

SENSORY INTELLIGENCE: How the application of evolutionary abilities improves organizational performance

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Abstract: Sensory intelligence is the ability to capture subtle distinctions from objects in the surrounding environment on the basis of information delivered to the brain by the sensory system. The status of this human ability can be improved by dedicated trainings. Enhanced sensory intelligence contributes to the improvement of organizational performance as well as to the holistic progress of the individual.

Keywords: Sensory intelligence; senses; intelligence

JEL: M12, M14, M53, M54

1. INTRODUCTION

“To gaze is to think” is Salvador Dali’s subtle addition to the philosophical wisdom “Beauty is in the eyes of the beholder”. The history of homo sapiens is a tale of evolutionary inception and development of the human beings’ abilities. It has been a chain of replications which from time to time added some random genetic modification that gave its possessor and their descendants down the long chain of generations some competitive advantage in the process of natural selection – all the way until the present day. In practice, every breathing human being on planet Earth holds the package of winning genetic mutations that provide the abilities owing to which our specie has survived. We designate these abilities as *senses*.

An underlying hypothesis of the present study is that as a provider of information from the environment, human senses can be improved in terms of their ability to capture subtle distinctions and thereby have a positive impact on performance at work.

2. INTELLIGENCE

The ability to define and the ability to identify are two different skills. Although we may struggle with the definition of *intelligence*, we can comfortably regard it as *ability*.

Binet-Simon intelligence tests have been used to measure intelligence for more than a century¹. If the top performers in the beginning of the previous century were asked to answer the same questions in the beginning of this century, they would have been labeled as debilitated individuals, which was exactly the initial objective of these tests. Although in the course of his research work Binet found that there are various types of memories, the indisputably complicated intelligence tests today measure quite the same thing – mainly the logical-mathematical abilities. Although the linguistic part of intelligence tests is being expanded with the addition of elements which measure writing and reflection skills², this cannot alter their logical-mathematical nucleus. Neuroscience, which of course did not exist at the time of Binet, has found that the linguistic zones in the frontal and temporal lobes of the brain have a key role in logical deduction³. Although the titles of the various sections of intelligence tests have seen some diversification, the tests have remained quite straightforward in terms of what they actually measure. Thus, we proceed with our first definition:

Definition 1: Intelligence is the ability to solve problems posed in intelligence tests.

In the 1970's the psychologist Howard Gardner embarked on research in the area of developmental psychology and neuropsychology which culminated in the formulation of Gardner's Theory of Multiple Intelligences⁴. The theory is based on the biological origin of each problem-solving skill. *Intelligence* according to Gardner is man's cognitive ability described in terms such as *aptitude*, *gift*, *mental skills*, etc. It is the computational capacity for processing certain types of information. Gardner argues that intelligence is the biologically-based ability to solve problems and create products which are of value for a certain culture or community. Each human being possesses various intelligence skills to various extents and the combination of these skills determines his or her individual uniqueness. Early humanism transpires in this concept. Gardner's longitudinal research led to the definition of nine intelligence modalities⁵:

¹ The collaboration between Alfred Binet and Theodore Simon resulted in the development of the first metric scale, published in 1905, for the measurement of intelligence.

² Gardner, H., *Multiple intelligences. New horizons in theory and practice* (in Bulgarian), East-West Publishers, ISBN 978-619-152-452-5, 1st ed. 1993, Sofia, 2014, p. 14.

³ *Ibid*, p. 24.

⁴ *Ibid*.

⁵ In the original order, *ibid*, p.19–35.

1) Musical – the skill to perceive and create music. This skill is concentrated in certain areas of the brain located mainly in the right hemisphere. The biological role of music can be traced all the way from birds with their breeding songs to young babies who are sensitive to and influenced by music.

2) Bodily-kinetic – the skill to work with your body is best manifested in the modern world of sport. The main task of sport talent scouts is to discover children who outperform their peers in terms of physical skill off-hand, i.e. without the benefit of prior dedicated workouts. At the soccer teacher in one kindergarten said, “All of them played, but this one outplayed them all.” The same kind of skill is observed in children who successfully replicate emotions by mimics and movements. Certain genes survived in the course of evolution and bestowed on their holders the ability to escape, chase, climb or overwhelm some threat, prey or competitor, so those who performed better could pass on these skills to more copies of their descendant generations.

3) Logical-mathematical – as pointed out above, the ability to deduce patterns and conclusions is an important part of intelligence tests. According to Gardner, the phenomenal mathematical abilities in children are usually accompanied with instantaneous insights, which are very often inexplicable and intuitive, and provide convincing evidence of the better functioning of the frontal and temporal lobes which are responsible for logical deduction.⁶

4) Linguistic – the skill to understand words and combine them in grammatically correct and meaningful sentences is a widely encountered in language-gifted individuals. Most children in various cultures easily develop speaking skills and are great in expressing thoughts even before they learn how to write. Language intelligence is so deeply “engrained” in our brain that in his book Steven Pinker, when summarizing the latest scientific discoveries in the area of linguistics, experimental psychology, evolutionary biology and neuroscience named it *The Language Instinct* – an inborn ability of the brain developed in the course of evolution⁷.

5) Spatial intelligence refers to the skill of solving space-related problems. Typical examples are navigation, operating with thinking maps as well as the visualization and examination of objects from various angles. The site at which these spatial tasks are processed is located in the posterior parts of the dextral cortex. Gardner makes analogies with the skill of the blind to identify shapes by non-visual methods because they have been forced to disconnect their optical perceptions, as well as with the spatial intelligence of people with normal eyesight which is very often observed in visual arts.

⁶ *Ibid*, p. 24.

⁷ Pinker, S., *The Language Instinct: How the Mind Creates Language* (in Bulgarian), East-West Publishers, ISBN 978-954-321-314-6, 1st ed. 1995, Sofia 2007.

6) Interpersonal – the skill of recognizing differences in others. These may include various changes of mood, temper, wishes, motivations and particularly in feelings, and sometimes even concealed motivations and wishes. Successful therapists, coaches and teachers possess stronger interpersonal intelligence. This probably applies to medical doctors as well. Cerebral neurobiology puts this skill in the frontal lobes and its evolutionary manifestation is that we can perfectly tell between tears caused by some grief and tears irritated by onion. The biological basis of interpersonal intelligence evolves in well-developed emotional intelligence, the key ability of which empathy.⁸

7) Intrapersonal – the skill to understand one's own inner world, i.e. to identify, distinguish and label emotions, feelings and various inner perceptions. This is a powerful tool for managing one's own behaviour. While this intelligence modality is the most difficult to diagnose in the brain, researchers agree that its constituent neuron structures are the fundament of self-consciousness. Quite often, intrapersonal intelligence is in good accord with interpersonal intelligence.

The last two intelligence modalities were identified and added by Gardner and his team at a later stage.

8) Naturalistic – the skill to tell between various species. This is not limited to just biological species – plants or animals and the associated sounds and other traits – but also includes objects of the non-living world such as rocks, mountains or clouds. Our evolutionary history has been driven by two instructions encoded in the genes – survival and replication⁹. These two forces demanded exceptional faculties for identification of the opportunities and threats that were usually disguised in the surrounding environment. We are all descendants of “ancestors”¹⁰ who were very good at spotting predators or edible mushrooms. The brain is the carrier of these perfectly mastered abilities. In the modern world, they help us easily distinguish “at first glance” various brands of smartphones, vehicles or foodstuffs which appear almost identical. We should probably be grateful to intelligence modality for the most significant discovery and enlightenment which has been sending shockwaves across the world since 1859, the fundamental work „On the Origin of Species”¹¹.

9) Existential – the ability to ask and reflect on fundamental questions. Gardner described it as “the intelligence of big questions”¹² and formulated some of these questions: Why do we live? Why do we die? Where do we come from? What

⁸ Goleman, D., *Emotional Intelligence* (in Bulgarian), East–West Publishers, ISBN 978-954-321-888-2, 1st ed. 1995, Sofia, 2011.

⁹ Dawkins, R., *The Selfish Gene* (in Bulgarian), East–West Publishers, ISBN 978-619-152-627-7, 1st ed. 1976, Sofia, 2015.

¹⁰ Dawkins, R., *Ancestor's Tale: A Pilgrimage to the Dawn of Evolution* (in Bulgarian), East–West Publishers, ISBN 978-619-152-300-9, 1st ed. 2004, Sofia, 2013.

¹¹ Darwin, Ch., *On the Origin of Species* (in Bulgarian), Zakhari Stoyanov Publishers, ISBN 978-954-09-0469-6, 1st ed. 1859, 6th ed. 1872, Sofia, 2011.

¹² Gardner, H., *Multiple intelligences. New horizons in theory and practice* (in Bulgarian), East–West Publishers, ISBN 978-619-152-452-5, 1st ed. 1993, Sofia, 2014, p. 34.

kind of future awaits us? What is love? Why do we wage wars?¹³ These questions are beyond the reach of our perceptions and cannot be captured with our five senses. Neuroscientists continue to look for areas in the brain which these questions come from, but the fact is that, albeit rarely, they are asked by children at the age of six¹⁴. Howard Gardner cautiously described existential intelligence – the latest addition to his Theory of Multiple Intelligences, as „Intelligence 8½“.

As a sequel of the foregoing discussion we will provide our next definition:

Definition 2: *Intelligence is the set of biological potentials of human beings to process data¹⁵.*

Defining intelligence is a task often undertaken by authors of science fiction books. Steven Pinker¹⁶ believes that David Alexander Smith gave the most appropriate characterization of intelligence: *“First they need to respond to situations in some smart, but incomprehensible way. You should be able to observe the alien’s behaviour and say to yourself: I do not understand the rules by which the alien takes its decisions, but it does act rationally in accordance with some set of rules... The second requirement is that there should be something important for them. They should want something and pursue that thing despite all the obstacles.”* Rational decisions taken in accordance with a set of rules are decisions based on some antecedent of truthfulness¹⁷, meaning that there two criteria for intelligence – beliefs and desires. The next definition in our discussion is:

Definition 3: *Intelligence is the ability to achieve objectives despite the obstacles by means of decisions based on rational rules.*

Nobel prize winner Herbert Simon and collaborator Allen Newell added the element of assessment as a requirement which connects the setting of some objective and the execution of a sequence of actions aimed at the achievement of that objective. In actual fact, an assessment of the current situation is necessary in order to identify the gap between the current state and the desired states, while the objective-setting algorithm is aimed at achieving some reduction of that gap¹⁸.

The next definition of intelligence reads as follows:

Definition 4: *Intelligence means setting an objective, assessment of the current situation and a sequence of actions aimed at eliminating the gaps.*

¹³ *Ibid*, c.34.

¹⁴ Personal observations and interviews of the authors with preschool educators at kindergartens.

¹⁵ *Ibid*, pp. 35, 42, 46, 57.

¹⁶ Pinker, S., *How the Mind Works* (in Bulgarian) East–West Publishers, ISBN 978-954-321-932-2, 1st ed. 1997, Sofia, 2011, p. 93.

¹⁷ *Ibid*

¹⁸ *Ibid*, p. 95.

In his mentoring books Robert Kiyosaki, a preacher of financial literacy for children and popular author of bestsellers, provided a more straightforward definition of intelligence¹⁹, which will also be our definition:

Definition 5: *Intelligence is the ability to make subtle distinctions.*

3. THE SENSES – FIVE EVOLUTIONARY ABILITIES

The senses examined in the next sections are evolutionary abilities observed in the majority of species belonging to the class of higher vertebrates – mammal (Mammalia). In the various species however they are developed to various extents depending on the requirements in the course of their biological adaptation. Typically the various senses do not operate in isolation but with some dependences and links between them, meaning that we can generalize them as a sensory system, and when referring to man – the human sensory system.

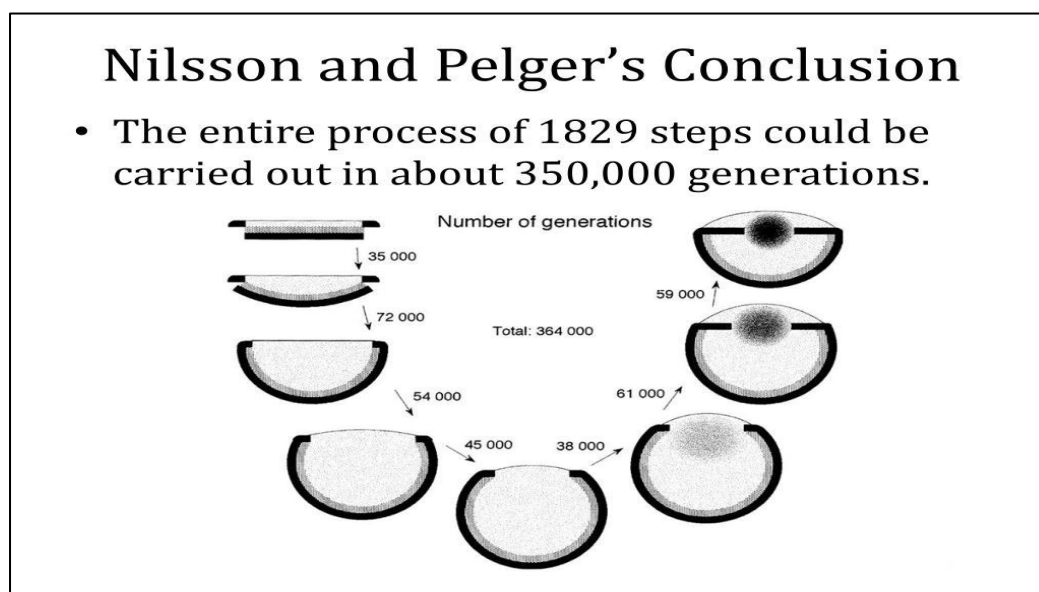
3.1. SIGHT (VISUAL PERCEPTION)

The external human organ for visual perception is the eye – a pair of eyes located symmetrically in separate spherical ocular voids in the skull. Visual perception occurs when a unit of light energy (photon) is reflected and triggers photo receptors in the eyeball, known as rods and cones, which transmit neural signals to the brain. The eye with its “unnatural” complexity has been a favourite theme of creationists. Computer scientists Dan Nilsson and Susanne Pelger have emulated a virtual plaque made of three plies of skin – an exact replica of the photosensitive spot in a rudimentary organism (Figure 1). The first ply consists of pigmented cells, the second one of photosensitive cells and the third one is made of semi-transparent cells which form a protective coat. All cells were able to undergo minor mutations which affected their thickness and size, and at each mutation cycle the computer program selected and kept for the next cycle the mutations which improve resolution. Similar to a genuine evolution, there was no plan to steer the project and accordingly there wasn't any designer. The results demonstrated that the transformation of flat skin into a sophisticated eye took less than 400,000 generations, which is only an instant from the perspective of geological time.²⁰ Thus, Nilsson and Pelger slapped loudly both cheeks and even the neck of creationists with the conclusion that origination of eye is inevitable as long as the evolution occurs in an environment of light.

¹⁹ Kiyosaki, R., Sh. Lechter, *Rich Kid, Smart Kid* (in Bulgarian), publ. Anhira EOOD, ISBN: 954-9882-26-8, 1st ed. 2001, Sofia, 2004, p. 29.

²⁰ Pinker, S., *How the Mind Works* (in Bulgarian) East-West Publishers, ISBN 978-954-321-932-2, 1st ed. 1997, Sofia, 2011, p. 219-220.

Figure 1 : Number of generations in the evolution of three-ply skin into an eye
(virtual simulation)



Source: Nilsson and Pelger

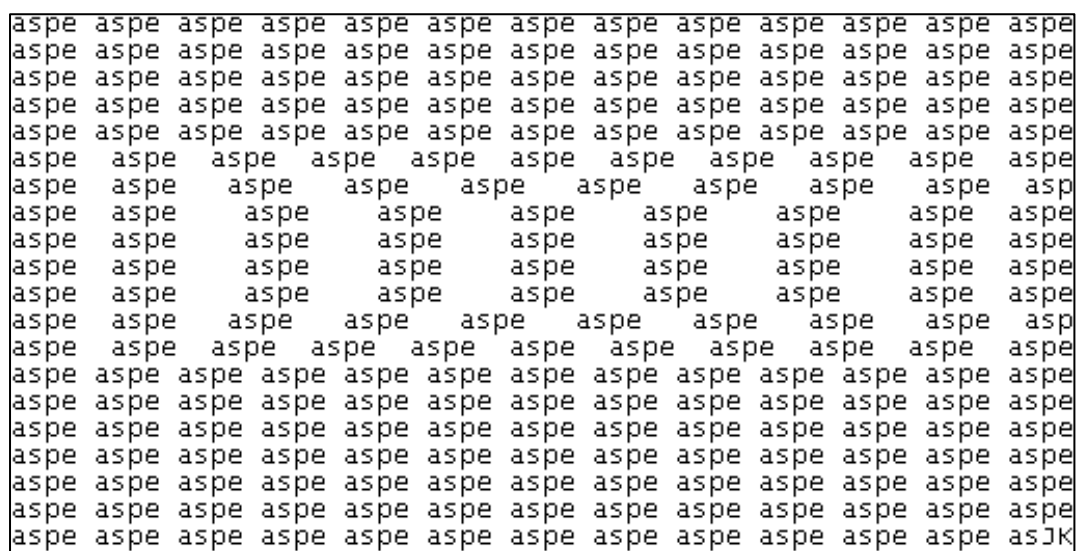
While light is indeed the practical condition for us to be able to see, more important in this case is that through the ocular nerve the eye 'prints' in the brain the image of the reality we are looking at. The interplay between thinking and seeing underlies our ability to create mental representations.²¹ As the two eyes watch some object, they project in the brain two images which are not identical. (This is easy to check. When we look at an object with one eye and then with the other, the object will somewhat shift, i.e. what we see are two different images.) The evolution of this 'binocular vision' has resulted in the ability to perceive the three-dimensional world, known as *stereoscopic vision*.²² Stereoscopic vision is the reason why we manage to insert a key in a keyhole or avoid spilling a cup of tea (most of the time). Stereovision attracted much attention in 1920's on the wings of a mania about the so-called stereograms – seemingly homogenous images composed of tiny repetitive elements. A search by *magic eye* in the Internet will return plenty of these images. The magic thing about stereovision is the ability of our brain to infer the distances between the points of the uniform elements of the image. Smaller distances make the brain decide that the object is close to the eye, while longer distances shift the object backwards from the eye. Most people are able to master the stereovision skill after some brief exercise, which essentially consists of looking at the image with unfocussed eyes, i.e. gazing at some plane which is anterior or posterior to the observed plane. Figure 2 depicts a stereogram with repetitive four-letter elements. The distances between the

²¹ *Ibid*, p. 238.

²² *Ibid*, p. 289.

elements in the middle are visibly larger which will make the rectangle shaped by these elements exhibit a stereo effect by shifting backwards, i.e. larger spaces between the points make the object appear located at a larger distance from the eye. In fact on each side of the four rows with equal spaces there are two rows with diminishing spaces.

Figure 2: Stereogram



Source: Internet

This skill causes astonishment in everyone who sees the “floating” images for the first time. This astonishment has its explanation in evolution. One essential trait of the living world is camouflage in nature. The survival of our specie hinged on the ability to make subtle distinctions, e.g. to distinguish between some tuft of yellow grass and the back of lion or between a turtle and stone. Falling from heights can be fatal, so our life on the trees depended on the ability to determine the distances between various elements in homogenous patterns of tree leaves. The identification of camouflaged military equipment from the air was one application of stereovision during World War II. Evolutionists describe stereovision as a triumph of nature comparable to engineering excellence which used sophisticated optical theorems for the purposes of modern aerial reconnaissance.²³

3.2. OLFACTION (SENSE OF SMELL)

The olfactory sense determines the types of the substances around on the basis of the smell they spread in liquid or gaseous environments. The external organ for this is the nose which is connected to the nasal void. The captured molecules of smell are transmitted through specialized neural paths to the brain where, similar to

²³ *Ibid*, p. 315-316.

the sight function, they are processed and stored in an olfactory memory. Our emphasis is again on the ability, developed throughout the evolution process, of making subtle distinctions; the anatomy of olfaction is beyond the scope of this paper. We can recall the smell of mown grass or burning candles just by imagining them. The olfactory identification of rotten meat and ripe figs has historically been a genetic advantage for the possessors of this ability. Stink and scent are labels of smells depending on the utility of their sources, and evolutionary selection has imparted in our genes olfactory emotional stamps – sickening aversion to the first and delightful desire for the latter, with a wide fan of nuances in between.

3.3. HEARING

Hearing is the ability to perceive sounds through the pair of outer and inner ears. The external organ is a pair of pronouncedly folded auricles located symmetrically on each side of head. According to some hypothesis the bizarre folds serve to identify the vertical position of the sound source. If you live mainly between tree branches, you are less likely to be bitten by a snake when you are good at instantly hearing where the hissing comes from – above or below you. The neurobiology of the hearing system transmits the sounds to the brain where they are received and can be stored in the form of memories. Incoming sound waves are transformed in information about the source of these waves. An average human individual can capture sounds in the wavelength range of 20 Hz to 20 kHz. More important in this case is that our brain is happy when it successfully distinguishes audible signals from important objects, e.g. vibrant strings or beaten drums in modern times or roaring beasts in the past. The skill to subtly distinguish various overtones helped our ancestors estimate the size of the resonator box which produced them and thus figure out whether it is roaring lion or a calling fallow deer. In ancient times it was our hearing that helped us estimate from a decent distance the size of some predator or prey.

3.4. TASTE

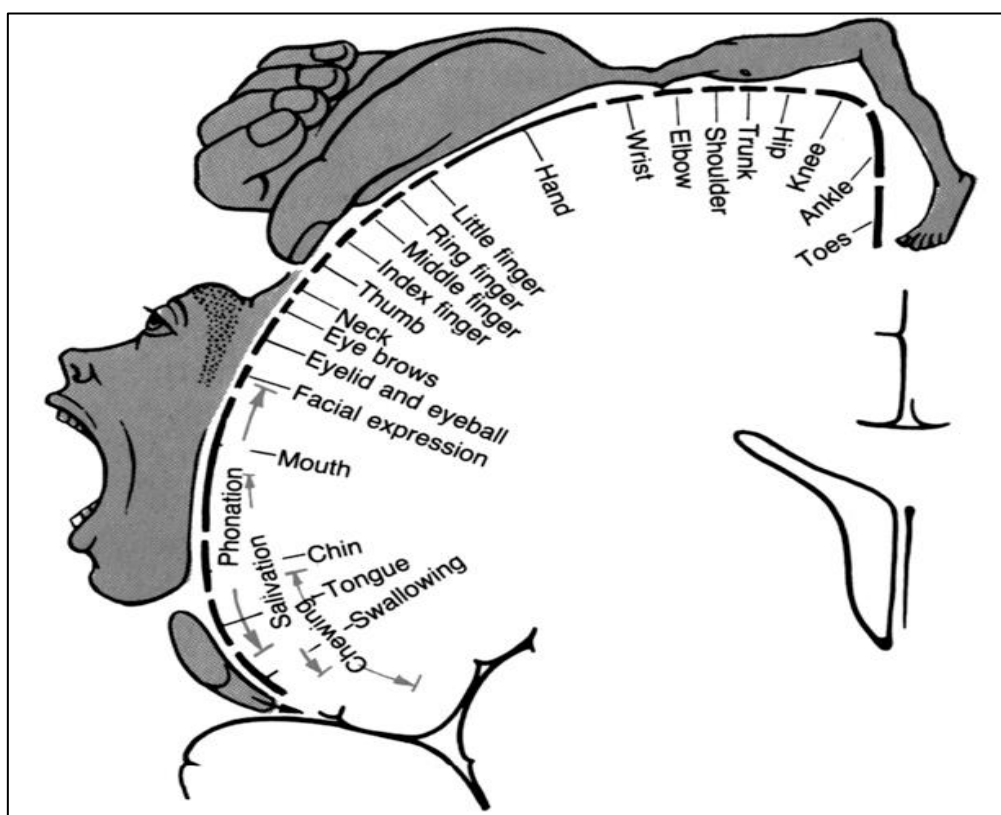
Taste is the ability to sense the environment through stimulation of taste receptors in the oral cavity, mostly on the tongue. Enclosed in various buds, warts and papillae, these receptors transmit the captured information to the nervous system where it is processed. Olfaction also play some role in the identification of various tastes, but that role is very limited. We can distinguish much more smells than tastes. Salty, sweet, sour and bitter are the basic tastes and are felt mostly with the tongue. Astringency, hotness, coldness and oiliness are more rarely sensed and difficult to distinguish in moderate concentrations. We can say outright that a pomelo fruit is both bitter and sweet, but need to ponder about astringency. It is exactly the pondering process which retrieves gustatory memories stored in the brain. Fortunately, we live in times of culinary abundance with a promisingly burgeoning

wealth of tastes. This is not due to the availability of more products, but to the recombination of these products. Matt Riddles simplifies the actual situation by presenting 10,000 different meals that are possible to make only with 10 types of meat, 10 types of vegetables, 10 condiments and 10 different recipes.²⁴ There is little risk that one day we become bored of monotonous food.

3.5. TOUCH

The sensory ability to read information by the touch and feel of an object is also known as sensation or tactility. Stimulation by friction, compression or touch occurring at our bodily border, mainly the on the skin, is captured by nerve endings spread (albeit unevenly) across the entire surface of the body. The densities of the various neuronal clusters on the surface of the human body have been charted by Wilder Penfield, a Canadian neurologist. Penfield created two charts. The first one (Figure 3) presents the relative size of the brain areas responsible for sensations from the corresponding parts of the body. The second one (Figure 4) is an imaginary body the parts of which are sized in proportion to the brain parts associated with tactile sensations.

Figure 3: Parts of the brain associated with tactile sensations at various parts of the body

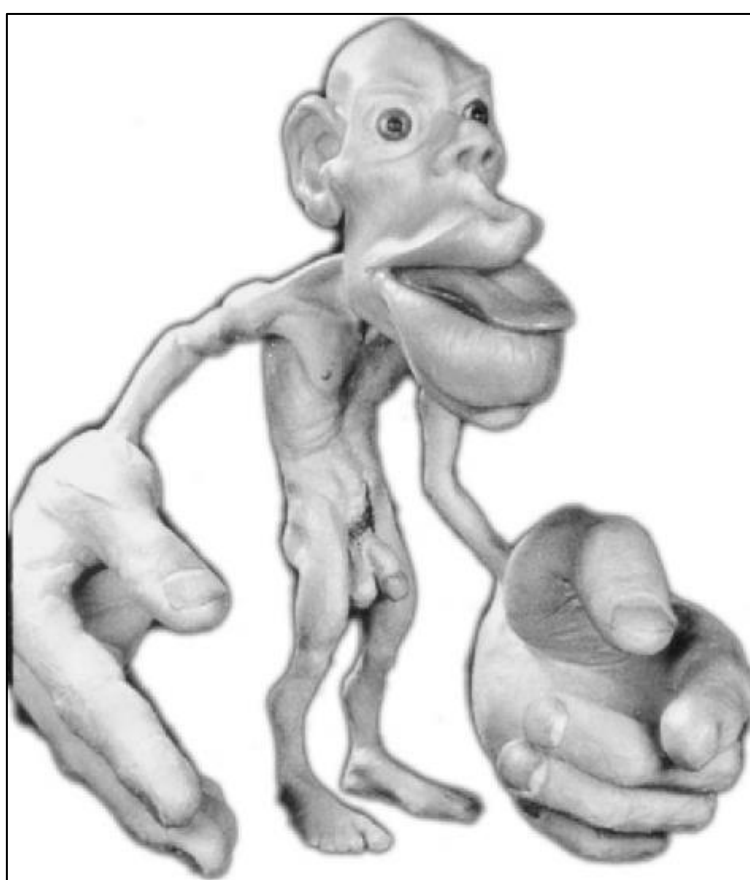


²⁴ Riddley, M., *A Short History of Innovations* (in Bulgarian), publ. Ciela Norma AD, Sofia, 2020, pp. 170–172.

Source: Penfield and Rasmussen

We can clearly see how important are the face and the parts that control the jaws, but what really astonishes us in the two charts of Penfield is the human hand. Figure 3 presents the hand proportionately to the amount of brain it takes to control it. If we are to select the part of the body which is best at tactile sensations, the hand is the clear winner.²⁵ A popular wisdom which Bulgarians say when they are distrustful of something is *“Let the eye see it and let the hand touch it”* (for me to believe it). It seems this wisdom has scientific verification in the form Penfield’s homunculus.

Figure 4: Penfield’s homunculus



Source: Wilder Penfield

The conclusion from the presentation of the five senses is that the sensations resulting from their functioning project in the brain images of the world. If we recall the following three aspects of the foregoing discussion: i) Definition 5 which says that intelligence is the ability to make subtle distinctions, ii) the five evolutionary abilities – the human senses by which we explore the world and memorize it in the brain and,

²⁵ Dawkins, R., *Ancestor's Tale: A Pilgrimage to the Dawn of Evolution* (in Bulgarian), East-West Publishers, ISBN 978-619-152-300-9, 1st ed. 2004, Sofia, 2013, p. 295.

iii) the evolutionary process of projecting the subtle distinctions in the brain and the advantages it provides in terms of genetic survival and replication, we can formulate the following concept:

Sensory intelligence (SI) is the ability to capture distinctions in the images projected in the brain by the functioning of our evolutionary senses.

Our scientific searches revealed that our conceptualization of SI is unmatched in the published literature which allows us to tag it as a conceptual archetype.

The next part of this paper will present SI from the perspective of the present day: how does it look like, what is its snapshot today; how do we define SI, the place and significance of SI in an organization as well the impact of SI on individual performance. We will dwell on the following concepts, assumptions and hypotheses, which equally form the logic of this study:

- Senses are an evolutionary developed powerful provider of information to the brain;
- Our individual performance nowadays depends on how we can access, process and make use of that information;
- Sensory intelligence is the skill of making subtle distinctions through our evolutionary sensory abilities;
- In the contemporary world senses are somewhat “muted”;
- Sensory intelligence can be improved by means of controlled activities which invoke stress;
- A controlled stress activator is an individually designed task which requires skills beyond the current ones;
- Improvements of sensory intelligence lead to improvements in individual performance.

This architecture points to three episodes: The first one is *evolutionary* – senses deliver to the brain for further processing information from the environment which is perceivable by the human sensory system. The second episode is *contemporary* – the operation of senses is limited, therefore the information is reduced and accordingly the ability to make subtle distinctions (SI) is weak. Finally, the third episode is about *progress*, mostly from an organizational perspective – dedicated trainings based on controlled stress activators. The last statement needs some clarification. In order to improve its performance, the “Human being” system must hoist itself beyond the boundaries of its own abilities. Although this is crucial for the individual’s holistic progress, it is often perceived as something stressful and the brain tries to avoid it because to it is something detrimental, and indeed it was detrimental in ancient times. The realization of evolutionary potentials occurred only under the pressure of survival. Until now. People can challenge their muscles and brain to the limit of their abilities or even try to exceed the limit at their own choice.²⁶

²⁶ Kotler, S. *The Rise of Superman: An Incredible Study of Ultimate Human Performance* (in Bulgarian), Vakon Publishers, ISBN 978-619-240-002-3, 1st ed. 2014, Sofia, 2020.

When the workload, e.g. the solving of some activator problem, exceeds one's existing abilities, this is stress. When the difficulty level is determined with reference to the skills to be applied, this is controlled stress. When the controlled stress is appropriately dozed, this is optimal experience which Csíkszentmihályi designates as flow – “*the state of being immersed so deeply in one's occupations that nothing else seems to matter; the experience itself is so delightful that one is willing to apply huge efforts in order to experience it again*”.²⁷ Thus, individual sensory intelligence can be strengthened by specific customized workloads (trainings) which exceed the existing skills (methodologies) for the purpose of improving the individual's performance at work (progress).

4. SENSORY INTELLIGENCE – METHODOLOGIES AND TRAININGS

Given that the senses presented so far are adapted evolutionary abilities for sensing the world, the very improvement of these abilities relies on the same mechanism, i.e. adaptation. Even more so, there is some constant and even progressive tendency of becoming increasingly better in the process of evolving. Richard Dawkins called this metaevolution *evolution of evolvability*²⁸ and added in his genuine style that the existing species descend from ancestral species which had evolutionary talent²⁹, wittily described by Dawkins as “pregnant with evolutionary potential”.³⁰ But, evolution is blind. Thus, random mutations which had some superior and positive application in random events and at random times, that is the species that have survived to the present day, are less than 1% of all species that ever existed. In the end of the day, almost every mutation had a negative impact on the competitiveness of its possessor.

The design of organizational methodologies for the improvement of individual sensory intelligence at organizations relies on one fundament – continual improvement of the ability of senses to capture subtle distinctions by proactive application of controlled stressors. In other words, constant, linearly increasing workloads which develop the sensory system. Or, if we cast a wink at Dawkins, rather than promoting pregnancy with evolutionary potentials, we aim to enrich the hibernating sensory abilities. *Linear* as opposed to *exponential* indicates that workloads are increased in small increments, i.e. by addition rather than multiplication.

It emerged that the field for the application of training opportunities aimed at improving individual sensory intelligence within organizations is very vast. Sensory stimulation may be found in any situation by which we sense our surrounding

²⁷ Csíkszentmihályi, Ch., *Flow: The Psychology of Optimal Experience* (in Bulgarian), Hermes Publishers, ISBN 978-954-26-1561-3, 1st ed. 1990, Plovdiv, 2016, pp. 12–13.

²⁸ Dawkins, R., *Ancestor's Tale: A Pilgrimage to the Dawn of Evolution* (in Bulgarian), East-West Publishers, ISBN 978-619-152-300-9, 1st ed. 2004, Sofia, 2013, pp.734–735.

²⁹ *Ibid*, p. 736

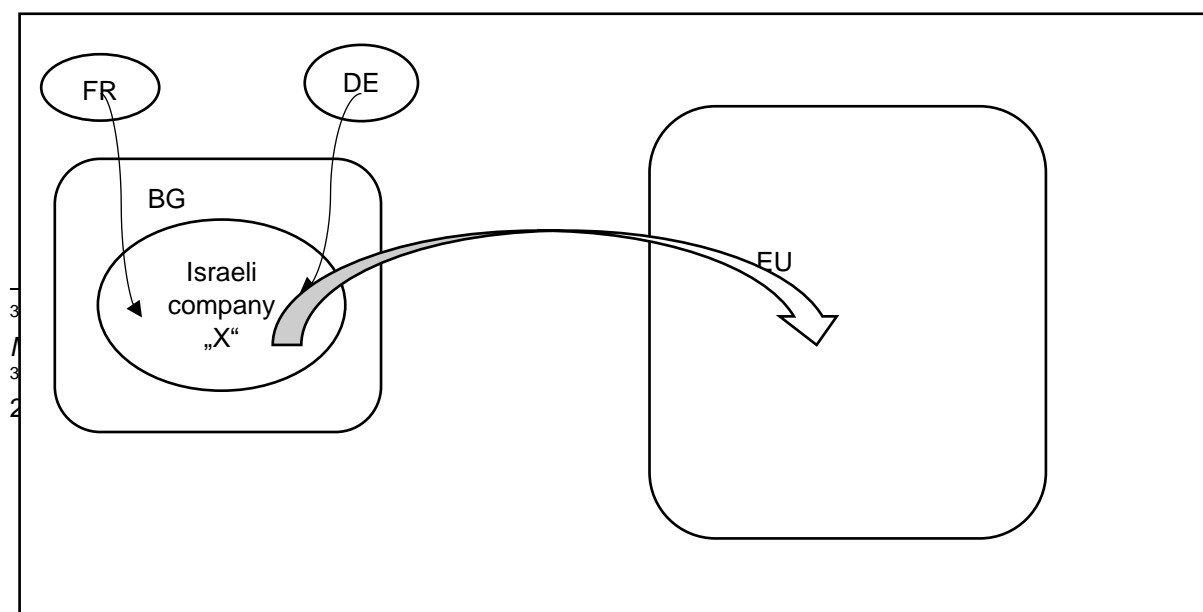
³⁰ *Ibid*, p. 738

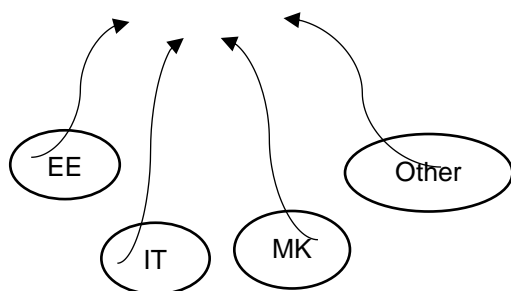
environment. In the next pages we will present trainings which have been applied at real organizations as well as the results in terms of the impact of these trainings on organizational performance.

The comfort we had to approbate trainings at Center Stars (CS) – an organization which recruits personnel for various language-intensive positions, in particular at call centers – was crucial for this study. The business of this type of organizations is to recruit candidates for certain jobs specified by the employer. The cultural diversities in these situations are kind of wickerwork at national and organizational level. An example: an Israel-based company “X” has a site in Bulgaria which serves clients in the EU. The company “X” is recruiting Bulgarian and international candidates with various backgrounds and has its own organizational culture (Figure 5).

The correct identification of an appropriate candidate for each organizational role requires transnational communication and knowledge of national and organizational cultures, so CS was the perfect site for our study. The various countries have various national cultures with different degrees of proximity to the various cultural metrics³¹, and language is a mirror of their values. Better knowledge of national cultural values on one side and of the organizational values on the other side provides better service to the requirements of a personnel recruitment organization. Understanding and matching the emotional worlds are also highly important.³² It can be generalized that good knowledge of transcultural values provides a good ability for “gearing” the appropriate characteristics of the candidates to the requirements of the organization and delivers benefits such as motivation and commitment, reduction of staff turnover, reduction of learning and training costs, improvement of the organization’s image and so forth. From the perspective of the employees responsible for the recruitment of personnel, this translates in professional excellence which has direct impact on wages, and leads to improvement of the individual’s performance and higher levels of satisfaction. The improvement of sensory intelligence is a way of improving the understanding of objects which are gauged through the information captured by sensory perceptions. The above represents an organizational methodological structure and its manifestation logic.

Figure 5: Example of national and international links at a cultural level





Source: proprietary

The sensory intelligence enhancement trainings which will be described below were conducted in the period March 2019 – September 2020 at the host organization mentioned above. The trainings were aimed at improving the engagement level of language recruitment professionals and were based on the authors' understanding of sensory intelligence as the skill of using evolutionary sensory abilities for making subtle distinctions.

Language recruitments are carried out in an environment of transnational communications. The knowledge of cultural differences enriches these communications. The main objective of our sensory intelligence trainings was to develop abilities for distinguishing cultural differences through the senses. In order to appropriately set up our trainings we sought advice from leading experts in various areas and tried to design mostly organizational experiences and ensure that they are engaging, inspiring, diverse and gamified.

Training 1: Cultural Atlas of the World. At the center of the office space we installed a huge administrative map of the world in which all countries are presented with different colours. In the course of the working day someone randomly picked some country – one at a time. For the benefit of the organization that was a country related to its main business. A team member was asked to come up and present to the team as many cultural characteristics of that country as possible. In practice it was a brief presentation which brought many differences to the attention of the listeners. The speaker and listener roles were rotated all the time and sometimes audiovisual recording devices were used to help improve presentation skills.

Training 2: Aroma. For the setup of this training we consulted a leading Bulgarian producer and exporter of the famous rose oil and a range of other essential oils. In appropriate combinations, some of these products can be used for the increasingly popular aromatherapy. It turned out that spraying aromatic molecules in an habitable space delivers not only the delightful scent of some essential oil. When inhaled through the olfactory system these natural aromas have a positive impact on the emotional state of people. Their refreshing, stimulating and activating effect is straightforwardly related to the individual perception of happiness. Furthermore, the aseptic properties of essential oils added to their attractiveness, especially in a

pandemic environment which is highly sensitive to the theme of Covid-19. The particular training of the olfactory sense occurred through spraying in the workspace aromatic molecules of essential oils derived from various plants such as white pine (*pinus silvestris*), juniper, lavender and spearmint, which then had to be correctly identified by the trainees.

Training 3: Sensory Intelligence in Non-Urban Environment. That training was designed as a teambuilding activity. It was largely gamified and relied on comprehensiveness by using opportunities provided in the natural environment for engaging multiple senses. The non-urban environment requirements were perfectly met by mountain Vitosha near Sofia. Several SI development objectives were set: a) hearing – capture and if possible identify the sources of various natural sounds. To this activity we added some competitive element (a variant of this training is asking the trainees to identify urban sounds in nature and vice versa, natural sounds in the city); b) vision – observe leaves, crowns and barks in order to identify various tree species, including trees with strong similarities such as pine, spruce and fir (in appropriate conditions the observations can be focused on animals, birds or soils, and again, this activity can also be staged in some urban environment); c) olfaction – distinguish between several species of coniferous trees by the smell of their needles and d) touch – trainees were asked to accurately determine the temperature of the water in a mountain river, which we had measured in advance. Later on we found that this type of training can take place in almost any thematic environment.

Training 4: Wine Evening. Obviously, the main objective of this training was to enhance gustatory intelligence. We made the necessary arrangements with an expert who is a sommelier and owner of wine boutique, and organized a lecture and tasting of wines suitably garnered with appropriate food. The main focus was on the identification of various flavours embodied in wine – leather, toast, citrus, wood, honey, vanilla, etc., and of the geographies which these flavours stem from. (Similar arrangements have been made with a perfumery boutique where trainees will be asked to capture nuances in the composition of perfumes in order to stimulate their olfactory intelligence.)

Training 5: National Cuisine. The practical objective was not so much about the identification of various tastes in the food. The actual focus was on capturing the specificities of the various tastes and on the identification of the national culinary characteristics which drive those tastes. The various cuisines were selected on the basis of the nationalities represented in the competition (see below) so as to improve the understanding of national specificities and thereby the performance of the teams. This had a strong positive impact on the marketing performance of the company.

We should note that these trainings were not ad hoc events and that the incoming information was processed on a daily basis. The process involved comments, repetitions, fine-tuning, etc., which ultimately led to improvements. Many of these trainings were supported with brief office activities to help memorize SI concepts. For

the sake of truth we must admit that not everything was accepted willingly and that resistance was a travelling companion of SI ideas – a genuine challenge to managers. The strongest momentum came from subsequent positive impact on individual performance. So much about organizational culture.

Since the objective of SI is to improve results, we will now present

5. THE RESULTS

We were fortunate enough to get the perfect chance. The language recruitment company Center Stars were working on a project for an international client with operations in 15 countries. The project was about setting up a language center for servicing customers and CS had to recruit and deliver 150 candidates for that center. It turned out that the project was a replica of a previous project which CS had already completed for the same employer, which made us, the researchers, quite happy because these were twin projects: the project team, the terms of the recruitment competition, the requirements to the candidates, the timelines, the wages, etc., everything was the same. The only difference were the sensory intelligence development trainings conducted at Center Stars. In the aftermath of the set of activities outlined above we measured the following results:

- *30%³³ is the increase of the number of candidates willing to commence the recruitment process.* These are people willing to proceed with the recruitment for the positions offered by the employer and means that owing to the SI-impacted marketing of CS for every ten candidates in previous projects there were three additional candidates. We strongly believe this increase is largely driven by the improved ability to comprehend national distinctions, as translated in all communications addressed to the market.
- *25% is the increase of the recommendations from candidates who are already in the recruitment process.* A recommendation from someone who is undergoing the recruitment process or has already been employed is a highly desirable element. This is a personal recommendation which is free from any camouflaged commercial intents, hence it creates a high level of trust and strong organizational image. These candidates are best convinced and prepared to continue working.

The above percentages, resulting from the application of SI at CS, delivered the following realities to the organization:

- 80 000 is the number of people reached by the organization – an increase by a factor of 2 owing to the delivered campaign. Of these 80 000:
- 25% visited the announcements of the company. This behaviour is also desirable because it creates detailed understanding both of the vacant position and of the organization's values. The proactive searching for

³³ In order to make the percentage values more expressive, we have rounded the numbers to the nearest integer by applying a negative offset (<5) or a positive offset (≥5), as the case may be.

information “by one’s own intent” has advertising and image-related effects, among other upsides.

- 531 is the number of received applications from candidates willing to undertake employment in the offered positions. These applications come from people who have expressed strong wish for the jobs and will take part in the next phases of the process up to receiving a job offer. These are profiles which the recruitment professionals actively work with. This is clear evidence of improvement.
- 172 candidates were presented to the employer organization as appropriate ones.
- 55 candidates received job offers.

The above means that the success rate is in the range of 32% or three times higher than the usual rate. (“Success rate” here is the ratio between a) the number of candidates who received job offers and b) the overall number of candidates presented to the employer as appropriate ones. The usual ratio is roughly 1/10 or 10–11%). This is unambiguous evidence of the strong impact of SI: sensory intelligence has promoted a) better of understanding of the specific personnel requirements of the employer, b) better understanding of the candidates’ skills and expectations, and c) the ability to match a) and b).

5. CONCLUSION

While information about the surrounding world is processed by our brain, that information is delivered by our senses. The ability to discover distinctions is an essential characteristic of intelligence, while senses are able to make those distinctions and, more importantly, that ability can be improved by training. The present study conceptualizes sensory intelligence as the ability of the human brain to identify distinctive features of surrounding objects on the basis of the information about these objects delivered by our senses. Furthermore, our study confirmed, by experiments and by registering and benchmarking the results from these experiments, the hypothesis that the enhancement of SI is a factor for improving the individual’s performance at work. We believe that by unfolding its potentials SI adds value to the holistic progress of the individual. This paper presents a set of practices (trainings) designed to enhance SI and demonstrates their impact in a particular organization, which ultimately translates in higher values of the organization’s final results. While the study is not shielded from errors and involves a high risk of errors, especially in its quantitative aspects, its merit stems in the opening of a wide field for subsequent scientific research and experimentation at organizations.

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