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AFTER GERMANWINGS:

THE LIFE OF AN AIRLINE PILOT

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will to vary the everyday routine and to look for new acquaintances, is the other side of the coin of stability and sedimentary certainties. These two tendencies are ingrained in the human being, although with individual differences. Everyone seeks a balance between stability and innovation, between security and challenge and between shelter and hunting. This intrinsic human ambivalence is rooted in our DNA both at the evolutional level of the species (phylogeny) and at that of the development of an individual personality (ontogeny).

In fact, on the one hand as biological organisms we are heirs of an evolutionary process, which has enabled some arboreal beings to descend into the savannah, organize themselves into groups and societies and transform their own environment, together with their own cerebral and psychological structure. These reminiscences of the evolutionary past, however, still lie in our cranial box. On the other hand, besides biological factors affected by millions of years of evolution, individuals develop by increasing their capacity to release, organize and express their energies and capacities to achieve the goals they aspire for inside human groups like family, school, friends, and historical period people belong to. These contexts affect and determine the other psychological-sociological characteristics of every human being.

Ontogeny is also a concept used in anthropology as the process through which each of us embodies the history of our own making. We develop in social and cultural contexts, which determine, beyond most of rational awareness, our ways of understanding life and the world. Besides, we must keep in mind that, from an evolutionary point of view, a hundred years of flying experience is the equivalent of an eye blink.

3.1. WHERE WE COME FROM: OUR EVOLUTIONARY HISTORY

Our ancestral brain alerts us to danger and our aggressive reactions are adaptations that have arisen in response to the adaptive problem of mechanism orchestration.

Additionally, our primary attachments are not the result of personal whims, but arise from the dynamics of the primary group; these, have adaptive reasons too. Therefore, the legacy of our past as a species could represent a good starting point to analyse our psychological, physiological and social point of view as humans.

This approach is necessary to come to terms with hyper-modern, hyper-specialized, and hyper-complex activities such as the flight. There are many theories on the evolution of the human brain, which consider several perspectives on its structure, cerebral functions, similarities and correspondences with other living species, given the significance that the flexibility and adaptability of this marvellous organ has for us.

According to the neurologist Paul McLean's theory, from a phylogenetic point of view, our skull holds not one brain, but three, each representing a distinct evolutionary stratum that has formed upon the older layer before it. He refers to these three brains as the neo-cortex or neo-mammalian brain, the limbic or paleo-mammalian system, and the repti-

lian brain. He says that three brains operate like "three interconnected biological computers, each with its own special intelligence, its own subjectivity, its own sense of time and space and its own memory[12]."

The reptilian brain keeps repeating the same behaviours, never learning from past mistakes. This brain controls muscles, balance and autonomic functions, such as breathing, heartbeat and sleep. This part of the brain is active, even in deep sleep. The deprivation of these functions provokes progressive forms of aggressiveness.

The old mammalian brain residing in the limbic system is concerned with emotions, needs of affection, a sense of belonging and instincts, feeding, fighting, fleeing, and sexual behaviour.

We are subjected to parental care from the moment of birth and this represents a model of behaviour, which we will imitate throughout our life. Relationships make life more supportable; each form differs from the others, such as love, filial affect, altruism etc.

The Neocortex, also known as the superior or rational (neomammalian) brain, corresponds to the brain of the primate mammals and, consequently, the human species. The cortex is divided into the left and right brain. The right brain is spatial, abstract, musical and artistic; the cerebral neo-cortex enables us to think abstractly, in areas such as philosophy, mathematics, and scientific discoveries, and all activities, which are situated at the level of superior thought. The left-brain is linear, rational, and verbal.

Nerves connect each of the three brains to the other two, but each seems to operate as its own brain system with distinct capacities. Scholars like Antonio Damasio have highlighted how the sphere of emotions contributes in a decisive way to cognition. Numerous other studies in the psychological field bear witness to how aspects of motivation, also deeply influence perception and understanding of the phenomena (Damasio, 1995).

From the phylogenetic point of view, which is the natural evolution of the human species, the same natural selection rewarded who was more suitable for the environment (or, vice versa, those whom the environment selected). The *homo species*, in its various versions of *habilis*, *erectus*, *ergaster*, *Neanderthal* and *sapiens*, has always set up partnerships, and cooperated with his similar to avoid being attacked by other species and/or to cope with environmental challenges. This is also due to a peculiarity that our species shares with few other species, namely *neoteny*. *Neoteny* in humans is the slowing or delaying of body development, a "major evolutionary trend in human beings" and as someone stated mirroring Gould's hypothesis, "greater prolongation of childhood and retardation of maturity". In fact, during the initial phase of life the new-born babies need prolonged and laborious parental care. Giving birth to children, who are not self-sufficient, ensures cooperation among males and females and among adults of the same group, both for the customs of hunting and a division of labour in which everyone is specialized in a task, increasing the general productivity of the society.

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[12] P.D. MacLean The Triune Brain in Evolution: Role in Paleocerebral Functions

Therefore, our species is made up of beings that are intrinsically led to social life. We look for the company of our similar not only for pleasure, but also out of necessity. In the middle of the savannah, a human being would not survive in isolation for more than a few hours, since he or she does not have carapace, is not fast in running, is not strong, has neither claws, nor fangs, does not possess lethal weapons like reserves of poison, nor has defensive measures towards other predators.

If then we refer to the typical average person living in modern western society, we would easily realize that we have completely lost the knowledge of the natural cycles, and we are not aware of what are the habits in the dynamic of hunting between prey and predators. Besides we would not succeed in distinguishing a wild berry from something eatable (Diamond, 1997). Nevertheless, the evolution of the species has come about, because the intelligence of the human being is shared out among the group and everyone cooperates to protect himself and others from aggressors, acquire food reserves, raise children and continually improve the conditions of life.

Being an animal fit for a group, having to put into act some dynamics of interaction between individuals, it is inevitable that all relationships are based at the same time on cooperation, conflict and competition (Morin, 2004).

We cooperate with others to increase our potential and the species' perpetuation, but inevitably, this also triggers off the possibility of conflict, because looking for the same limited resources (competition).

As Konrad Lorenz, who is one of the most eminent scholars of ethology, noticed, our species is characterized by the highest degree of intra-specific conflicts (Lorenz, 1981). That provokes a natural variability in human behaviour, which depends on the situation, objectives and persons with whom we are interacting. We have, with the evolution of society, moved more and more away from mere survival and dependence. The human being has succeeded in getting food and primary needs, dampening peaks and lulls of the available resources scattered in the environment. Although nature spontaneously presents some cyclical phases, a wide variation in the fertility of the soil and the migrations of animals, man has managed with the sedentarization process to regularize the flow of resources, in order to utilize and save them.

Sedentism has required a series of anthropological changes, fostering the development of technology, communication, commerce, innovation and political establishment with social hierarchies and population control. Within these sedentary societies, some normal procedures and matrices of behaviour are established to stabilize cohabitation, bring about conflicts and soften clashes. The dimensions of great urban centres today lead to many human interactions, often with unknown people, that raise the possibilities of friction at an exponential rate. Therefore, codes of behaviour are functional for living together, identifying the groups from the inside and differentiating them from the outside. We tend to share a territory and customs (the word "ethics", from the Greek *ethos*, derives from "custom", just as the Latin word *mos* from which the word "moral" derives.) Furthermore we share codes of communication (language, non-verbal attitudes, ways of dressing, etiquette, etc.), but above all an understanding of our environment, which

we manage to decode with little mental energy (Morris, 1990). With the right environmental influence, conforming allows one to learn group dynamics and thus, to adopt the appropriate behaviours necessary to interact and develop correctly within society. This does not always succeed, but normal people often achieve it. Conformity is functional for social order. People often conform from a desire for security within a group. Conformity influences formation and maintenance of social norms, and helps societies function smoothly and predictably via the self-elimination of behaviours seen as contrary to unwritten rules. In this sense, we perceive conformity in a positive force that prevents perceptually disruptive or dangerous acts that lead into mass delirium, such as the atrocities of the last century, committed by totalitarian regimes. Those governments relied initially on a high consent, and then counted on the acquiescence towards many wrong manifestations of power and eventually on the silence towards phenomena of extreme inhumanity. Therefore, it is necessary that in the same society there are some pockets of resistance, eccentricity, and non-conformists.

In short, to mention the concept of phylogeny it is necessary to understand and explain why a constitutionally social being needs relationship, contact, human interaction and above all the knowledge of how to manage them. We shall now briefly see which dynamics emerge from the necessity and the desire to be part of a group.

3.2. GROUP LIFE

Man is an animal that tends to conform, also when he thinks he does not. Speaking the same language is a way of adapting to a community, which enables us to express in an original way respecting grammar constraints. Language does not enable us to go too far beyond a certain degree of originality. As Ferdinand De Saussure asserted, there is a dichotomy between "*langue and parole*", language and word. The "*langue*" is intended as a social aspect, made up of conventions, long established agreements on syntaxes that enable the transmission and understanding of the meaning within a community. The "*parole*", instead, is the individual linguistic act, which has its originality, modulating meanings and ways of saying according to a unique point of view, but which must always be within the field of *langue* (De Saussure, 1968).

The same framework applies to the way of dressing, building our own house, raising children and in general to all those activities that have at the same time a public and private character. Nevertheless, when we notice that a certain conformism prevails, we must consider it normal up to a certain point. The spirit of conformism is a natural attitude of our species. On the other hand, driven by the force of numbers and by the desire to get the support of the others a person may share the group values just for the sole fact of being accepted. Therefore, conformism has two aspects: the attitude to conform and the situational conformism. In the first case, the person prefers to remain anony-

mous, complying with the shared rules simply for the fact of not being noticed, not to be known as different, and to be identified with the group at all costs. It is by remaining in the sphere of shared behaviour that the individual finds himself in an *aurea mediocritas*, which protects him from having his own work examined.

This attitude is translated in the aeronautical field as adherence to the standard operating procedures. Standard operating procedures are a vital necessity for flight operations, but must be adequately understood. It is important to know what is behind the rules, what is the reason (often an accident) that has inspired them and why people must comply with them.

When SOPs (Standard Operating Procedures) are interpreted in a rigid manner and rules are applied in a non-critical approach they may reverse - in a highly complex environment - in a risk factor.

Moreover, the pilot who is used to the concept of working according to standard operating procedures somehow overwhelms the professional field, reverberating this approach into his/her private life.

Some decades ago, the pilot was considered something like a semi-god, giving rise sometimes to a histrionic vein in people. On the contrary, today we are witnessing a flattening towards the profile of a system operator, a clerk working relegated inside a highly automated flight deck.

This consideration of the pilot job takes away to some extent the aura of a special person. With this flattening phenomenon, there is the tendency to put a dampener on the expression of one's own feelings, and on the traits of one's own personality, which can reveal psychological states of discomfort or excitement.

Maybe, this attitude played a role in the recent accidents, hiding some psychological uneasiness of the pilots.

This deep-rooted conformist attitude has also its other side, which represents a negative aspect. In fact, what the others do may not be right. In aviation, this attitude can be reflected in everyday working days.

An accident may happen due to operators neglecting safety procedures because others do it, in a kind of wrong imitation game.

Nevertheless, there is also a second type of conformity, the situational one, which is guided by other pragmatic motivations. This conformity is justified by the fact that others' behaviour puts us on the safe side. If I see some boats all entering a harbour from the left side of the bay, I could think that on the right side there are some rocks. In doubt, I think that by passing on the left I will be safe. One of the driving forces of conformism is the fear of others' judgment, or worse, the fear of standing up due to the censure of the group.

We are afraid of penal consequences following our non-compliance with rules like fines or periods of imprisonment, but there is also a moral judgement to deal with. These have bearing on the quality of life, and the possibility of expressing one's own individuality within a structured society. This quote by Jean Paul Sartre, "Hell is other people" does not mean one has to be a misanthrope and flee from his/her fellow beings, but it is a re-

ference to Sartre's ideas about the look and the perpetual ontological struggle of being caused to see oneself as an object from the view of another consciousness.

In other words, other people's judgement can be neither avoided nor guided and only the mad, the hermits and cynics can ignore these judgements. One explanation offered in ancient times for why the Cynics were called "dogs" was because the first Cynic, Antisthenes, taught in the Cynosarges gymnasium at Athens. The word *cynosarges* means the "place of the white dog". It seems certain, however, that the word dog was also thrown at the first Cynics as an insult for their shameless rejection of conventional manners.

In fact, as we shall see, the cynic lives on the margins of society, self-deprived of most of the undoubtedly positive aspects of social life. A cynical attitude is easier however where the group is large and social control is not as tight. In a big community, there is a lesser chance to come up against moral sanctions from the groups. These eccentric positions inside a social group may assume several forms. An interesting sociological distinction (Mongardini, 1993) identifies external and internal positioning within a group. The first typology regards those who find themselves outside the group in a situation of indifference; they simply have no interest in entering it.

The second typology regards those who are outside the group, wanting to belong to it, but keeping their own social values. Be this the case of the foreigner.

For example, some immigrant communities merge with the citizens of the country of destination, while other communities, although dutifully adhering closely to the rules, maintain their own strong identity, such as the Chinese communities scattered around the world. The third typology characterizes those who are outside and would like to integrate themselves in a group, but who are looked down on as being extraneous to it. In this case, the group will accept them after a trial period during which their character, abilities and values are tested to see whether they are suitable for the community. The initial distrustfulness of the group is nothing but concealed study.

The two characters identified by Mongardini are leadership and marginalization. Leadership has many facets. The leader is totally integrated with the group he belongs to, keeping himself somehow at a distance from it.

The leader must necessarily share the customs, be accepted as a significant representative of the group, work at building consensus on basic values, develop and propagate cultural values and norms, protect values and ethics.

The marginalized person, is the one who would like to be part of the group, but stands apart. In fact, marginalization involves exclusion from the dynamics of the group, and it almost always results in conflictual phenomena that can be expressed both with open manifestations of dissent, and bearing a concealed resentment towards the group. This person also brings about some self-destructive behaviour. The concept of social exclusion clearly shows who is inside and who is outside the society, or better who is integrated and who is at the margins of the system. It postpones the onset of discrimination and includes many problems that, even if different, are correlated among them: economic precariousness, cultural deprivation, solitude, etc. It is not a coincidence that in the

urban contexts we talk about "new forms of poverty", which refer more in general to a widespread sense of social insecurity, vulnerability, lack of relationships and inadequacy regarding a system dominated by competitiveness and productivity rather than by social integration. The sociologist Bauman[13], philosopher of the "liquid society", talks about a real explosion of the need for a sense of identity. It derives from the individual without social roots, who is exposed to solitude, fragility, and liquefaction and so he desperately needs to re-establish an identity.

The loss of identity, disorientation, separation from rules and roles and resentment are side effects of marginalization. It is not of secondary importance to note that the marginalized person is not necessarily the one the group rejects because of not being at the level of the collective standard, but it could even be at the upper end of social scale such as the person who for ability, charisma or competence is above average. In fact, people like geniuses and prophets are usually not integrated into a group.

A pilot undergoes a psychologically evaluation by one or more psychologists during the selection process. The first thing they look for is motivation, suitability for what concerns some aspects linked to psychology-physiology (spatial orientation, equilibrium, recognition of right-left, mapping of the reality, etc.) and the ability to work in group. After this probation period, in the everyday working life, the group determines whether the individual shows strange behaviour. The policy of almost all the airline companies is that pilots fly constantly with different crews. The rotation of the crews permits social control. Someone will be sure to notice clear cases of behaviour that differs from a statistical average, and probably will report significant facts or behaviour he/she records. However, there are cases in which depression, isolation, and the will for self-destruction are concealed or underestimated. Therefore, these conditions can be overlooked even under close examination. In other words, some psychological pathologies are so indiscernible (especially to flight crew eyes, trained mostly in technical education) that only specialists can notice them.

A clear example comes from journalism. When the police, following a shocking series of crimes, arrests the serial killer, journalists interview the murder's neighbours. Invariably, they state, "He was such a good guy".

After this analysis on people interactions during their life, we shall now see how every person develops his/her personal identity. We shall start with the brain, which is the organ capable of understanding, working out and projecting our inner states, in response to external stimuli.

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[13] Bauman Z.(2007), Work, Consumerism and the New Poor. Lavoro, consumismo e nuove povertà, Città aperta, Torino

3.3. WHO WE ARE: OUR PERSONAL HISTORY

After having mentioned in brief some phylogenetic aspects (formation of social groups, evolution of the cerebral layers and competence acquired during the evolutionary process), let us now consider the ontogenetic aspects which characterize the evolution of the person. There are three areas, which have to be pointed out: the development of the right-left differentiation of the brain, the hormonal dynamics and physiological and psychological needs.

3.3.1. LATERALIZATION

Lateralization is the correlation between hemisphere lateralization and handedness or dominance in relation to the right or left hemisphere. It is linked to the differences in the way of interpreting reality, giving value to determining characteristics of the personality, as well as perceiving the events and situations of life to form a specific mental picture.

Our brain is formed of two hemispheres, connected by the corpus callosum. The Corpus Callosum is the main anatomical link between the left and right hemispheres; consequently, it plays an important functional role in interhemispheric interactions (Gazzaniga, 2000). The anatomy of the corpus callosum has been advocated as a potential marker for functional lateralization because its size is supposedly proportional to the number of fibres connecting the hemispheres. Different types of damage to the corpus callosum cause different symptoms; however, all types of damage to the corpus callosum cause a disconnection between the brain's hemispheres, according to the National Institutes of Health.

Much of the human brain is arranged in a way that the right half of the brain controls the left half of the body and vice versa, but also keeps some characteristics apparently not tied to the part of the body, which it governs. The left-brain uses logic, abstract thought, knows and remembers object names; it is reality based and practical, while the right brain uses feeling, symbols, intuition. It knows object functions, presents possibilities, it is impetuous and risk taker. Instead, the processing of visual and auditory stimuli, spatial manipulation, facial perception, and artistic ability are represented bilaterally.

However, if a specific area of the brain is injured, its functions sometimes can be assumed by another area of the brain.

The theory of modularity suggests that there are functionally specialized regions in the brain that are domain specific for different cognitive processes that allow one to pinpoint adaptive problems, e.g. (in the deaf there is a recovery of the auditory cortex for the visual function)" (Morin, 1990).

For what concerns sight, each eye, by means of the optic nerve, sends the images captured by the retina to the brain. The signal is elaborated by the chiasm that merges the images arriving independently from both eyes. From a cerebral point of view, the image received is not thorough but it arrives according to an alternate pattern of strips arriving one after ano-

ther from both eyes. Therefore, internally we recompose the image as in a puzzle where the cards are long and thin, disposed in an alternate sequence right-left-right-left and so on. Some studies have shown that there is a "critical period" in the lifespan of an organism.

The nervous system is especially sensitive to certain environmental stimuli during a maturational stage, which arrive from the sensory organs, like the eyes, ears, etc. If, for some reason, the organism does not receive the appropriate stimulus during this "critical period" to learn a given skill or trait, it may be difficult, ultimately less successful, or even impossible, to develop some functions later in life.

Moreover, in the specific case of the sight, which is an indispensable function, experiments, have been conducted to demonstrate the elasticity of the brain. One eye, perfectly functioning from the physiological point of view, is covered after birth with a bandage; scientist showed that columns in the primary visual cortex receiving inputs from the other eye took over the areas that would normally receive input from the deprived eye. When the bandage is subsequently removed, the brain is no longer capable of elaborating the signal coming from the eye, which had been covered. This is also the case in the absence of pathologies relating to the visual organ.

Nevertheless, the cerebral elaboration does not take place since the elasticity of the brain, in its intention to compensate for the lack of information, has blocked the possibility of receiving visual input. Many of the studies investigating a critical period for language acquisition have focused on deaf children of hearing parents.

The neurosurgeons, emphasizing the elasticity of the brain, say that "The brain forgive; the spine does not". This means that an injury in the brain can be alleviated by substitute functions from the other hemisphere or other lobes, while there are no successful treatment for the spine up to now.

Besides the elaboration of the signals perceived, the brain also provides other innumerable functions, according to sexual identity. In fact, it seems that men and women have some areas that are more developed than others, thanks to the sideways effect, as it happens with ethnic groups (for example: Westerners/Easterners).

Analysing the specific functions performed by the two hemispheres, we will notice in fact that:

LEFT HEMISPHERE	RIGHT HEMISPHERE
• Analytical, abstract thought • Explanation • Focalizing on objects • Linear, sequence, series • Rationality/calculation • Social control/domination • Masculine • Technical • Western culture/education	• Intuitive, concrete thought • Understanding • Focalizing on persons • Simultaneity, synthesis, globalism • Aesthetics, art • Psychological-emotional communication • Feminine • Artist • Oriental culture/education

The left and right hemispheres. Source: Capra F. (1997)

Observing the previous table, it does not escape our attention that in the "left hemisphere" column there are some characteristics typical of pilots, directed towards performance, calculation and efficiency, while in the "right hemisphere" column there are many characteristics shared by flight attendants, directed more towards relationship, effectiveness and empathy.

These characteristics have consequences, as we will see later on, when we will speak about coping mechanisms to mitigate the effects of burnout.

This table also shows some characteristics such as action, decision and power, usually associated to an alpha male, who is a problem-solver and has the tendency to take on responsibilities, exerting himself.

On the other hand, this psychological profile has some flaws such as a minimal ability to introspection that often prevents a clear acknowledgment (in a structured way) of having problems. Moreover, if the subject recognizes them, he/she will hardly speak about them with peers and even more rarely with a psychologist.

For many pilots asking for a psychologist consultancy will mean admitting their own inadequacy and declaring themselves a problematic subject, not fit for complex and demanding tasks that pilots are used to cope with.

Furthermore, pilots see in the doctor an ambivalent figure, since on the one hand, he is a source of help, but on the other, he is the police officer who can interrupt and bring to an end their profession.

3.3.2. The Hormonal dynamics

Besides the perceptive and cognitive characteristics, there is also an intense hormonal activity. The brain communicates with itself by sending out chemical information from one neuron or nerve cell to another. Brain chemistry is the sum of all the chemical messaging that takes place in the brain, which allows it to carry out its daily functions, such as generating movement, speaking, thinking, listening, regulating the systems of the body, and countless others. Hormones like adrenaline, dopamine, serotonin and endorphin are capable of triggering physical reactions. In particular, adrenaline, a hormone produced when we feel endangered, brings about a series of psychological-physical effects, such as contractions of the bowels, increase of the heartbeat, pallor of face, dryness of the mucous membranes and dilation of pupil and nostrils. In addition, they bring about greater aggressiveness, an increase in the threshold of attention, faster reflexes and other mechanisms apt to react.

These reactions could be even antagonistic in the same subject. Therefore, at a neurological level, the MFB (*Medial Forebrain Bundle*), which rouses the hypo field and the PVS (*Periventricular System*) that activates the amygdala, go towards activating functions, which can be complementary and contrasting at the same time.

The first urges the satisfaction of needs and is continually in search for gratification,

activating the catecholaminergic system (dopamine and noradrenaline) and inciting action. The second is based on the cholinergic system urging flight and renouncement.

In a normal state, the hormones all work together to maintain a stable environment, mental clarity, and an even mood. The vital system is based on a recurring cycle. Feelings that accompany dopamine release reinforce good outcomes and positive behaviour, which encourages the search of new pleasure, completing and beginning the subsequent virtuous cycle again.

Vice versa, the inhibitory system stimulates sadness, which brings about black thoughts, which encourage depression and therefore the blocking of motor and exploratory activity. This encourages sadness again and the cycle is self-fed at times in a negative sense, perpetuating up to the point where there is a change in one of the stages.

However, with the tremendous amount of stimuli and pressure that we are exposed to in modern life, it is easy to see how our hormonal responses have become unbalanced. The brain finds stimuli from the environment in the form of words and external support because of our capacity for complex thought and dialogue. This is the key to invert the vicious circle.

These chemical reactions inside us play a part, often unrecognized by ourselves. Therefore, it is important to understand not only the warning signs of such disorders, but also to know how to get help in alleviating them. This helps to cope with emotions, with instincts and unconscious driving force.

3.3.3. THE HIERARCHY OF NEEDS

Here comes the third interesting aspect of the *magic box*: the hierarchy of needs.

Maslow's hierarchy of needs is a theory in psychology that interprets human motivation. In his theory, Maslow describes how human motivation begins with physiological needs and moves onward to include safety, love and belonging, esteem, and self-actualization once lower-level needs are met. Even if it has some limitations, it is a good example of common sense together with consistent scientific foundation.

At the bottom of the pyramid, having priority over the others, we find our most basic needs that are for physical survival, and these will be the first things that motivate our behaviour. Once that level is fulfilled, the next level up is what motivates us, and so on. The physiological needs consist of the drives relating to breathing, food, sleep, sex and homeostasis (the ability to return to a physical and mental equilibrium). Nevertheless, these physiological needs have, in their turn, their priority. A person deprived of air will start to fly into a rage, in a similar way the lack of food (including water, the lack of which induces a bad state of deprivation in a short time) will induce an aggressive behaviour to obtain the satisfaction of this vital need. Instead, the lack of sex and of the homeostatic mechanisms will bring about dissatisfaction, which will not necessarily develop into the preceding behaviour, even if in the long term they will induce a general state of uneasiness that can take various forms.
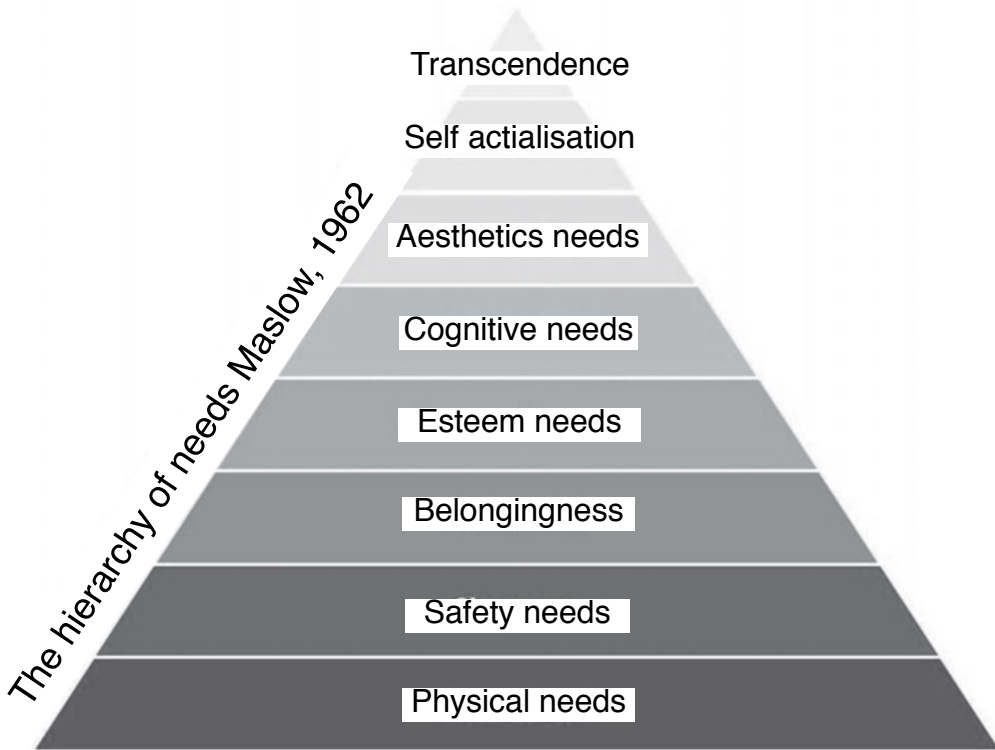
The hierarchy of needs Maslow, 1962

Transcendence
Self actialisation
Aesthetics needs
Cognitive needs
Esteem needs
Belongingness
Safety needs
Physical needs

Fig. 3.1 Maslow pyramid

Up one-step and we find the need for safety, including physical safety, economic security, along with morals, work, family and health well-being. Physical safety is concerned with attacks on a person whose life is put at risk. No wonder that in the middle of the traffic jam people become aggressive, because their life is endangered by a probable accident. (In fact, car accidents cause a high percentage of death every year). The certainty of a workplace, that gives us the possibility of self-sustenance, is a sign of a relative autonomy and therefore is a pre-condition for carrying out the activities of the higher levels. Family security is associated to the sense of belonging to the inner group in which we feel safe. Since our infancy, we feel the warmth of home, the shelter provided by the family context that transmits tranquillity, a sense of protection, and a source of unconditioned sustenance, etc.

The security of the third level concerns affection, which is the closest relationship in life and which is typical of the social animals. According to Mc Lean's theory of the multiple layered (tri-unique) brain, the second layer has been developed starting from the emotional state typical of mammals apt for social life. We find in this layer the functions linked to socialization, personal relationships, and belonging to a group. These

functions are related to taking care of others, assuming responsibility for one's own family and the offer of one's skills to enlarged groups for something, which is not strictly egoistic.

Finally, the most recent layer, more developed, is the environment of complex thought, and the one, which enables abstraction, science, understanding of concepts beyond empirical phenomena, computation, imagination, memories and future prospects.

The fourth level of the pyramid includes the needs for self-esteem, self-control, development of our potential and reciprocal respect. They are the needs for higher level of socialization, in which our self-perception also depends on the feedback that we receive from our social context. Often we do not realize that our identity and the self-perception come from the feedbacks given by others who reflect as in a deformed mirror our image. On that basis, we are being compared to others, understood as continual feedback that society provides on our behaviour, which is something completely different from taking the opinion of others as the decisive element in planning our conduct.

Finally, at the peak of the pyramid, we find the needs of self-fulfilment, creativity, spontaneity and the absence of prejudices. At this level, the individual tries to reach the state of satisfaction of his/ her own existential needs. The person interacts with his/her own social environment in a positive way, without being subjected to it passively, but on the contrary providing his/her own contribution to modify the system of relationships. At this stage, the individual is satisfied with himself and fully integrated, recognizing himself in a system of values, relationships and behaviours that he responsibly shares.

Referring to these conceptual models, means dealing with paradigms, which have a limited validity and are incomplete. For example, according to such a vision we cannot explain why a person should decide to be a hero, to sacrifice his own life to protect the group, or to leave behind his own name as a symbol in a battle of principle. As well, Maslow's model does not explain some forms of asceticism, where some subjects prefer to mortify their primary needs, placing before them those of self-fulfilment, following the dictates of a religion or creed. In fact, applying Maslow's interpretative model to the letter, the needs of the ascetic should be at the highest level and therefore satisfied with the least priority. Having remarked which are the limitations and the constraints of such model, we can however consider the scheme proposed by Maslow to be fairly intuitive and consistent with common sense, namely to the one which an average representative of society could envisage.