SENSORIALITY[1] OF APPROPRATION AND SENSORIALITY OF DEFENCE ACCORDING TO MAURICE PRADINES

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Z jeho knižných prác uveďme aspoň dve: Théorie nouvelle sur les âges de la vie (Nová teória o vekoch života), *Paríž, Barré a Dayez 1969, 200 s. (nové rozšírené vyd. v r. 1987);* Les trois cerveaux de l'homme (Tri mozgy človeka), *Paríž, R. Lafont 1990, 468 s.*

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We have in France a theory of the senses which has become classic. We feel it is important for psychophysics and are taking part in this International Congress in order to make it known to those foreign researchers who took part in Symposium No 2.

For Pradines sensation has a biological meaning prior to an aesthetic meaning. It allows us to anticipate the appropriation of reflexes which serve our needs or the defense reflexes. In its original nature it is *spatial* and objective, for it indicates the nature and the position of external objects, and *temporal* because it indicates the nature and the position of external objects, and temporal because it indicates the imminence of an action that might occur. The sources of stimulation that give rise to sensations are still inactive biologically, being outside the range of harm or sexual or alimentary appropriation. The sensation is a signal for an eventual passion subordinated to a movement closer or apart. One cannot feel (from the point of view of the sensations) without understanding something. The most elementary sensation is already one of the intellect. *It is an act.*

[1] Sensoriality: neologism = sensorial sensitivity

In order to establish experimentally the meaning of the sensation, it is necessary to link the irritation that causes the reflex to be an instantaneous riposte and the sensation itself. In all types of riposte, the amounts of stimulation that provoke *sensations* are *always inferior* to the amounts that set off appropriation and defense *reflexes,* thus pleasure or pain. If, for example, one considers the figures for the sense of touch (see table), one can easily see the functional link between *affective sensitivity* and *sensorial sensivity.* The more an organ is specialised in the sense of touch (the end of the fingers, the palm of the hand, the flat of the foot), the more the threshold of pressure is behind the threshold of pressure is behind the threshold of pain. This *Law of Divergences* established by Pradines and based on Von Frey s figures in Hamilton s Law applied to the senses. The relation is inverse between feeling, of pleasure and pain, and representation. Contacts allow us to foresee in the sense of touch possible pain due to the pressure of the deforming agents. The distance between the tresholds proves that touch is a means of defense, a protective shield against pain.

One can note that the more perfect the senses are, the more neutral their sensations are from the point of view of feeling. They are thus capable of warning the living organism about what is happening a great distance away. The organism s sight and hearing are sensitive to extremely feeble sources of stimulation. Thje latter are detected from their inception before they can become pleasant or unpleasant. An astonishing *sensitivity to the insensitive* resides in superorgans. Optical and acoustic percussions are in fact so slight that they do not make an impression or impact on the organ.

This functional link between feeling and representation, which can be noted in the case of touch, singht and hearing, can be shown to exist in a second way, based on *sensorial phylogenesis* in the species, from fish to reptiles, then to batrachians, birds and mammals. According to Pradines, senses can be put into *two categories:*

— the senses of need: smell, taste, touch connected with feelings (a hand caressing);

— the senses of defense: hearing, sight, cognitive touch (a hand feeling).

He shows that this distinction corresponds to that between pleasure and pain, heterogeneous affection, and that the anatomical differenciation is to be made according to there being a vector: senses of need → senses of defense. Evolution takes place from sensations still imbued with affects and sinesthesia to totally inaffective sensations which are therefore the most expressive and meaningful. Representation frees itself more and more from affection at the same time as the completely objective exterior world is being constructed. This existence of a vector finds its anatomical equivalent in the link between the rhinencephalon (or limbic zone) and the neofallium (or neocortex). The non-olfactory

structures develop much further and repress the olfactory structures around the hilar of the hemispheres. The sensorial regions which distinguish objects as being different from or opposed to the subject, without a direct link with the vital needs, cover a much wider area than those that distinguish those objects that supplement the needs thatt serve to satisfy them. Tactile, auditory and visual sensations, the least connected with feelings and the most free from sinesthesia are strongest with the associative cortex. Whether one considers therefore the functioning of a *single sensorial system* or the *general evolution of sensorial organs* in the species, one notices this inverse link between affection and representation which flowers in the senses of defense.

Pradines has shown the connection between touch, sight and hearing. The last two senses are transformed senses of touch, *touch at a distance.* The human ear is an apparatus for receiving vibrations in liquid transformed into an apparatus for receiving vibrations in the air. The sense of the rough is a vibrational sense which links it to hearing. The exploratory action of the fovea of the retina is analogous to digital action. An ever more powerful and complicated peripheral sensorial mechanism has been created, one that can detect very feeble quantities of energy whose source is generally a very considerable distance away. All things considered, there exists only one sensory defense, but several kinds according to the nature of the energy picked up. The senses are in the service of defense but, by transference, can move into the service of appropriation. The senses are associated with or are substituted for one another: for example, sight or touch. The senses anticipate therefore just as much the promise of pleasure as the threat of injury.

Pradines has highlighted the meaning of the *Fechner-Weber Law,* recognised as valid for all sensorial receptors. In each type of seense a *range* of sensations corresponds to a *register* of the intensities of stimulation (from O to saturation point), all beneath the threshold of reflex--producing irritation. The increases and decreases in stimulation can be interpreted in terms of movements towards and away. The greatest sensorial perfection is to be found where the range is widest. It is to be noted that in the most specialised areas, the further away one moves from the threshold of feeling, the more active, discriminatory and analytic is the sense. These areas cooperate with the feeble stimulations, play with them, but, on the other hand, are opposed to the strong stimulations and then close, varying leess and less. Sensorial conscience does not welcome passively every kind of stimulation. It is alive and selective and this activity reveals an intention to adapt that belongs to the intellect The mechanism of the psychophysical law of Fechner and Weber has its meaning and points to a purpose. It is an instrument of protection against the external agents whose eventually destructive action is circumscribed in this beginning, when it is still unimportant for life.

Finally Pradines explains seensorial pain by the *law of reciprocal*

genesis. Not all that happens to the living organism can be anticipated. One cannot parry everything From the moment that the cellurar reflex producing irritability has evolved into means of expressing feeling in the organs of the senses that have become hypersensitive, they will support with difficulty, or not at all, any strong stimulations. It is thus that in the cornea contact does no precede pain. It suffers at once if one uses sources of stimulation usually employed for the epidermis. No distance betwen the thresholds of contact and pain. Pain is precisely the discomfort of the inevitable irritation amplified by the conscience (because of the corticalisation) and made thus thousands of times more unbearable. Pain is reflexive and corresponds to the non-adaptation of organs that are too fragile for strong shocks. There is a reciprocal geneesis of the senses (the effect rebounds on the cause). The first genesis works for life, it is *progressive,* the second genesis against life, it is *regressive* (this lack of purpose on the part of pain is recognised by Professors Leriche, Soulairac and Laborit in France). Pain is the price paid by the living organism for the construction of an objective external world. Thus one must give disorder a place alongside order (emotion, like pain, is teratological). Pain stems from the senses. The conscience, imprisoned in the defensive reflexes of permanent pain, can even go to the point of degenerating and sinking into madness. In extreme circumstances therefore the living purpose is destroyed by the play of a blind, mechanical causality.

In all parts of the body used for touching the gap between the threshold of contact and the threshold of pain is considerable and the ratio of these thresholds becomes invariably smaller as the aptitude of the part used for the function of touch becomes clearly greater (Pradines' Law).

In the skin there exists therefore between the *organs of general sensitivity,* i. e. responding to irritation and reflex-producing, and the *organs or apparatuses likely to reach the stimulations* of this sensitivity at thresholds infinitely lower than those where they affect it painfully.

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