Fractal Model of Psyche and Archetypal Mechanisms of Human Behaviour

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Abstract:

Based on the model of personality by Roberto Assagioli and field theory of Kurt Lewin and as a result of our choice of the fractal model for representing the logical and information components of the mind, we developed a universal fractal model of the human psyche and its components in their dynamic interaction with each other and with the environment, as well as discovered the archetypal mechanisms of this interaction.

In the framework of the presented model, this publication also describes the mechanisms of development of the societal psyche of human communities, which to a great extent determines the same type of behavioral responses of most of its members to the same external challenges.

The fractal model of the human psyche makes it possible to quickly and comprehensively provide members of new political organizations able to operate effectively under the conditions of the information society with rather profound interdisciplinary knowledge about different approaches that explain the principles and mechanisms of their choice of behavioral patterns and strategies in the process of organizational interaction, as well as bring all these approaches into a coherent and consistent system of ideas and views about the interplay of the individual, the organization and the environment.
One of the most serious threats facing Western society against the backdrop of the financial crisis and permanent military conflicts on its periphery includes, on the one hand, the failure of democratic government institutions to generate a collective coordinated response to such external threats and, on the other hand, their degeneration as a result of simulation and imitation of democracy in the information society, where the media play an increasingly important role as a tool for designing the virtual space that essentially replaces the real world and turns into the basis for consciential wars [1].

The Ukrainian elite looks up to the societies of Western democracy where power is shaped and exerted by elite group political organisations after winning elections, therefore it is clear that the reason for this problem lies in the inconsistency of the basic qualities of such organisations with the new realities of the information society. This, as well as effects of the long known “iron law of oligarchy” described by Michels (this law postulates concentration of power in the oligarchic top of political organisations and
passivation of rank-and-file party members), puts to the fore the problem of constructing qualitatively new political organisations able to operate effectively in the information society.

To address these issues, we examined the conditions when organised elite groups opted for strategies of cooperation as opposed to strategies of confrontation in the process of competitive interaction [2]; developed principles of archetypal management of social systems and organisational tools for its implementation [3]; and proposed the concept of creating and deploying socio-political organisations with the variable structure – dynamic network [4].

For effective implementation and successful use of the proposed findings in real political organisations, their members should at least understand the nature of their choice of behavioural patterns and strategies within organisations due to the impact of socio-psychological effects and processes during their group interaction as well as ethological, social, cultural, psychological, psychoanalytical, political, situational, organisational and other factors. This will allow them to consciously accept and take in stride the period of organisational change and, consequently, to internalise the new organisational culture that involves collective cooperation under the new rules and algorithms underlying the practical application of the organisational tools we developed.

However, a huge amount of scientific and sometimes conflicting approaches within different disciplines explaining human behaviour complicates the task of acquiring relevant systemic knowledge by members of political organisations.

To illustrate the relationship of the components of the individual psyche (including components of the unconscious) and their correlation with the components of the unconscious of the societal psyche, we will resort to one of the most well-known models of personality.
Much of the previous research and advances in the study of the human psyche from different angles were summarised by the Italian doctor and philosopher Roberto Assagioli [5]. As a result, he came up with a multi-dimensional concept of the human personality (Figure 1), which, although being far from perfect, offered a more meaningful and realistic view than the previous ones.

*Figure 1. Structure of personality by Roberto Assagioli.*

According to the author, the unconscious includes: the simplest forms of mental activity controlling the life of the body; reasonable coordination of bodily functions; basic attractions and primitive urges; numerous “complexes” bearing strong emotional charge; images of nightmarish dreams and fantasies; lower uncontrolled para-psychical processes; various pathological manifestations such as phobias, delusions, obsessions and desires.
The middle unconscious consists of the mental elements that are similar to the mental elements of the conscious and freely penetrate it. This is where we internalise the gained experience; this is where the fruit of the daily activities of our mind and imagination emerge, develop and mature before being brought to the light of the conscious.

The higher unconscious or supra-conscious. This is the area that produces the highest forms of intuition and inspiration – artistic, philosophical and scientific – ethical “imperatives”, and striving for humane and heroic deeds. This is the source of higher feelings, such as altruistic love; it is the source of talents and the state of contemplation, enlightenment and ecstasy. Here lie the higher para-psychical functions and spiritual energy.

The field of consciousness. This term is not entirely accurate, but it is clear and suitable for practical purposes. It designates the part of our identity we are conscious of: a continuous stream of sensations, images, thoughts, feelings, desires and attractions accessible to our observation, analysis and evaluation.

The conscious “I” (a point of pure self-consciousness) is often mistaken for the above-described conscious part of our personality; in fact, they are quite different. This can be seen by introspection. The changing content of our consciousness (sensations, thoughts, feelings, and so on) is one thing, while “I” – the centre of our consciousness – is another. The difference between them in some ways resembles the difference between the illuminated area of the screen and the images projected onto it. However, “men on the street” and even highly educated people do not take the trouble to engage in introspection and do not see the difference – they passively float on the surface of the “stream of thoughts”, identifying themselves with each successive wave with the variable contents of their consciousness.
The higher “I” usually is not just immersed in the flow of the contents of the conscious, but seems to disappear altogether when we fall asleep, faint, are under the influence of aesthetic drugs or hypnosis. However, when we wake up or come around, the “I” mysteriously re-appears from nowhere – a fact which upon closer examination is indeed incomprehensible and confusing. This fact leads us to assume that behind or above the conscious “I” there is the true “I”, a permanent centre from which the “I” returns to the consciousness. There are different ways to find out whether the “I” really exists. Many people who experienced a more or less long-term conscious understanding of the higher “I” compared the authenticity of this experience to that of a traveller in an unknown-before country. This “I” is above the thought stream and the body condition and is not subject to their influence. While the personal, conscious “I” should be considered as its reflection, “projection” on the field of the personality. At this stage of the psychological study of the higher “I”, nothing definite can be said about it, but the importance of this synthesising centre is a guarantee of future research.

The collective unconscious. Human beings are not isolated from each other; they are not “monads without windows” as Leibnitz thought. Sometimes people can feel a subjective sense of isolation and loneliness, however existentialist concepts that absolutise this fact are not true either psychologically or spiritually. The external line of the oval in the Figure should be regarded as a “demarcation” line rather than a “separating” one. It should be seen as similar to the cell membrane, which provides continuous active exchange of substances between the cell and the organism. Processes of “psychological osmosis” take place between us and other people all the time; they also take place between us and the mental environment that surrounds us. The latter thesis is in line with what Jung referred to as the “collective unconscious”, but he did not give a clear definition of the term and included in the collective unconscious
different and even contradictory elements, namely primitive archaic structures and higher innovative work of the supra-conscious level.

According to Roberto Assagioli, this concept of the structure of man’s inner world includes, coordinates and brings together the results of various observations and experiments. It allows for a fuller and deeper understanding of the dramatic collisions of our life with its conflicts and problems, reveals the means of solving them, and points the way to liberation.

In our view, one of the key shortcomings of this model is its static mode and the lack of mechanisms that represent the interaction between the components of the model inside the psyche and with the challenges of the environment, as well as the absence of mechanisms that link this interaction with human behavioural reactions to external challenges.

Another important concept that lies at the heart of our research is field theory developed by Kurt Lewin [6, 7, 8] and its basic concepts: the life space and its sectors and regions, locomotion and communication between them, mental energy, tension, valence, etc.

Life space is a key concept in Kurt Lewin’s field theory. The content of this term includes all the many real and unreal, current, past and future events contained in the mental space of the individual in a given time. These may be expectations, goals, images of attractive (or repulsive) objects, real or imagined obstacles to achieving the desired, human activities and so on. All in all, anything that might determine individual behaviour. Hence, behaviour is a function of personality and his/her life space at any given time. It should be noted that Lewin acknowledged the impact of non-mental events on human behaviour. Therefore, his analysis of life space includes even the effects associated with socio-economic and physiological factors that people are
unaware of. Sometimes life space is called mental. In terms of Roberto Asagioli’s personality scheme, life space can be considered identical to the middle unconscious.

Psychological space consists of different sectors or regions that are represented graphically as separated with borders. The borders are permeable. The “tougher” the border (the barrier), the thicker the line delineating it. Facts of life space include everything that the person can become conscious of. Events result from interaction of several facts. The number of sectors (regions) is determined by the number of facts currently contained in the life space. The closer the sector to the personal space of the person, the more influence it exerts. In the context of our study, the concept of boundaries between the components of the psyche bears special importance; the level of permeability of these boundaries creates a certain resistance to information exchange between them, which, in our opinion, is relevant for the personality model by Roberto Asagioli.

Communication between the regions is implemented by means of locomotion. Locomotion (actions) can take place both in the real physical space and in the unreal imaginary space. The function of locomotion is to regulate human life space. The level of tension in one sector can be controlled through the implementation of locomotion in another sector. For example, dreams may be unreal locomotion associated with regulation of tension generated by the needs that for the time being cannot be satisfied in the physical space. If dreams do not reduce the tension, one resorts to other regions in order to get some discharge. If locomotion in accessible regions does not reduce the level of tension, and the remaining regions have tough “input” borders, human behaviour can be described as obsessive. The individual him/herself cannot be considered a space within which an object performs locomotion from one part to another. Personality regions are said to communicate with each
other. Locomotion and communication are described as events as they are the result of the interaction of facts.

Kurt Lewin (like most personality theorists) believes that man is a complex power system. The type of energy that performs psychological work is called mental energy. Mental energy is released when the psychic system (the human being) is trying to regain balance after losing it. Imbalance is generated as a result of increased tension in one part of the system compared to the other parts due to external stimulation or internal changes. When the tension in the system gets balanced again, the energy release halts and the whole system comes to a state of rest.

Tension is a condition of the human, or, more precisely, the state of an intrapersonal region with regard to other intrapersonal regions. The state of tension in a particular system tends to equalise with tension of the surrounding systems. For example, if a system is in a state of high tension, and the surrounding systems are in a state of low tension, the tension will strive to expand to the surrounding systems until the tension level is equal throughout the system. The psychological means of pressure equalisation are called processes. Such a process may include thinking, memory, sensation, perception, action, etc.

The state of balance does not mean there is no tension. Perhaps, no organism can be completely free of tension and stay alive. Balance means either that the tension throughout the system is equalised, or that the subsystem with a different tension level is firmly cordoned off and isolated from other intrapersonal systems. This high-tension system can remain in isolation for a long time representing a more or less constant reservoir of energy. A personality can contain a number of such strictly segregated systems that continuously provide energy for mental processes.
Another conceptual property of tension is that it puts pressure on the boundaries of the system. If the boundary is strong, the diffusion of the tension from the system to neighbouring systems will stop; but if the boundary is weak, the tension will carry over from the given system to the others. Usually every high-tension system borders on more than one high-tension system. In such cases, resistance of one part of the border may be weaker than the resistance of the other parts. This allows the tension to move in certain directions more freely than in other. In other words, the dynamic communication between systems is variable.

An important conclusion of Kurt Lewin's “field theory” is the thesis that groups of people should be considered as being in a state of constant tension. It is generated, on the one hand, due to the demands of uniformity; and, on the other hand, by forces that influence each team member individually, making them move away from the group standard. Members of any group will have different sources of information on issues of general significance and will interpret this information in various ways. This will create a variety of opinions facing the resistance of consolidating intra-group forces. The intra-group forces are aimed at achieving a static state characterised by a high level of entropy with a total uniformity of opinions.

Some individuals may also be seen as high-tension systems, particularly in regard to their conflict with group standards. If someone suddenly manifests a divergence between group norms and their own views, this generates a tension that can be discharged in one of the three following ways: bringing the group round to their point of view; opening oneself to the group influence to bring their own opinion in line with the vision of the group; or rejection to consider the group opinion as the standard for forming a personal opinion. If it is impossible to bring the group round to the personal point of view and the arguments of the group seem to be unconvincing in the
light of the available facts but the person does not feel like distancing her/himself from
the group, a powerful kind of tension emerges – “cognitive dissonance”, i.e. any tension
that arises in many situations where various factors pull the person’s attitudes in
different directions.

The book *The Person and the Situation* by Lee Ross and R. E. Nisbett shows
that the impact of the environment in general and contexts of discrete situations in
particular often plays a decisive role in people’s choice of behavioural patterns and
strategies [9]. This book is dedicated to the key issue of Behavioural Sciences – the
interdependence of human behaviour, the presence of patterns in it and the possibility to
predict it based on these patterns. The authors argue that it is difficult and often
impossible to predict human behaviour in a given new situation based on observations
of their behaviour in other situations or based on data about their personality
traits. According to the authors, initially socio-psychological data do not help us to
predict the behaviour of specific individuals or groups but rather undermine our
confidence in the possibility to make such a prediction based on the information that is
usually used for this purpose.

To substantiate their position and show the patterns and information that can be
used to make successful predictions (or at least an explanation) of behaviour, the
authors carried out a kind of inventory of ideological and theoretical achievements of
socio-psychological sciences. They articulate three main ideas, which, in their view,
underlie the structure of modern social psychology.

The first idea – is the thesis of a strong determining influence of the social
situation of the person, moreover the influence often comes from non-obvious or
insignificant at first glance characteristics of the situation (such as presence of certain
“channels” contributing to a manifestation of an individual’s activity).
The second idea relates to subjective interpretation and its impact on human behaviour. At this point, socio-psychological situationism differs from the behavioural one and is even opposed to it. According to the authors, a subjective interpretation is neither a mirror image of the external situation, nor a product of an absolutely arbitrary “construction of reality” by the subject, rather it is a result of the interaction between the person and the situation.

Here again, the implication is not just that the subjective perception and understanding are important, but that people are not aware of this effect (“naive realism”), underestimate the variability and diversity of subjective interpretations of the same objective situation and are not able to make adjustments for interpersonal differences in interpretations when explaining other people’s behaviour.

The third idea concerns the configuration of forces acting within the psychological systems of the subject, as well as in the social systems that comprise the subject as their part. Specifically, we imply that tranquillity in these systems is only ostensible. In fact, these systems are internally strained and their stability is supported by a complex balance of many opposing forces in equilibrium. This equilibrium is sufficiently stable and may from time to time resist the onslaught of external influences. But if the balance IS disturbed, changes come avalanche-like, as powerful forces are released that already exist within this system. To outside observers, these changes seem surprising, since they often overlook the dynamic (quasi-stable) nature of stability in high-tension systems. It is noteworthy that the authors illustrate such impressive changes of quasi-stable systems using the example of the collapse of the socialist regimes in the Soviet Union and former Eastern Bloc countries that occurred one after another like a chain reaction in the late 1980s and early 1990s.
One of the founders of the Ukrainian school of archetype studies Eduard Afonin in one of his books [10] analyses the cyclical model of personality socialisation in history, the influence of the socialisation process on the formation of societal psyche, and the methods of analysis of social systems based on archetypes. In another work [11], the author applies binary opposing scales to monitor and analyse changes in the psychosocial culture of Ukraine that can display both the stable, unchanging historical component of the psychology of Ukrainian society and the changing, dynamic component. Specifically, he applies the following six scales of binary oppositions: extraversion/introversion, emotionality/pragmatism, irrationality/rationality, intuitiveness/sensority, externality/internality, executiveness/intentionality. Each of these psychological characteristics is an outcome, a kind of a historic result of the things that repeated many times in the behaviour of individuals and the whole nation, and, therefore, it can serve as a measuring tool of Ukraine’s identity or deviations from it. In other words, it is a societal identity as a multidimensional psychosocial reality defined as a reliable means of harmonisation of the internal life of society and a guarantee of its self-acceptance and further development.

In the context of our study, it is important to mention the work of Ukrainian researchers O. Donchenko and Y. Romanenko [12], where they offer a fractal model of the archetype of psychosocial evolution, which, according to the authors, is based of cultural archetypes as the organising principles. The authors believe that these principles constitute a kind of a regulation matrix imposed on chaos so that any content can find its place. It is not by chance that the organising principles are situated on the fractal as an irregular self-similar structure, rather it is natural, according to the actual correlations and mutual phenomenal structures. Individual features that represent this or that style of life do not reflect its integrity. Only together do they make up an organisational society
type, set its spiritual atmosphere, its integrity, the spirit of society, its aura, and the way people feel in it. The authors identify the following components of the fractal archetype: totalitarian (totem) type of a social life style, authoritarian type of a social life style, liberal social life style, and democratic social life style.

To integrate various interdisciplinary approaches to forming human behaviour into an integral model in the context of our research, it is very important to account for the concept of the Ukrainian author G. Pocheptsov represented in a number of his books and publications, including the book *Глобальні проекти: конструювання майбутнього* (*Global Projects: Constructing the Future*) [13]. It is based on transitions between the three spaces – information, virtual and physical ones: changes in the information space alter the virtual space, which in turn leads to changes in the physical space. Changes in the physical space that occurred as a result of these conversions generate information occasions canalising feedback, which makes it possible to properly adjust control information effects on social systems. This concept implies a systematic relationship between the three abovementioned spaces and the mechanisms for its implementation. When choosing the basic model of our study we were trying to take it into consideration and visualise it to the maximum extent.

One of the important issues that must be resolved in the process of constructing qualitatively new political organisations able to operate effectively in the information society is the acquisition by its members of sufficiently deep interdisciplinary knowledge about different approaches to explain the principles and mechanisms of choosing behavioural patterns and strategies in their organisational interaction and bringing all these approaches together into a coherent and consistent system of views and ideas of the mutual influences among the individual, the organisation and the environment.
The aim of the article is to provide a universal model of the human personality, or in other words, the human psyche and its components in their dynamic interaction with each other and with the environment. In this context, the main task is to select and substantiate the principle of work of the model able to ensure the specified parameters, such as present in one format the simplest information, its complex aggregates, the very psyche and its components, including archetypes, and, most importantly, the interrelation mechanisms and transitions between them.

In order to harmonise and integrate different approaches, we introduce the concept of a universal logical information module (LIM) presented in Figure 2 at position 1. Here, the term “module” is used in the classic sense – as a part that can be separated or, at least, mentally isolated from the total. The attribute “logical information” in this case indicates that the selected module constitutes a certain amount of information that can be combined with other modules to form a certain set of logical relationships. The amount (density) and the structure of logical relationships of any arbitrary information module with other modules varies in different types of information systems from logic and informatics to the psyche of the individual, the psyche of human groups, and societal psyche. The totality of logical relationships of all information modules of the system constitutes its sense-bearing field.

Inside biological information systems, a continuous process of formation of logical connections between different blocks of information is taking place. On the physical plane, this process is based on the biological mechanisms of formation of multiple synapse chains between dendrites on brain neuron axons (Figure 2, position 3). It should be emphasised that the logical information module is similar to neuron synapses but by no means identical. However, the similarity is one of the criteria for the correct choice of the model in our study.
The interdependence of mental and biological processes in the brain is manifested through two interconnected mechanisms. The first of these is the mechanism of activation of certain areas of the brain due to mental processes, and the second one includes the mechanisms of launching mental processes due to the transmission of stimuli through the human nervous system to the respective groups of neurons, including that due to neurohumoral responses. The simultaneous impact of these mechanisms and their relations activates certain groups of neurons in areas of the brain, which provides energy for concentration, focus and attention circulation in corresponding logical information modules. That is, at the biological level (inside the brain psychic phenomena) attention focuses almost without resistance circulate along the pre-formed chains of synapses with the minimal energy input by activating the relevant groups of neurons.

At the same time, bringing to consciousness components of the unconscious or reflections of external unrecognised stimuli as a result of them being captured by attention focuses as well as forming new logical connections between them and the components that already exist in the conscious mind requires biological energy spent to scan the relevant areas of the brain activated by certain groups of neurons and to form new chains of synapses between them.

In other words, any logical information module in biological information systems is brought to consciousness only after an attention focus seizes it and the respective groups of neurons activate in the brain, where its reflection is stored. As a result, new chains of synapses between neurons of the brain form or old ones activate, fixing on the biological level the newly formed logical relationships between components of the biological information system – the individual’s psyche.
A module that made its way in the information system but was not captured by attention focuses avoids consciousness and gets directly in the middle unconscious, changing to some extent the entire information state of the system and, accordingly, the parameters of its sense-bearing field. In this way, we can represent a model of suggestion, for instance.

So, logical information modules contain blocks of information that are interconnected due to internal fixed logical connections, which makes it possible for attention focuses to isolate them as part of the total logical and information content of the system. The set of logical connections of the module with a certain structure and density makes up its sense-bearing field that actualises and acquires unique parameters within this or that biological information system of a higher or lower level of complexity as a result of interaction with its own sense-bearing field.

In other words, in this way, any logical information module in a sense-bearing field of a random biological information system is conceptualised – it acquires a unique set of meanings realised through the formation of new internal logical relationships between its own components and external logical relationships of these components and all other logical information modules of the biological information system.

An equivalent of the above concept of a logical information module is an element of any flow chart describing algorithms or processes, for instance in programming, where separate steps are depicted as blocks of various shapes connected by lines – an equivalent of logical relationships.

It should be noted that the proposed concept of a logical information module is wider than the concept of gestalt: it includes gestalt just like it includes the smallest elementary logical information module that will be presented below or components of
the psyche from the model of Roberto Assagioli, archetypes, the very human and societal psyche.

Figure 2. Logical information modules.

In Figure 2, position 1 shows the concept of a logical information module – a unit of information combined with other information via logical connections. This model allows us to visualise the density of logical connections that pass through this piece of information in the sense-bearing field of a given information system – in different shades of grey. Obviously, the density of logical relationships of modules in the communication channel in the conscious, the unconscious, and the collective unconscious is different – hence in their representation in the model they will have different shades of grey. It can be argued that the greatest density is in the information system of God – there it is equal to infinity, i.e. each unit of information there is tangled in an infinite number of logical relationships.
In Figure 2, position 2 shows the basic logic and information modules equivalent to the binary code in programming. Another biological analogue is the brain neuron synapses (Figure 2, position 3).

Just as gestalt may be incomplete and complete, logical information modules are compensated and uncompensated in the sense-bearing field of a particular information system (Figure 2, positions 4 and 5). Any logical information module is compensated in the sense-bearing field of its corresponding information system or a higher one in terms of the complexity level. However, if the information system does not distinguish some of the logical connections available in a complex module, we get an uncompensated logical information module, which after getting into the sense-bearing field of a less complex information system will cause tension of its sense-bearing field, which, in turn, will draw the focus of attention and therefrom receive the energy required to find a compensator.

In this sense, our concept of the logical information module in information systems corresponds to the general idea of sectors and regions in the psychological space in Kurt Lewin’s field theory. For example, the author of a book of problems in mathematics when creating problems has to solve each of them, therefore in his conscious they were compensated or holistic logical information modules. But in the book of problems he only provides the problems – uncompensated logical information modules. After they get into the conscious of students, these problems cause tension in their sense-bearing field. In turn, the tension leads to the student’s concentration on the uncompensated module and an active search for a compensator (the solution) by sorting through logical connections with the mathematical knowledge existing in the student’s conscious – i.e. integrated logical information module in mathematics. In case of successful solution the uncompensated logical information module becomes
compensated in the student’s conscious, the tension in the sense-bearing field subsides, attention focuses on the next task or on any other object that causes a behaviour change – for example, the student starts writing the solution down in a notebook or goes for a walk.

In Figure 2, positions 4 and 5 show different variants of representation for compensated and uncompensated logical information modules. Hereinafter we will denote them as jigsaw puzzles – this is the most generalised way to represent internal and external relationships, which allows us to create visual models of mental process.

Let us introduce the concept of the fractal model of a logical information module. The right part of Figure 3 shows that each random element of this model (fractal as an irregular self-similar structure) has identical logical connections with other elements both outside and inside, because there (inside) it expands and based on the principle of self-similarity incorporates all other elements ad infinitum. Thus, by choosing any random element of the fractal model beyond the fractal shell as a temporary (momentary) form and by tentatively cutting off external logical connections, we get the fractal model of the human psyche. What’s more, the fractal shell at any given time may be a logical information module of any level drawing the focus of attention and constantly enclosing the entire psyche with all its components distinguished by various authors in their models, including metaphysical egregores.

The suggested fractal model helps us illustrate the basic property of logical information modules – their interrelatedness through manifested and not manifested (in simpler information systems) logical links with all other of logical information modules of different levels – from the simplest modules to the whole psyche, including the collective unconscious.
Figure 3. Fractal model of a logical information module.

By focusing our attention to logical information modules of any level and moving inside the shell of its fractal model along any existing logical link and then focusing our attention at the right (or random) logical information module, we fill it with mental energy, consequently it separates, expands and eventually becomes a new fractal shell. When the shell changes, all elements (logical information modules of different levels) of the fractal model restructure, which spawns the formation and stabilisation of a new order within the fractal, and the initial module (wherefrom the focus of our attention started moving) ends up in a new shell together with other components of the psyche. The above-described property of the presented model will be denoted as the fractal inversion.

Thus, one of the key properties of the logical information module as a fractal is its ability to invert, as a result of which any of its components that gets into the focus of a biological information system at any given time reflects and includes the restructured whole – our psyche itself as an information system with all its components. This makes it easy to instantly simulate a logical (associative) transition between mutually enclosed
fractal elements – for example, we can easily organise parallel or logical relationships between the structure of an atom and the solar system, bypassing the entire chain that unites them logically. It is in this way that our model can represent the mechanism of realisation of locomotion and communication from the field theory of Kurt Lewin.

Accordingly, in the same way we can represent a model of our thought flow (Figure 4), where the focus of attention continuously slides (circulates) along arbitrary logical links within the psyche, causing inversion of its fractal, that is triggering its restructuring as a result of discrete concentration of the focus of attention on one of the random internal logical information modules so that due to receiving a certain amount of mental energy it turns into the outer shell of the fractal and reflects all the other logical information modules that together constitute the human psyche.

![Figure 4. Model of the flow of thoughts as continuous inversion of the psyche fractal.](image)

This approach allows us to represent any biological information system or its random part as a complex logical information module in the form of a fractal with a
dynamically variable shell and with its unique structure and density of logical information relations that determine the parameters of its sense-bearing field.

Figure 5 shows a fractal model of the human psyche (fractal model of personality). Its structure contains components of the personality model of Roberto Assagioli as well as its inversion by these components.

![Fractal model of personality](image)

**Figure 5. Inversion of the fractal model of personality by the components from the model of Roberto Assagioli.**

Apart from the highlighted components, the scheme shown fractals that indicate structural components of the psyche of the individual other than those included in Roberto Assagioli’s model. For example, the middle unconscious can be divided into two parts – standard knowledge acquired during socialisation and unique personal experience. Similarly, our psyche or mental space can be divided into sectors and regions according to the field theory of Kurt Lewin.
Figures 4 and 5 demonstrate and illustrate one of the main advantages of the presented fractal model of biological information systems and their components – i.e. independence of the scaling of logical information modules.

Let us consider the interaction of an external challenge as an incoming logical information module with a field of the conscious from Roberto Assagioli’s personality model represented in the above described fractal model. It is important to note that the challenge here means its comprehensive and holistic perception and reflection that includes contexts and features of the current situation in line with the ideas of the authors of the book *The Person and the Situation* [9].

![Diagram](image)

**Figure 6. Reflection of external challenges in the fractal of the conscious and its inversion as a result of the acquired tension in the sense-bearing field due to an uncompensated logical information module.**
Figure 6 shows how uncompensated and compensated logical information modules get outside through communication channels (such as visual or auditory) in the sense-bearing field of a biological information system, for example, in the conscious of the human psyche, their reflection and fractal inversion of the conscious as a complex logical information module under the impact of the tension of the sense-bearing field caused by a reflected uncompensated module.

Obviously, a compensated module (for example, a problem solved as a sample in the book) will not cause tension of the sense-bearing field of the information system (the student’s field of the conscious), while an unsolved problem as an uncompensated module will generate tension this field, resulting in the inversion of the fractal of the conscious due to focusing attention on the reflected uncompensated module and, consequently, its saturation with mental energy.

Let us consider the dynamics of the processes occurring in the human psyche when it produces a response to an external challenge and archetypal mechanisms for their realisation within Roberto Assagioli’s personality model, which will be presented in a fractal form (Figure 7).

Each individual element of Roberto Assagioli’s personality model can be represented as a distinct complex logic and information module in a fractal form, separated from other components of the model by a semipermeable membrane-type shell, and connected with the single psyche of the individual through logical relationships. Separate semipermeable boundaries will be viewed as energy barriers of information exchange between different components of the personality model or, in other words, sensitivity thresholds that prevent the focus of attention from capturing logical information modules (components of the unconscious) and their further bringing to consciousness in the field of the conscious.
Figure 7. Fractal model of personality and its archetypal mechanisms of forming a human behavioural response to external challenges.

Within our model, the energy source that feeds the focus of attention is the psychic and neurohumoral activation of neuron sets in the relevant areas of the brain as a biological information system. That is to say, neurons activated by mental processes or neurohumoral reactions transform the biological energy of the human body into mental energy spent on feeding the focus of attention, supporting its circulation in the field of the conscious, “highlighting” activated uncompensated logical information modules of the field areas, as well as resonant activation of the areas of components of the unconscious corresponding in their frequency (sense-bearing) features in order for them to invert and overcome the resistance of the semipermeable boundaries between the components of the psyche and the conscious field, as well as on their further coming to consciousness after being captured by the focus of attention.
The focus of attention comes from the conscious “I” and “highlights” the parts of the conscious that are within the consciousness at the time, responding to the least tension of the sense-bearing field caused by uncompensated logical information modules – either internal (driven by uncompensated ones into the middle unconscious and approaching its boundaries with the conscious) or external – coming from the outside through communication channels and reflected in the field of the conscious.

Therefore, at the first stage the external challenge is reflected as an uncompensated logical information module in the field of the conscious through an appropriate communication channel (visual, auditory, etc.), which causes a change by increasing its tension.

Tension of the sense-bearing field at an area of the conscious with reflected uncompensated logical information module that came from the outside captures and keeps the focus of attention for some time, hence the saturation of this area with psychic energy and further inversion in the entire field of the conscious into a fractal with a shell corresponding to the external challenge.

The excess energy received by the fractal of the field of the conscious due to its being captured by the attention focus triggers resonance with similar sense-bearing (having similar frequency characteristics) areas of components of the unconscious. This causes the transfer of mental energy to the areas of the unconscious housing a plurality of respective compensators of the uncompensated module. In fact, these are the areas of corresponding archetypes as logical information objects with highly concentrated human experience because of the ultra-high density of well-structured logical connections that include a variety of possible reactions in a typical archetypal situation.

Because of the phenomenon of resonance, compensators with the most similar frequency (sense-bearing) characteristics resonate with the field of the conscious
saturated with psychic energy that reflects the external challenge; and the energy
generated in this way causes their inversion and, therefore, the increase of tension of the
sense-bearing field in these areas to a level higher than the threshold of sensitivity of the
focus of attention, allowing it to overcome the semipermeable boundaries between the
components of the psyche and get captured by this focus.

It should be noted that resonance activates areas of the various components of
the unconscious, and as a result corresponding energy-saturated compensators of
different (sometimes contrary) content get into consciousness by being successively
captured by the focus of attention. Thus, the biological information system (the human
psyche), which by its nature strives for balance, generates a set of possible reactions that
can compensate for the reflected external challenge.

In the field of the conscious, the compensators that got into consciousness in
such a way alternately adjust to the reflection of the external challenge. The ultimate
choice of the compensator that will produce a behavioural response of the individual to
the external challenge is made based on the criterion of minimising the tension of the
sense-bearing field of the different variants of the compensated external challenge held
in the focus of attention that are produced by different compensators in the current state
of the general sense-bearing field of the given biological information system. This is the
field that determines different levels of saturation with personal emotions, passions,
desires, attachments, etc. in the process of sorting through various compensators.

It is important to note that the field of the conscious in Roberto Assagioli’s
model of personality from all sides borders on the middle unconscious, which, in turn,
consists of mental elements (logical information modules) similar in construction and
structure to the mental elements of the conscious that quite freely move both ways
through the semipermeable membrane-type shell. In the middle unconscious, personal
experience, information and knowledge received in the process of socialisation are internalised. We can therefore say that it is the middle unconscious that contains the concentrated and generalised historical experience of the ethnic group, nation, and civilization, which in general makes up the societal psyche.

Due to the low information resistance of the border with the field of the conscious, the middle unconscious is easily enough scanned by the focus of attention – its areas are “highlighted” and brought to consciousness using significantly less energy compared to the areas of other more remote components of the unconscious. Therefore, the compensators that emerge as a result of resonance and inversion of the respective fractals in the areas of the middle unconscious under normal conditions are most likely to be selected as the behavioural response to an external challenge when sorting through the variety of options compared to other compensators from remote components of the unconscious that entered the field of the conscious due to their saturation with mental energy through the mechanism of resonance.

When extreme external challenges enter the field of the conscious and the tension of the area of the field of the conscious grows to a significant level, or when the tension is high for other reasons, compensators from areas of the remote components of the unconscious activate avalanche-like, which increases the likelihood of opting for them as a behavioural response. Two equal compensators can make it complicated to choose and/or trigger cognitive dissonance in the human psyche, which is usually settled by superseding one them to the middle unconscious due to power overload of the attention focus.

The choice of a compensator depends on the current state of the biological information system in general and the strength and nature of its sense-bearing field in particular, or, to put it in simple terms, by emotions, passions, affections, inclinations,
etc., as well as by temporal and quality characteristics of the challenge, which together determine the probabilistic nature of the result of choosing the person’s response to it.

After a successful or unsuccessful compensation, every challenge reflected in the field of the conscious as an uncompensated logical information module gets into the middle unconscious, namely in the area of memory. Moreover, these modules are distributed in an orderly rather than chaotic way – they are connected in some way with compensators of the middle unconscious via logically structured links activated through the mechanism of resonance, as well as with some conscious compensators from areas of other components of the psyche that got into the field of the conscious due to their resonant activation.

In the future, when a similar external challenge comes and is reflected in the field of the conscious, the fractal of the field of the conscious (which due to inversion acquired an appropriate shell) through the mechanism of resonance activates the corresponding memory area of the middle unconscious containing various options of once perceived compensators from the various components of the psyche. Thus obtained psychic energy of the activated area triggers inversion of the fractal of the middle unconscious, which makes it easy for it to overcome the resistance of the semipermeable boundaries of the field of the conscious, where it is captured by the focus of attention and gets into the consciousness in general including the multitude of compensators that entered consciousness last time. This ensures faster response to a repeat challenge of the same type and minimisation of the amount of the required mental energy, and the whole process at the biological level is based mainly on regeneration and activation of a network of existing contacts (synapses) between neurons of the brain.
The latter property of the provided model suggests that this is the way of formation of the societal psyche inherent in a given human community: during socialisation, areas of typical reactions to external challenges emerge in the middle unconscious, they include readymade – made conscious by ancestors and implanted in culture (epics, traditions and customs of that community) – sets of compensators from various remote components of the unconscious. Formed in this way, the societal psyche of the human community to a large extent determines the same type of behavioural responses of most of its members to the same external challenges because the awareness embedded in the middle unconscious of the typical set of compensators implanted in the societal psyche requires minimal mental energy. This assumption about the formation of the societal psyche formed based on the analysis of the developed fractal model of personality correlates quite well with the theses of the work by Prof. Afonin [10,11].

To represent the dynamics of archetypal mechanisms of formation of human behavioural responses to external challenges within the above fractal model of the psyche, we produced a video animation that you can view on YouTube [14].

**Conclusions.** Based on Roberto Assagioli’s model of personality and the field theory of Kurt Lewin, as well as based on the choice of the fractal model for representing logical informational components of the psyche, we developed a universal fractal model of the human psyche and its components in their dynamic interaction with each other and with the environment, and also revealed the archetypal mechanisms of such interaction.

Within the model, the article also describes the mechanisms of formation of the societal psyche of human communities, which largely determines the same type of behavioural responses of most of its members to the same external challenges.
The model will make it possible for members of qualitatively new political organisations to operate effectively in the information society to get sufficiently deep interdisciplinary knowledge of different approaches explaining the principles and mechanisms of choosing their behavioural patterns and strategies in the process of organisational interaction, as well as to bring all these approaches into a coherent and consistent paradigm of views concerning mutual influence of the individual, the organisation and the environment.

The suggested model will help to analyse the mechanisms of information, conceptual, organisational and structural, and consciential effects on individuals and their communities within the concept of transitions between the three spaces (informational, virtual and physical) proposed by the Ukrainian researcher G. Pocheptsov [13].

References.


