |
|-----------------------------------------------------------------------------------------------------|------------------------------------------------------------------|----------------------------------------------------|---------------------------------------------------|
| <i>Over the next ten years, scientific progress will mean the eradication of terminal diseases.</i> | <i>My co-workers are always pleasant.</i>                        | <i>A good relationship means absolute honesty.</i> | <i>I am too old to learn.</i>                     |
| <i>Business is hard; only the toughest will make it.</i>                                            | <i>I don't have time to relax. I have to answer emails 24/7.</i> | <i>People are just taking advantage of me.</i>     | <i>Others won't accept me unless I'm perfect.</i> |

FIGURE 5.3. Mental Model Spotter

communicating. Unknown or hidden mental models pose great limitations to the mind system. They function like blinders. The mind mapping process facilitates the identification of those blinders opening up the mind system for new input. The mind increasingly processes information that is unknown thus extending the basis for potential innovation.

The thought maps help us to decide which thought patterns are useful, and which patterns would be a liability. We can identify more tag-words that work like a spam filter and gradually stop thinking thoughts categorized as spam, i.e., thoughts that take energy without contributing anything valuable. Soon we will realize that before we started the mapping process, the mental models formed unconscious barriers filtering our thoughts that did not match the mental models. Unconsciously held mental models kept us in pre-defined tracks. They guided our judgments and decisions.

With the use of continuous mind mapping, however, we are now enabled to extend the capacities of our mind processor. We can decide to go beyond existing mental models and open up for new perspectives, ideas and thoughts that come to mind.

In the various stages of the mind mapping process, individuals mainly develop intrapersonal intelligence, namely self-monitoring skills leading to enhanced self-awareness, sensitivity about inner dialogue via thoughts, sensitivity about moments of inner silence. These skills build the basis for extending the mapping activities to another sub-system, the body.

### *Mapping Sub-System 2: The Body*

In contrast to common belief, the body is a valuable source of information. Take the field of applied kinesiology: it deals with the body's intelligence, which is contained in each of its billions of cells. Whilst our minds are fed with information mankind has amassed over thousands of years, the body has saved information in its cells in a rather more intuitive way. Every cell nucleus contains the complete DNA with knowledge necessary to evaluate what is good and what is harmful for our entire systems (Lipton, 2016). With a simple muscle test, we can find out about our needs, not only in the physical but also in the metaphysical sense (Hawkins, 2014).

Typically, the mind system produces a lot of noise that overlays the other sub-systems. With the mind-mapping training, though, the individual is in the position of interacting consciously with sub-system number 2, the body.

This system has a different way of information encoding. Going back to the muscle test mentioned above, information exchange can occur through the reaction of an outstretched arm to pressure. Does the arm accommodate the pressure and go down or does it stay in the same position? Another form of body communication are different signals of indisposition. It can be well-known symptoms like a rapid heartbeat, cold hands, cold sweat and shivering or outright pain like a headache, muscular tension or eczema.

An untrained mind-system is typically not ready to receive subtle information from the body. The noise that is always there due to the unconsciously running programs and generated thoughts is just too “loud” and occupies too many resources. Thus, only very pronounced messages from the body come to mind. Moreover, the classical mind-system is result-oriented and thinks in terms of solutions: how to ditch the pain, to ease the itching, to release the tension. It is programmed to restore full functionality of the body as fast as possible. It does not see any purpose in investigating the reasons for the pain.

The trained mind-system acknowledges the information packages sent from the body-system and tries to use it as indicators for the mental and emotional state of the individual.

It makes sense to support the body-system with the conscious establishment of inner silence. The following measures are appropriate to give space for information exchange with the body-system:

- Sports with rhythmical contemplative movements (such as long-distance jogging);
- Abdominal breathing (e.g., practiced in yoga); and
- Introspection (such as meditation).

The mind-system takes the lead in acknowledging and structuring system interdependencies with the help of another template, the extended Thought Tracker.

### *Mapping Sub-System 3: The Heart*

The mind-system classically not only overrides the body-system, but also the heart-system. This is rooted in the mental programming of the era of industrialization, postulating the dominance of the mind. We are educated to deny or ignore our emotions, in particular in the business context, for the sake of professionalism and efficiency.

In reality, however, individuals are strongly driven by emotions. Emotions carry a vast amount of information. As they tend to hurt, we have developed the habit of suppressing emotions, especially negative ones with the effect that the information they send remains unaddressed. Even worse, this information undermines the entire system like a virus.

Therefore, it is paramount to make this information visible and integrate the heart-system in the overall system. This is best done with the help of the interactive mind-body-subsystems. The Thought Tracker Level 2, for instance, shows the interdependence between emotions, e.g., desperation, sadness, hopelessness, helplessness, rejection, worthlessness. Likelihood is high that those emotions are reflected in physical heart ache or stings in the heart area, wet eyes, and the stomach might feel like it is filled with stones. The trigger was a thought: “I am not sure how long I will have my job as an attorney. A neighboring law office has already introduced software that autonomously writes contracts.”

## THOUGHT TRACKER LEVEL 2 – Examples

| Description of the thought<br>(based on Thought Tracker Level 1)                                                                                                           | What emotions do you associate<br>with this thought?                                  | What do those emotions trigger<br>in you physically?                                                    |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
| <i>I am not sure how long I will have my job<br/>as an attorney. A neighbouring law office<br/>has already introduced software that<br/>autonomously writes contracts.</i> | <i>desperation, sadness, hopelessness,<br/>helplessness, rejection, worthlessness</i> | <i>heart ache, stings in the heart area, wet eyes,<br/>stomach feels like it was filled with stones</i> |

FIGURE 5.4. Thought Tracker Level 2

## INVENTORY OF FEARS – Examples

What am I afraid of? (situation / person etc.)

- Will I get a job again when I return?

What fears are related to this situation or person?

- Fear of unemployment
- Fear of survival
- Fear of being worthless without a job
- Fear of loss of identity
- Fear of being treated disrespectfully as unemployed

What can I do to reduce those fears?

- I can remember a positive experience from the past when I followed my partner on an assignment abroad. There I found a job in a very short time despite the unknown environment. Why should it be different this time?
- I can write down a list of all the competences I have and become more aware of these competences.
- I can increase my awareness of the variety of activities I can do.
- I can talk to people who have had similar experiences and ask for their advice. What did they do after their return?
- I can make progress with my self-development and discover new talents in me to extend my employment options.

FIGURE 5.5. Inventory of Fears

One kind of emotion is extremely strong turning the above-mentioned thought into a thought carousel: fear. Fears have the power of causing a breakdown of the entire system.

We need a comprehensive map of the heart-system, similar to the process of mapping the mind-system to prevent breakdowns, provide motivation and clarify needs.

### ***Reduction of System Interferences and Breakdowns***

If we think of thoughts and feelings as electro-magnetic vibrations, translated into more tangible information by the body-system, we can imagine the interferences created by undetected information flows between the mind- and heart-system. We have a lot of noise that causes minor and major disturbances of the overall system.<sup>3</sup> Only if we can identify the information streams, we can locate information blockages and restore information exchange between the sub-systems.

### ***Using Emotional Information for Motivation***

Negative emotions make sense. For instance, anger or rage can be turned into energy to move forward, decide, and stand in for one's own values. Negative emotions can be the source of inspiration such as sadness. Many artists were driven towards creativity out of a deep feeling of sadness or loneliness.

### ***Clarity About Own and Others' Needs***

There is abundant research about the relation between unmet needs and negative emotions, namely fears (Rosenberg, 2019). Individuals can use their negative emotions to dig deeper and investigate the underlying needs that are not met. There are so-called deficiency needs such as survival, belonging, and self-esteem (Maslow, 1968). If they are not met, the individual is blocked by anxiety (Barrett, 2019). It is important to recognize those relations in order to go beyond this "need trap" that prevents the heart-system from smoothly collaborating with the other sub-systems and to become familiar and act upon other needs belonging mainly to autonomy, i.e., self-regulation, self-expression, and self-realization based on the desire to be the creator of one's own life (Deci & Vansteenkiste, 2004).

The realization of autonomy needs is based on an aligned, integrated individual. Individuals only have access to self-realization if they run on aligned sub-systems. Aligned Individuals can exchange the information between their sub-systems in a reliable and stable way. The sub-systems are in a state of equilibrium that is able to re-establish itself in case of external disturbances.

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<sup>3</sup> The mind-body-heart system alignment only works for mentally healthy people. In addition to the tracking and mapping tools outlined by Köster (2018), there are techniques to help reduce the impact of negative emotions, especially fears, such as hypnosis and quantum entrainment methods. Basically, those methods help the individual with temporary access to his or her sub-consciousness thus facilitating the mapping process.

We can equate alignment with balance, a widely used ideal state across time and disciplines. More recent concepts in the business context build on balance as a critical factor for long-term success, such as the “Balanced Score Card” (Kaplan & Norton, 1996) or the triple bottom line, i.e., the balance between profit, people, and planet (Elkington, 1997). Physics teach us that if all forces influencing a system from inside and outside are balanced, the system is stable, or in other words resilient.

Resilience is what human beings need in VUCADD times. With increased velocity, Aligned Individuals can speed-up their mind-body-heart system effortlessly and with ease. This enables them not only to keep pace with their environment but to have a positive impact on it. Aligned Individuals are open and in constant exchange with their environment. They have overcome their fears regarding new technologies like AI and take the opportunity of using it to meet their autonomy needs.

The autonomy needs are related in turn with increased consciousness. At that stage of alignment, the individuals are aware of their inner flow of information, how they are programmed and how they are functioning. They can assume a meta-level and combine the information flows across their sub-systems to something new in a new way. This enhances their creative power—something AI cannot achieve at the current stage.

## LOOPS TOWARDS INNER ALIGNMENT

As the alignment process might still seem a little abstract, we will look at the example of Ronald to make it more tangible.

### **Ronald’s Alignment Process**

A trained controller, Ronald has made a successful career holding the position of vice president of an enterprise with 70 employees. He should be satisfied with his achievements, but he is not. He thinks: “I feel empty, without a goal—something is missing.” He perceives his life as hard and cumbersome, although he has everything he wants to have. Except: something that fascinates him.

The mind-system was talking very loudly repeating the same messages over and over:

*“Am I doing this in the right way?”*

*“Am I good enough?”*

He located a thought carousel and went on to identify the related mental models:

“I have to be perfect, but I’m not.”

“Life is hard.”

“I have to go through this.”

“If it’s not hard, it can’t be good.”

Ronald noticed that his mind-system was extremely active bombarding him with those negative thoughts that caused deep self-doubts. He was shocked at the intensity and negativity of the programs his mind-system was running on. It seemed like his mind-system had the goal of sabotaging him.

In parallel, his body-system indicated severe back pain over a longer period of time, motivating him to start with yoga practice on a regular basis. He became so fond of this practice that he invested considerable effort in a yoga teacher training. His body-system was happy because its issue, back pain, was solved.

For a long time, Ronald kept his yoga-life secret from his colleagues considering it his private affair.

Only when he entered the alignment process, he identified the mental model related to his behavior based on the conviction that private and business life must be separated.

He started to question his normality: did it make sense to compartmentalize his life? He went beyond his mental model and started to offer yoga classes to his colleagues, free of charge. They were enchanted and some started to share Ronald’s love for yoga. Ronald also noticed that his colleagues opened up towards more intense collaboration in various projects.

Switching off some filters of his mind-system brought Ronald more options and ultimately led him to introduce new rituals like the yoga morning in his company. The word was spreading fast about this unusual vice president augmenting the attractiveness of the company. This helped with employer branding.

Ronald made another discovery when he focused on his heart-system: as the mind-system reduced its interventions, he had a clearer view on his heart-system. Almost unnoticed, he felt a relief. Life has become more easy-going, less burdening. He had been longing for this relief for such a long time, as he knew that he had to get rid of this feeling of heaviness if he wanted to be more resilient and balanced.

The alignment process is a non-linear process. It occurs in loops denoted as L-Loops (Köster, 2018). The L-Loops describe the structure and the process of the mapping activities. They are a blueprint for self-regulation and guide individuals towards effective self-observation.

There are six loops. Each loop focuses on a main activity, defining sub-tasks of the overall process of achieving and strengthen inner alignment. At the beginning of this process, the first loop, Locating, and the second loop, Letting Go will be most prevalent. The primary function of the Locating task is to identify issues, i.e., misalignments, and to take the power out of them by becoming aware of them and deciding whether they should be kept for a certain reason or whether they have to be deactivated. Having gained experiences in performing these “operational” tasks, the individuals switch to loop three: Learning, which is more stra-

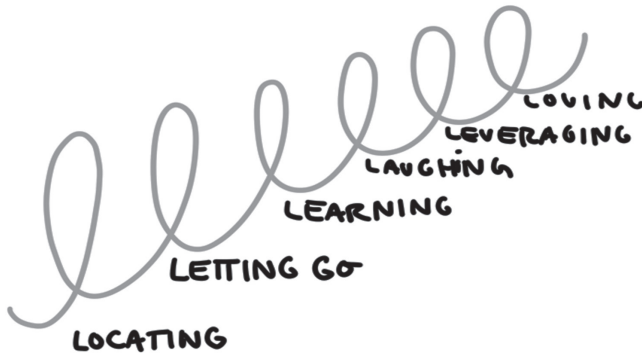


FIGURE 5.6. The L-Loop Process

tegic. The individuals reflect on their monitoring and deactivating activities and gain new insights. For instance, they identify interdependencies between certain issues and enhance their deactivation skills. Loop four, the Laughing loop, gives space and relaxation to “digest” the new information. It also comes with a change of perspective while looking at oneself from the outside and noticing the funny moments. Refreshed from the Laughing Loop, the individuals proceed to loop five, Leveraging, where internal learning is translated into different behaviour. The whole alignment process performed so far and the insights that were created on the inside become now visible on the outside. Others are most likely to notice qualities such as courage, open-mindedness, resilience, appreciation, focus, and action-orientation that are a side effect of the alignment process. In the sixth loop, Loving, individuals get absorbed by the joy the process gives them. They feel that their inner processes run more smoothly, that life is easier, new ideas come faster, physical and emotional health is more stable. They notice that their aligned systems produce better output—and they love it.

In short, the L-Loops are about:

- Locating self-limitations and interferences;
- Letting Go of mental and emotional patterns;
- Learning about one’s issues and patterns;
- Laughing about quirks and the funny side of life;
- Leveraging insights to changed behaviour; and
- Loving the entire process and the alignment status one has achieved.

This process supports individuals to combine mental, emotional and body intelligence thus enhancing resilience and unleashing their full creative power.

Understanding all three systems enables individuals to become fully aware of themselves having answers at hand to the following questions:

- How is my mind programmed? Which programs do I want to maintain? Which ones do I want to delete?
- Which mental needs do I have?
- How does my body interact with my mind and heart?
- What are my individual physical needs?
- What are my prevailing emotions?
- Which ones tend to dominate my state of being?
- Which are my main emotional needs?

Aligned Individuals know about their unique set-up in all three sub-systems. Having gone through the alignment process, the Aligned Individual is a human being with stable connections between all three sub-systems. Any impetus from the VUCADD world can be processed in parallel with all three sub-systems.

Aligned sub-systems are able to create ideas, services, products, art, anything new. To go beyond the existing system and create something new is part of innovation.

## IMPACT ON HIGHER MANAGEMENT EDUCATION

We need to shift our paradigm from standardized, hierarchical education with focus on the superiority of the mind-system to empower learners to develop into Aligned Individuals. Such a paradigm shift touches the purpose and the main protagonists (individual level and organizational level) of higher management education.

### *Change of Management Education Philosophy*

In analogy to the equal treatment of all three human sub-systems, management education has to comprise of the development of intellectual, emotional and body intelligence. It has to be holistic in order to be realistic. This is opposite to the past when we diminished the manager to a mere mind-system, making it easier for education, at the expense of unfolding the true potential of a human being. This long-held conformational bias towards the mental domain has caused the grand challenges as defined in the SDGs, especially those focusing on the effects of environmental destruction addressed in SDG 11-15 (United Nations, 2019b).

Developing Aligned Individuals meets the first principle of responsible management education: “We will develop the capabilities of students to be future generators of sustainable value for business and society at large and to work for an inclusive and sustainable global economy” (United Nations, 2019a).

Developing individuals towards Aligned Individuals is a life-long learning process that takes place in formal and informal learning settings, in on-the-job and off-the-job learning. Therefore, we need to consider management education in general as aligning, flexible, and transferable.

### *Change in Learners and Teachers*

Here comes the biggest challenge: developing Aligned Individuals is based on experiential learning. This means that the teacher has to lead by example in order to be able to authentically convey his or her own experience. It is insufficient to teach aligning the Mind-Body-Heart-System from a theoretical perspective. The knowledge aspects of the interdependencies and the alignment process can be taught in theory. The practical alignment aspects require first-hand experience.

Teachers need to be prepared to take the lead and become leaders. Leaders who demonstrate the following qualities, also referred to as CORAFA-qualities (Köster, 2019):

- **Courage:** to step out of their comfort zone and explore new territory, namely their entire mind-body-heart-system;
- **Openness:** to go beyond their mental programming and acknowledge equal importance of emotional and body intelligence to intellectual intelligence;
- **Resilience:** to ensure a stable system set-up inside themselves, and transfer this set-up to their organization;
- **Appreciation:** to be willing to exchange experience with the learners' community. Aligned Individuals grow in peer-to-peer experience exchange and network-based learning;
- **Focus:** to be able to focus on a single sub-system at a given point of time, to swap between sub-systems and to focus on the interface of the sub-systems with the outside environment; and
- **Action-orientation:** to constantly create new output with all three sub-systems smoothly running and responding to stimuli from inside and outside.

This set of qualities will enable individuals to successfully lead in a VUCADD world that is increasingly relying on Artificial Intelligence.

### *Change in Management Education Organizations*

Digitization, connectivity and above all AI brings disruptions to the field: traditional universities and business schools (public and private) will have to compete and coexist with new kinds of (management) education organizations such as online platforms (e.g., TechHippo, Coursera),<sup>4</sup> or consulting companies.

In order to be sustainably successful, they need to transfer the insights described in the paragraphs on the Aligned Individual to the organizational level,

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<sup>4</sup> TechHippo (<https://techhippo.org/>), headquartered in Europe, provides state-of-the-art online learning programs for entrepreneurs and intrapreneurs with the aim to augment skills on Data Science and Artificial Intelligence combined with leadership, management and self-development skills. Coursera (<https://www.coursera.org/>) headquartered in the U.S. is a global online learning platform with a broad range of short and degree programs. Both platforms collaborate with higher education organizations and other partners (SDGs 4, 17).

and adapt their strategy, structure, and culture to embrace AI on the one hand, and to leverage the impact of the Aligned Individual on the other hand.

They need to be able to (Erickson, 2019):

### ***Engage***

They need to convey meaning based on clarity regarding their own purpose and the purpose of their members

### ***Intrigue***

They need to ask unusual, inspiring questions that lead to new discoveries on a personal, organizational, and technological level

### ***Connect***

They need to build collaborative capacity beyond their organizational boundaries. Connecting diverse stakeholders for open innovation contributes to solving the grand challenges. AI might be facilitating this process.

Higher Management Education has to be strongly purpose-driven. Organizations need to be aligned in order to develop and deliver programs that support learners with their inner alignment. And they need to be disruptive by showing how AI can enable human mankind to enter the next level of being truly human.

## **FURTHER RESEARCH**

We do not have much time and need to accelerate insight generation. This means not only to change management education organizations but also to shift the research approach.

### *How To Do Research?*

Research in general is more effective if conducted by Aligned Individuals. Therefore, researchers should constantly strive to develop their CORAFA-qualities as a basic attitude.

To make research impactful and VUCADD-proof, we should form trans-disciplinary teams, if adequate on a global basis. We should focus on action-based research using agile methods to shorten research cycles. We should publish research results fast on online-platforms to facilitate networking and ensure fast dissemination of research results.

### *What To Do Research About?*

- Adaptation and further development of maturity models for individual alignment

To design higher management education in a modularized, individualized way, it is helpful to assess the alignment status of a learner. The state of inner alignment

is related to the state of consciousness. The state of consciousness is connected to the degree of self-awareness as described in section 5.

The founder of the field of integral theory, Wilber (Wilber, 2000) has inspired researchers in the field of development theory (Cook-Greuter, 2013) and consultants and practitioners alike to develop maturity or stage models (Barrett, 2010). Those frameworks categorize the individual's development stage towards greater awareness and integration about both, the inner and the outer world.

There is the need to extend those frameworks by insights from Computer Sciences with different purposes: on one hand, adding new perspectives that might generate new insights, on the other hand adapting those frameworks to the language and thinking of individuals with affiliation and affinity towards the field of technology.

- Open Digital Badges for state of inner alignment

Extended maturity stage models can be combined with research on new delivery formats such as Open Digital Badges that provide the opportunity of experiential learning on the job.

- AI and Consciousness

There is a bi-directional fertilization between insights on AI and insights on Aligned Individuals. In the state of alignment of all sub-systems, Aligned Individuals can tap into their full potential and realize their entirety from the monitoring meta-level. If we postulate that this state of self-awareness is consciousness, what can we transfer to AI? This is a contribution to the emerging field of consciousness engineering with a major application field in ethical behaviour of (advanced) AI. Or, as Schneider and Turner (2017) put it concisely: "The age of AI will be a time of soul-searching—both of ours, and for theirs."

## CONCLUSION

In this book chapter, we discussed the following main issues:

- Our world is increasingly technology driven with AI on the rise causing disruptive change for organizations and individuals.
- The nature of our global environment is characterized by volatility, uncertainty, complexity, ambiguity, diversity and dynamics, requiring new skills in decision making.
- Computational Thinking is increasingly important: on the one hand, it provides the underlying logic of AI thus contributing to a rough understanding of AI. On the other hand, Computational Thinking equips the individual with a set of tools and techniques aiming at effective logical problem definition and solving under uncertainty, including unpredicted changes.
- Human beings, especially decision makers, need to broaden their skills. On the one hand, they need to learn Computational Thinking to comprehend

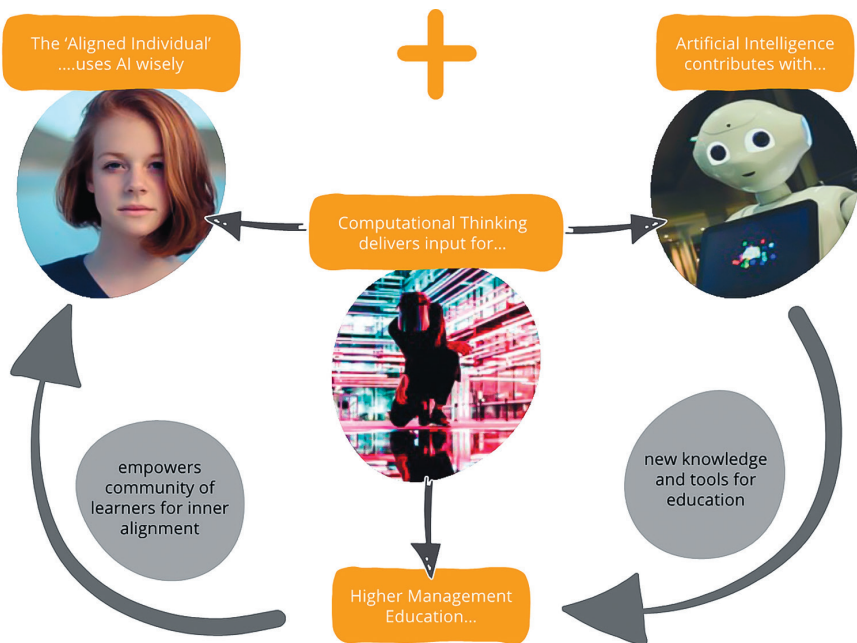


FIGURE 5.7. Summary

AI and the opportunities it brings. On the other hand, they need to use Computational Thinking and augmented self-awareness to align their inner processors, the mind-body-heart system in order to overcome fear of AI, and to be able to tap into their entire bundle of intelligences. Aligned leaders are more creative and inspire their followers to leverage their full potential.

- Aligned Individuals can change perspectives and look at AI and its development as a mirror of mankind leveraging society towards the next level of civilization where the grand challenges we are currently facing can be solved.

The skillset needed for leaders now and in the future comprises of:

- Self-monitoring competencies;
- Inner dialogue and communication skills;
- Computational thinking skills; and
- Immersive learning abilities.

Higher Management Education has to change if it wants to play a major role in developing those skills and remain relevant in the mid-term future. First, it

has to change its self-image and assume a broader view on the nature of education targeting at empowering people to develop diverse intelligences in diverse ways. Second, at least some pioneering groups among the teaching staff have to lead by example embarking on the path of inner alignment themselves because aligning the mind-body-heart system goes beyond theory and cannot be taught in a conventional way. Third, higher management education organizations need to become purpose-driven, network-based agile organizations that intrigue, engage, and connect—people and technology.

As any other technology, AI can be used or misused. If the development of human beings into Aligned Individuals keeps pace with the introduction of AI, probability is high that AI will serve human mankind and not destroy it.

In order to benefit most from the potential AI offers, we are well advised to do research about maturity models for individual alignment, creative learning formats for inner alignment, and consciousness engineering for the sake of furthering the development of both: AI and human mankind.

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