The Psychological Dynamics. The Mechanism of the Need for Psychological Stimulation

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Abstract: - The paper sets to identify forms of the need for psychological stimulation which satisfy the invariance group of the partial differential equation:

$$\frac{\partial^2 u}{\partial t^2} = \frac{1}{4} \left( \frac{\partial^2 u}{\partial m^2} + \frac{\partial^2 u}{\partial v^2} + \frac{\partial^2 u}{\partial b^2} \right) + Vu$$

The equation describes the tensional state ($u$) function in physical time ($t$), the ratio between the current neuro-psychological activation and the minimal one needed for the activation of attention ($m$), apperception ($v$), amplitude of the tensional state ($b$) and need for psychological stimulation ($V$). We associate the need for psychological stimulation with an unused potential of the tensional state. Complex calculations led to a constant unused potential! The result proves that the source of the need for psychological stimulation is the unconscious instance.

Key-Words: - Conscious instance, Group theory, Metrics, Psychological system, Unused potential, Unconscious instance

1 Introduction
The dynamics of human behavior depends on a subtle energy which is governed by inflexible laws imposed by the functionality of the psychological system and by laws determined by the processing of stimuli.

The ratio between the homeostasis – represented by the actions of defense mechanisms – and the entropy of certain psychological measures modulates the tensional dynamics of the person. We advance the idea of the existence of a certain specific mechanism of this ratio which resets the human psychological system correctly.

Every person has certain specific instruments to solve any emotional situation. The attitude responses to psychological challenges require the selection of those behavior strategies which minimize regret and amplify pleasure. The building of responses constitutes itself a process consisting in searching and testing of the behavior recipes which satisfy the optimum criteria of the psychological dynamics having as purpose the avoidance of unpleasant states and the search for pleasurable states.

What is essential and what is variable in transactional "challenge-response"? The pointing out of the essential feature presupposes the acting of an equivalence class of a ratio in which the engaged resources oppose a certain destructive potential. Technically speaking, in this ratio a certain tolerance of the entropy of psychological measures and a certain capacity to adjust this entropy are involved. This means that different situations could be treated in an equivalent manner. This is a striking conclusion!

If our judgment is right, it means that the human psyche approaches problematic situations in a similar way. But this fact proves the myth of psychological invincibility.

At the conscious level, a new structure is needed, which has to bring out the problematic situations. This structure should have the behavior of a special consciousness which has to distinguish between the potentials of using its products. The interpretive potential of the conscious instance is recorded by the tensional effort – a weak structure which preserves the equivalence class – mentioned above – specific to a person. The reason for preserving it is to assure the simultaneous functioning of strong and weak psychological structures and, of course, of psychological instances. At psychological level, the entropy and the adjustment of entropy are assembled in different structures. The structures must be compatible, meaning that these are acting on the basis of certain formulae which have to assure the accurate functioning of the psychological system. The variability of the psychological energy suggests for the unconscious instance equivalence class type structures, functioning on the basis of a constant ratio "anti-entropy/entropy" and for the conscious instance and its peripheral...
instance, the special type structures functioning on the basis of the formula "anti-entropy + entropy". The functioning of the psychological system presupposes the existence of a certain control structure of the functioning of psychological instances along predefined formulae.

The psychological dysfunction appears as an effect of the vulnerability of the mentioned formulae which result at the level of the control structure in the correct functioning of the system. Actually, this is a false image, induced probably by the presence of the possible indeterminations in the mentioned structure formulae. The indeterminations decay the recipe "entropy-adjustment" into an infinity of possible ones, having as an effect the blocking of the approaches of an unconscious nature. The decayed recipes record a null psychological effort at the conscious level. This fact could be interpreted by the appearance of a doubled unconscious instance and by the suppression of the conscious instance. The psychological conflict appears at the control structure level which receives unspecific signals from the conscious instance and it will be charged with the task of the gratification of ungratifiable pulsions.

2 The Need for Psychological Stimulation as a Mechanism

How could the need for psychological stimulation be interpreted?

The existential equilibrium is dependent on the duality "generation-consumption". The dominant role in the dynamics of the psychological status is fulfilled by the psychological behavior, which is the observable form of the consumption of psychological potential. The presence of the generator of psychological potential is justified by the functionality of an intrinsic consciousness of the consumption which has to identify it. The existence of the generator of psychological states seems enigmatic because it should be justified by an external component of the mentioned duality, probably in the form of a conscience of consciousness. The generation and consumption of the psychological potential are dual elements of a system which maintain the forms of certain laws, with repeatability valences.

Surprisingly, the consumption seems to be endowed with mechanisms which allow the parallel functioning of the state corresponding to the extinction of pulsion signals and, more interestingly, of the state corresponding to the extinction of the potential state. Here, a special role is played by the mystic power of intrinsic consciousness, which changes the irrationality of the extinction of an unchallenged lack of balance into something materialized in desire. What expresses this special kind of desire? The finality must overlap with a target image, having cathartic valences. The logic of the image – projection of finality type images is known by the producer (the unique consciousness) and not by the watcher (the simple consciousness). What seems to be the desire at the conscious level is the need at the unconscious level – as a dual image of desire.

The autonomy and the overall efficiency of the human psyche are explained through the interpretation of the surplus of psychological energy as a need for psychological stimulation. In this context the need for psychological stimulation seems to have a special role.

The right functionality of the supervisory instance is determined by complying with certain rigid conditions of recording. Psychological lability is a consequence of the breach of the psychological system which allows the confrontation between the philogenetic and the ontogenetic. The source of deterioration of the psychological system through failed resettings is placed at the level of the factors which induce disparities between the philogenetic formulae and those resulted from the confrontation with a hostile environment. The logic and the bizarreness of this statement could accredit the idea that a balanced personality would access only those environments which maintain the overlapping between the ontogenetic and the philogenetic.

In the next chapters we will try to determine the behavior of the need for psychological stimulation, trying to identify its implications.

3 The Mathematical Function of the Need for Psychological Stimulation

A way to determine the mathematical function of the need for psychological stimulation is one which uses group theory and it consists in identifying a group of transformations which preserves a system of partial differential equations. We call this group the symmetry group. The equation

\[ \frac{\partial^2 u}{\partial t^2} = \frac{1}{4} \left( \frac{\partial u}{\partial m^2} + \frac{\partial^2 u}{\partial b^2} \right) \]  

(1)

where \( u \) - tensional state, \( t \) - physical time, \( m \) - the ratio between the current neuro-psychological activation and the minimal one needed for the activation of attention, \( v \) - apperception and \( b \) - the amplitude of the tensional state, describes the dynamics of tensional states in which the whole (tensional) potential is used for specific processings determined by the psychological functioning. This equation is obtained from the metrics [3], [4]:

\[ ds^2 = \left( dt \right)^2 + \frac{4}{(\alpha + p)^2} \left( dx \right)^2 \]

(2)
We generalize the above equation by including the term "V" which indicates an unused tensional potential, called the need for psychological stimulation.

\[
\frac{\partial^2 u}{\partial t^2} = \frac{(\partial t + p)^2}{4} \Delta_2 u + Vu
\]  

(3)

The generator of the symmetry group for this equation, is written:

\[
X = \xi \partial_t + \eta \partial_u + \phi \partial_v
\]  

(4)

Using the mathematical relations

\[
pr^2 X = \frac{\partial^2 u}{\partial t^2} - \frac{(\partial t + p)^2}{4} \Delta u - Vu
\]  

(5)

where \( pr^2 X \) is the extension of the second degree, having the form:

\[
pr^2 X = X + \phi \partial u - \alpha^v \partial \alpha^w + \phi \partial \beta - \alpha^v \partial \alpha^w + \phi \partial \beta - \alpha^v \partial \alpha^w + \phi \partial \beta
\]  

(6)

and

\[
u_{ii} = \frac{(\partial t + p)^2}{4} (u_{xx} + u_{yy} + u_{zz}) - Vu = 0
\]  

(7)

considering the derivatives of the function \( u \) as independent variables, the following system of partial differential equations results:

\[
\phi_{\partial t} = \frac{(\partial t + p)^2}{4} (\phi_{mm} + \phi_{ww} + \phi_{bb}) - Vu = 0
\]  

(8)

\[
\phi_{\partial u} = \frac{(\partial t + p)^2}{4} \left(3 \phi_{uu} - 5 \phi_{uv} - 4 \phi_{ww} - 4 \phi_{wb} - \phi_{bb} \right)
\]  

(9)

\[
\phi_{\partial v} = \frac{(\partial t + p)^2}{4} \left(- \eta_{mm} - \eta_{ww} - \eta_{bb} \right) = 0
\]  

(10)

\[
\eta_{\partial t} = \frac{(\partial t + p)^2}{4} \left(- \eta_{mm} + 3 \eta_{uu} - 4 \eta_{uv} - 4 \eta_{ww} - 4 \eta_{wb} - \eta_{bb} \right) = 0
\]  

(11)

\[
\phi_{\partial u} = \frac{(\partial t + p)^2}{4} \left(- \phi_{uu} - \phi_{ww} - 4 \phi_{uv} - 4 \phi_{wb} - \phi_{bb} \right) = 0
\]  

(12)

\[
\eta_{\partial v} = \frac{(\partial t + p)^2}{4} \left(- \eta_{mm} + \eta_{ww} + 4 \eta_{uv} - 4 \eta_{wb} - 5 \phi_{bb} \right) = 0
\]  

(13)

\[
\phi_{\partial v} = \frac{(\partial t + p)^2}{4} \left(- \phi_{uu} + \phi_{ww} + 4 \phi_{uv} - 4 \phi_{wb} - 5 \phi_{bb} \right) = 0
\]  

(14)

\[
\phi_{\partial u} = \frac{(\partial t + p)^2}{4} \left(- \phi_{uu} + \phi_{ww} + 4 \phi_{uv} - 4 \phi_{wb} - 5 \phi_{bb} \right) = 0
\]  

(15)

The general solution of this system is:

\[
\xi = a_1 t + a_2
\]  

(23)

\[
\eta = \eta_{m} + \eta_{n} + \eta_{p} + \eta_{q} + \eta_{r}
\]  

(24)

\[
\phi = \phi_{m} + \phi_{n} + \phi_{p} + \phi_{q} + \phi_{r}
\]  

(25)

\[
\theta = \theta_{m} + \theta_{n} + \theta_{p} + \theta_{q} + \theta_{r}
\]  

(26)

\[
\phi = f(m, v, b, t)
\]  

(27)

The generators of the symmetry group, are written:

\[
a_1 = 1: X_1 = \frac{\partial}{\partial t} + \frac{\partial}{\partial m} + \frac{\partial}{\partial v} + \frac{\partial}{\partial b} + \frac{\partial}{\partial x}
\]  

(28)

\[
a_3 = 1: X_3 = \frac{\partial}{\partial t}
\]  

(29)

\[
a_2 = 1: X_2 = \frac{\partial}{\partial m} - \frac{\partial}{\partial c}
\]  

(30)

\[
a_4 = 1: X_4 = \frac{\partial}{\partial v}
\]  

(31)

\[
a_6 = 1: X_6 = \frac{\partial}{\partial c} - \frac{\partial}{\partial x}
\]  

(32)

\[
a_5 = 1: X_5 = \frac{\partial}{\partial m}
\]  

(33)

\[
a_7 = 1: X_7 = \frac{\partial}{\partial x}
\]  

(34)

\[
a_8 = 1: X_8 = \frac{\partial}{\partial c}
\]  

(35)

\[f \neq 0: X_{10} = f(m, v, b, t) \frac{\partial}{\partial u}
\]  

(36)

Integrating Lie's equation

\[
\frac{dp}{d\gamma} = X, p, p(0) = p, u(0) = u
\]  

(37)

the finite changes which correspond to each one-dimensional group results:

\[
a_1: \{r, t, u\} \rightarrow \{r, t, d, u\}
\]  

(38)

\[
a_3: \{r, t, u\} \rightarrow \{r, t, a, u\}
\]  

(39)

\[
\rho: \{r, t, u\} \rightarrow \{r, t, u\} \}
\]  

(40)

\[
\omega: \{r, t, u\} \rightarrow \{r, t, u + \phi\}
\]  

(41)

\[
\mu: \{r, t, u\} \rightarrow \{r, t, u + y\}
\]  

(42)
where
\[ d = \exp(a_i), r \equiv (m, v, b), \]
\[ \rho \equiv (a_2, a_3, a_4), R \in SO(3), \]
\[ \omega \equiv (a_5, a_6, a_7). \]
Combining the above changes in the space of the variables \([r, i]\), the group results:
\[ (r, i) \rightarrow g(r, i) = \left[Rr + \omega t, \left[t + a_2 \right] d\right] \quad (43) \]
The elements of this group could be characterized through the symbol:
\[ g = (d, a_3, \omega, R) = (d)(a_3)(\omega, R) \quad (44) \]
Using the changes (38)-(42), we obtain
\[ f_\{d\} = C, f_\{a_3\} = C, f_\{\omega, R\} = C \quad (45) \]
where C is a constant.

Taking into account the relation (44) and combining the above functions, we have the following result
\[ f_\{g\}(r, i) = C \quad (46) \]
The relations (3) and (46) show that the need for psychological stimulation is governed by the following rule
\[ V[g(r, i)] - V(r, i) = 0 \quad (47) \]
Namely, the need for psychological stimulation is a constant specific to a person.
\[ V = \text{constant} \quad (48) \]

4 Conclusion
1. The functionality of psychological instances is governed by dynamic laws, all of them containing the same terms. The laws are different as to form and the existence of the common kernel of terms is explained by the necessity of the simultaneous functioning of psychological instances and by the maintaining of the invariant law of the unconscious instance. The invincibility of the unconscious [2] instance is determined by invariance law of the equivalence class type. The conscious instance, endowed with interpretive potential, presupposes laws which preserve the functionality of the unconscious instance. On the other hand the endowing of the conscious instance with rigid limits of potentialities, within which it can function effectively, turns this instance into an extremely vulnerable component. The maximum vulnerability of the conscious instance takes the form of deletion. The deletion is determined by the need of the psychological system to function with its natural unconscious instance in cooperation with a cloned instance;

2. The dynamics of the anti-entropy is determined by an inert component, manifested through the constant need for psychological stimulation; it is further determined by an active component which has to satisfy adaptation [1] to the inquirer environment. The conclusion is surprising because it shows that in the process of adaptation the psychological system does not use its whole available capacity. Moreover, the purpose of the inert component might be the stimulation or the inhibition of the inquirer environment. In this way adaptation becomes efficient;

3. Taking into account the conclusions presented above, we can conclude that an essential component of the psychological equilibrium is given by the preserving of the ancestral constant that is the need for psychological stimulation. The deletion of the possibility of the specific expression of a person and the impossibility of avoidance of the unpleasant state are determined by the alteration of the constant that is the need for psychological stimulation.

References: