

## **THE STRESS OF LIFE**

### **A theory of health**

by

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About twenty years ago the subject of stress momentarily crossed my way. When the organisers of the 1999 Sevilla Symposium of the Spanish Society of Group Psychotherapy and Techniques (Sociedad Española de Psicoterapia y Técnicas de Grupo, SEPTG) asked me to present a communication on stress, I thought it was a good opportunity to think about it at greater length. I looked through my bookshelves and recovered: *The Stress of Life. A new theory of disease* de Hans Selye (1956). For this conference I used his title, although changing the subtitle for "A theory of health", a change of approach which I have been working on for quite some years.

Selye, a doctor and biologist of Austrian origin living in the United States, published on July 4, 1936 his first paper on the GAS, the General Adaptation Syndrome, to which he referred to with the term of stress already in use, although, based on laboratory investigation, offering a more specific theoretical explanation of the experience of stress. Twenty years of self-sacrificing laboratory work elapsed between the publication of this first paper and the book on "The stress of life" of 1956. In this book Selye not only talks about the process, objectives, successes and failures of these years of research but also comments on how the person of the investigator and his socio-professional context determine that what he investigates. It is not by chance that at the beginning of the nineteen-thirties the object of investigation begins to be considered more and more a part of a wider whole, giving importance to the relation between both. Its the epoch of Gestalt theory and the growing interest in the organism seen as a functional whole.

It seems that for Selye 1956 is a moment for recapitulation. Being first of all a man of science and an investigator, as time goes by Selye —as often happens with theoretical or laboratory scientists— feels the need that his concept of stress —beyond its application to somatic medicine— contribute to a unified theory of disease and health, the attainment of equilibrium between the psychic and the somatic, and a constructive articulation between the needs of every individual and the ultimate objectives of human beings as a species. The last two parts of the book are about these themes and what he thinks about them. I shall mention these ideas of Selye when pertinent, although I shall refer particularly to the General Adaptation Syndrome he investigated and the aspects which permit me

to propose not so much a unified theory but a continuous process of transdisciplinary theorising and a group method which integrates ideas and practice.

Selye discovered that a **General Adaptation Syndrome** overlaps the specific reaction of the organism to disease, medication or treatment, i.e. to any strange element which impinges on the organism from outside. The GAS is a generalised defensive answer of the very same biological system against harm inflicted on part of the organism. Stress is the common denominator of all the adaptive reactions in the body, a state which manifests itself through **a specific syndrome consisting of all non-specific changes** induced in a biological system. The General Adaptation Syndrome has its **locus on the pituitary-suprarenal axle** and implies the following changes: stimulation of adrenaline production, reduction of the lymphatic organs especially the thymus, gastrointestinal ulcers, changes in body weight, and different alterations of the chemical composition of the body. These changes appear together. According to Selye, independently from what we may define as system or biological unit —a nation, a human being, a region of the body, or a cell— we can only speak of stress if various units which constitute the system are affected in a non-specific way, i.e. that the symptoms are not reducible to a biological unit nor respond to a specific harmful agent. It may be of interest to note that the GAS implies an inhibition of the hormones responsible for sexual functioning.

On the other hand, tissues more directly affected by the stressful factor develop a Local Adaptation Syndrome, as could be an inflammation in response to a microbe invasion. In this case feedback is established between the GAS and the LAS. Chemical alarm signals are sent directly from the tissue under local stress to the co-ordinating centres of the nervous system and the endocrine glands, particularly the pituitary and the suprarenal glands. These glands secrete adaptive hormones which, in general terms, divide up in anti-inflammatory which inhibit excessive defensive reactions and pro-inflammatory which stimulate them.

The GAS in its **temporal development** passes through three phases: 1) the alarm reaction, 2) the stage of resistance, and 3) the stage of exhaustion or capitulation. Resistance and adaptation depend on the equilibrium of the hormonal elements responsible for these stages. The phases succeed each other in a co-ordinated manner and at an appropriate rhythm for overcoming the stress and for the organism to attain a new equilibrium. The intensity of the phase of capitulation relates to the degree of recuperation of the equilibrium. Far from a state of exhaustion, sometimes, for example, we simply get tired of reading. **The essential characteristic of adaptation is the delimitation of the stress to the smallest area able to cope with the demands of the situation.** This is important if we take into account that the energy for adaptation —different to the energy which comes from food intake— is genetically determined. Although it is possible to find ways of regenerating this energy within certain limits, is worthwhile to evaluate the stressful situation to be able to spend our adaptive energy in a wise and healthy manner.

Stress is a result of the effort of self-preservation of the parts within a whole. This is true for individual cells within a person, for the human being within society, and the individual species within the total animal world. "The capacity of

adaptation —says Selye— is the most distinctive characteristic of life. No inanimate force has been so successful in the maintenance of independence and the individuality of natural units like this capacity of alertness and change we call life —the loss of it means death. Perhaps there is a certain parallel between the degree of vitality and the power to adapt in every animal —in every human being.”

Here are the basic ideas of the General Syndrome of Adaptation in confronting harm, threat to integrity and the survival of the parts within a whole. Any harm to a unit implies a general defensive reaction of the whole system. Although Selye establishes analogies between the body, the person and social collectives as global systems to be taken as a reference, his basic reference is the stress in the body whose symptoms are identical or comparable in animals and men.

As therapists and people who work with groups from a systems oriented point of view, we are interested in the possibilities and limits of these analogies coming from biology. I will choose three of Selye’s concepts which seem useful in establishing possible links between body, person, and group as systems in which the General Adaptation Syndrome or its disorder manifest themselves. These are: the idea of antagonistic forces, the dichotomy egotism-altruism, and inflammation as a primary model of defence.

**Antagonistic forces.** The condition of biological stress is essentially intent of adaptation to the antagonism between the aggressor and the resistance offered by the organism. There are principally two ways of defending oneself from aggression: fight or flight. According to Selye, the diverse defence mechanisms of the General Adaptation Syndrome are always based on a combination of these two types of response. In fact, these in turn offer three possibilities of response: advancing, retiring or maintaining the position. Survival depends on the adequate combination of these possibilities. The principal systems of this co-ordination are the nervous system and the hormonal one. The Voluntary muscles as well as the involuntary ones respond to nervous stimuli. But, in the last instance even the nervous impulses are regulated by antagonistic hormonal substances, some of them secreted by the very same nerve endings. The **anti-inflammatory and pro-inflammatory** functions of the corticoids also are examples of this antagonism, even if they also have functions which are not regulated by them. The final response of fight, flight or maintenance arises from a highly complicated combination and co-ordination of stimuli which determine the intensity and duration of the General Adaptation Syndrome.

The idea of antagonistic forces is part of the scientific way of thinking of that period. The first teachers of Freud in the physiology laboratory of Brücke believed in Science written with majuscule. Brücke together with others had made a solemn vow to propagate the following truth: “Within the organism there act no forces whatsoever apart from the physical-chemical ones. In those cases where, for the moment, forces acting there cannot be explained, one has to find a way or specific type of action by means of the physical or mathematical method, or accept the existence of new forces as worthy as the physical-chemical ones inherent in matter, reducible to the forces of attraction and repulsion.”

**To conceive the wider contexts** which permit to integrate in a general view the functions of these biological forces and their psychosocial derivatives, is the task of all professionals and persons whose primary point of reference is the human group. The basic question is: What relation is there between what happens to us in particular and what happens to us as a species? —the species being the whole of reference for any unit, be it a body, a person or a group. To integrate the particular with the whole has the eternally renewed objective of attaining an organismic and ecologic equilibrium, solidarity of the species, or what we call health. On the subject of health in present-day terms, I am very fond of the contribution of another biologist, microbiologist in this case, one of the first professionals if not the first to pose the question of health in evolutionary terms of the human species: I refer to René Dubos. His book "The mirage of health", published in 1959 is obligatory reading for anyone interested in the subject. However, on this occasion I only want to remind you of Dubos' ideas about the necessity of an overall view. In his words: "To resolve problems of disease is not the same than to create health and happiness. This requires a type of wisdom and view which transcends the specialised knowledge of remedies and treatments and which includes the relation between living beings and their total environment in all its complexity and subtlety. Health and happiness are expressions of the way in which the individual responds and adapts himself to the challenges of everyday life. These challenges do not only spring from the physical and social world, but it so happens that the environmental factors most determining in their influence and which more often cause disease are the very same objectives and finalities which the human being sets up for himself, often leaving aside the biological necessities... The health of a human being will not be better the more one does for him... The 'truth' of tomorrow rather will be something like: the more we try to study and solve every problem having first thought about it in global terms, the more possibilities of success there will be on the individual level." Dubos has a maxim with which I fully agree: "Think globally, act locally". This sums up my proposal of theoretical unification and methodological articulation.

Let us see now what we can think in this sense in relation to the **forces which in biology are called antagonistic**. In the most global sense, what characterises the human species and what differentiates it from others, is the communication through language. The meaning of 'antagonistic' is "something so different from something else that it cannot be reconciled". **This idea emerges from the very introjection of this symbolic universe of language into a biologic organism**. The idea of antagonism gives sense to a vital human experience. The insertion of communication by symbols into a biological organism upsets any pre-established equilibrium of the individual with himself and with his environment. Animals maintain an instinctive relationship with their food, which secures the survival of the individual, and with their couple, which secures the survival of the species; the final objectives of individual and collective survival are reconciled. For the human being this can never again be like this. His external ecosystem as well as his internal one in the last instance is determined and given meaning through language. Life for the human being is his capacity to respond to and integrate the antagonistic forces coming from a biologic organism forming part of the animal species, on one hand, and a psychosocial being whose identity arises from a symbolic universe, on the other. The human being is "response-ible" for the emotional effects produced by being born, living and dying between two irreconcilable worlds. This conflictive and

never entirely solved relationship of the human being with himself and his environment generates the stress of life and determines the expenditure and drainage of his adaptive energy. The **antagonistic forces** which biologists try to track down in the smallest units of the living organism are a reflection of a **logical-rational symbolisation** which violates the organismic homeostasis and the ecologic niche with which the rest of animals are endowed. If it is well true that this symbolic universe interferes with a pre-established equilibrium, it is also true that it creates unifying contexts —theories, ideologies, opinions— that emerge from responses type yes-no, but which in turn create ever new antagonistic subdivisions and dichotomies. The conflict of antagonistic forces is, for the time being, entirely displaced onto the level of the symbolic universe, the level of language, and is made an inevitable and integral part of human life.

Another idea which springs from Selye's theorisations and which I want to take up here is the dichotomy **egotism-altruism**. This idea points to **emotional dynamics of the necessity of finding a wider context which permits us to integrate these antagonistic biological forces and their psychosocial derivatives**. For Selye, the antagonism egotism-altruism is the primary, the oldest and most essential characteristic of life. It is something natural and inevitable, the seed of fight, flight and advance. As multicellular organisms came into being, the survival of the individual cell became intimately dependant on the survival of the organism as a whole and this superior unit, according to Selye, determined a collective egotism or intercellular altruism. Much time elapsed before the individual cells attained a peaceful interdependence, avoiding the maximum stress. Even today it can happen —as is the case of cancer— that a cellular revolution forgets about this principle necessary for survival. In relation to an interpersonal altruism between various multicellular beings, till further orders, life together or coexistence is less than satisfactory and almost always produces stress. On this level, all harmony or discord is due to one single organ: the nervous system. The latter governs the decisions and attitudes between persons through one of its multiple effects: the emotions. People who give importance to logic in interpersonal relations are off the mark. Selye thinks that logic has a minimal function in interpersonal relations. Lasting physical changes —in structure as well as in chemical composition— underlying an efficient adaptation or its failure are consequences of stress, the stress of life. These changes are "cellular memories" which are stored and accumulated, and which affect the future somatic behaviour in similar situations of stress.

I must mention that, in my opinion, Selye is not very successful with his aspiration to create a unified theory, where the General Adaptation Syndrome would explain the vital adaptation of the human being beyond its application in medical practice. The General Adaptation Syndrome as Selye describes it, is a general defence of the organism as a whole. But, I ask, where from comes this motivation of life as a whole? His intuition of a cellular memory of stressful situations stored and accumulated throughout time and determining future behaviour could be accepted. Also I could accept the idea that interpersonal relations are governed by emotions, one of the by-products of the nervous system. But the cells are no more than structural units, as Selye himself tells us. Well then, which is the functional unit of life? In his intent to answer this question, Selye invents a whole theory around the concept of "reacton", the smallest particle of life capable of responding to a stimulus, although of vague limits and not visible as a unit. It is certainly interesting to become aware of the

limits a biologist finds in explaining human life and his intents to overcome these limits.

I would like to add something to Selye's ideas about cellular egotism and intercellular altruism which seems important if we are to study constructively the stress characteristic of human life. In the famous "Project" of 1895, Freud addresses the energetic transformation in the human being. With genial intuition he formulates the existence of "contact barriers" between neurones, two years in advance of biochemists formulating the "synapses between neurones". In the Project Freud explains how through progressive diversification, ramification and multiplication of the nervous system two new mutually related factors are introduced: 1) the possibility of postponing the response, and 2) the fact that the response eventually is determined by the quantum of tension tolerable or not tolerable by the organism itself. In other words, the principal question is no longer the perception of external stimuli and the automatic response to them but the conscience of stimuli which come from the organism itself, to the point that stimuli coming from outside also are metabolised through these new internal bio-psycho-physiological conditions. It is at this point that the human being passes from feeling his bodily senses to feeling the sentiments, the emotions that generate his self-consciousness and are in turn generated by it. The possibility of determining the moment of response to stimuli and being conscious of the tensions in ones own organism makes that the human being feels sentiments and re-sentments about his individuality and his solitude.

Through primary interpersonal relations first and then later ones, a self-conscious narcissistic structure or ego is created. This structure is the one which determines how the adaptive energy of the organism is spent. As Selye points out, the adaptive energy is not the same than the one we obtain through food, in other words, on the level of adaptation the transformation of energy is also different. The dynamics of what feeds the narcissistic structure or makes us feel alive and what deprives it of energy and makes us feel down or dead, are very complicated. The human being eats, sleeps, walks, talks, learns or not in function of wishes, aspirations, frustrations, anxieties, and fears, conscious and unconscious, of his mother, his family, his socio-cultural environment and, eventually, his own. What he perceives through his bodily senses —his sensations— is converted into a sense of a different order, a sense articulated in a body of knowledge —a common sense if possible— which creates sentiments in relation to oneself and others, governs the social body and influences the conception and perception of our biological body.

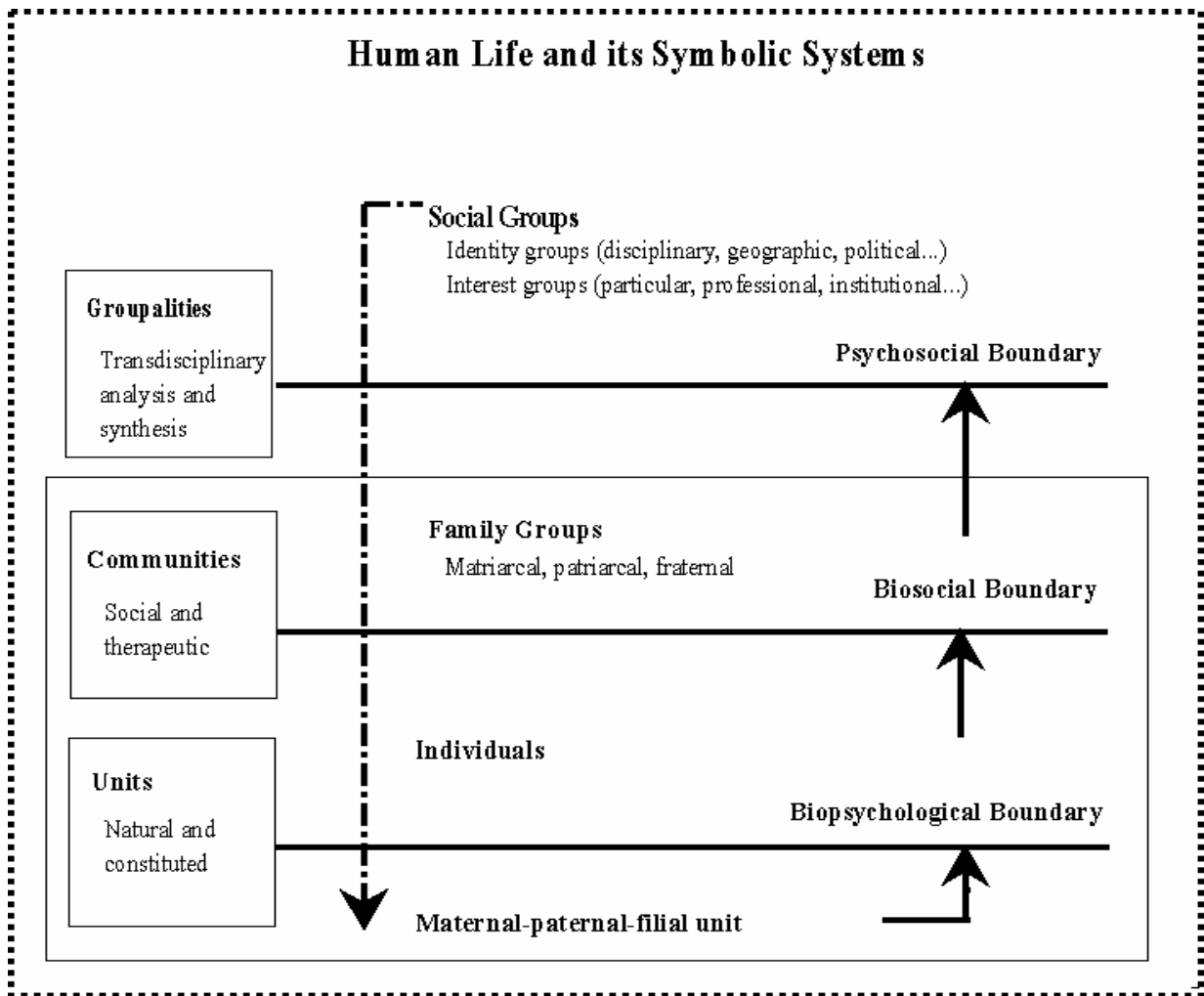
A general view in function of an egotistic structure and an organism contained in a skin puts into evidence a double frontier or boundary of the stress of life: on one hand, the one which marks the articulation between organism and narcissism and, on the other hand, the one which is established between the human individual and the rest of the species. Here the antagonism between a biological organism and a symbolic universe which gives it sense superimposes on the gap between body and person a chasm between individual and species. The split between individual and species breaks definitely any direct relationship between what happens on the level of the group or collective and what happens on the individual organismic level. It is only possible to establish or re-establish this relationship on the symbolic level, with language, in communication through words. For human beings the biological equilibrium between individual and

species is paradise lost. Words are what there is. With these we not only can reconstruct our past —monotheme of reflection since writing was invented, but we also can construct the future, the only way of finally accepting the mortality of the unfortunately famous individual and invent the unit(y) which permits us to give sense to the life of the species. If we do not want to fall into barbarity and bestiality, we have no other choice than use words to restore the relationship between the tree of science and the tree of life.

We are very far from becoming aware of the urgent necessity of a symbolic protective skin in front of all these treacherous logical-rational envelopes produced by the left hemisphere which take us from division to division with its analytical, lineal, sequential, dichotomic ways of reasoning, split off from the rest of the functions of our organism. How is it that we don't listen to our scientists when they point out to us that the right hemisphere of our brain is the one which harbours the capacities of global perception, of space appreciation, of intuition, of analogy, of synthesis and many others which would be helpful in resolving social problems which are well beyond us at present? How is it that we don't create schools which develop these capacities of which we are so badly in need of. If we don't learn all this, we will not be able to arrive at a theoretical unification. Selye himself is a good example of where a unilateral logical way of thinking will take us to. If we really want to arrive at transdisciplinarity and a unified theory, we need to alternate logical reasoning with intuition, with analogy, and similar ways of comprehension. This, like all in life, we will have to learn.

Which is the integrative methodology of ideas and praxis? This step from theories to praxis, first of all we would have to imagine it, translate abstract units into concrete units in space and time. With this in mind I include here (at the end of the article) one of the schemes I construct for myself to help me imagine the ways in which we could overcome the diverse splits in human functioning. This scheme of human life and its symbolic systems, coming from a systemic point of view, represents the bio-social, bio-psychological and psycho-social frontiers or boundaries to which I refer. It helps me decide, at a given moment: 1) the localisation of the agent of stress and 2) the prioritisation of the organic, the personal and the social context of the harmful effect in the intervention related to the harm or conflict.

A method refers to a "how to bring about", in our case how to circumscribe the minimum area of influence of the conflictive agent and find the way of living with the part of it which cannot be eliminated. Let us see the possible analogy between the most common biological defence, **inflammation**, and the defences in the bio-sociological and psycho-sociological contexts.



The majority of **inflammatory disorders of the biological organism concern conjunctive tissues and the very same skin** which swell up, producing an **amplified border space which serves as a battle field in front of the harmful agent and as a boundary in relation to the rest of the organism**. On the other hand, **inflammation can also produce immobility in articulations**, in which case the conjunctive tissues turn rigid. In the first instance the harm is caused by a stressful agent, while in the second the disorder is caused by the malfunctioning of the very same capacity of adaptation. In this latter case we could well ask if the antagonistic impulses only come from the organic level. Selye points out the similarity between defensive inflammation in the body of a person and the one of a nation and urges us to learn from the biological mechanisms of defence. Selye says: "If a man threatens you with a knife, perhaps it is better to fight. But, if he insults you, why worry? He can only do you harm if you react; or because you beat him or because you worry. In both cases, what hurts you is your own reaction... To fight or not to fight depends on the circumstances; and —adds Selye— in taking this decision cells are wiser than human being, and human beings are wiser than nations. Although all biological groups are singularly short-sighted in this respect, concluding that "as things stand, this choice is difficult to make *from inside*, for tissues, men and nations. These situations are better appreciated when the unit which suffers the disorder is observed *from outside*, from where we can perceive its position in a wider context." In relation to this wider context like from a group or collective point of view of human conflicts, we are still where Freud was in 1931, when he



asked himself what would happen if the whole of a society was affected by a disorder. Which would be that view from *outside* permitting us to diagnose the disorder? And, if we did have the diagnosis, who then would have the authority to apply the treatment to society? The biological analogies have their limit and Freud did not help us to surpass them.

There is, however, one aspect of the defence mechanism of inflammation which has a parallel in a method we use in the social contexts. The inflammation generates a boundary space where we can fight the aggressor and stop him from invading other parts or the entire organism. In fact in any therapeutic intervention we do precisely this: as therapists we create on the interpersonal and intergroup boundary a temporary transitional space where the aggressive agent can be reduced to the smallest ambit suitable for dealing with the demands of the situation and for reducing the stress to a level fitting the capacity of adaptation of the persons in question.

Beyond this analogy, the effects of stress of the General Syndrome of Adaptation in human beings are radically different to the ones manifest in other animals. The stress which, in the last instance, also registers in their biological organism, in human beings is particularly virulent since the aggressive stimuli from outside not only assault the integrity of the organism but, through intervention of an egotistic structure of the individual, they endanger the personal life and the personal future detached from the future of the species.

In human living together, the units —persons and groups— as well as the whole —the species, theories and ideologies of the human being and life— are constructed with the same primary material, i.e. words and language in general. Splits and rigidity are inevitable effects of this construction of the meanings of life, be they in reference to the body, the persons or groups. They are not accidents that occur every now and then. The question of existence, of to be or not to be, is always present. Theories, disciplines and opinions inevitably divide us up in healthy and sick, good and bad, etc. Usually we construct therapeutic spaces for treating splits and rigidities as if they were microbes or viruses. We do as if they were a disease to be eradicated, when in fact life demands of us a constant adaptation. My plea is for “continuous and regular space-time units” where we can reduce the stress of life —caused by the antagonisms, splits and rigidities— to the smallest possible ambit where we can confront the demands of the stressful situation and find constructive responses to them.

I would like to finish with one of the excerpt with which Selye introduces his book. It is from Bertrand Russell (1872):

“Not only will men of science have to grapple with the sciences that deal with man, but —and this is a far more difficult matter— they will have to persuade the world to listen to what they have discovered. If they cannot succeed in this difficult enterprise, man will destroy himself by considering himself cleverer than he is.”