

Psychopathology according to universal categories

Excerpts from Dr. Diana Wojtkowiak's book,
self-published in: Autorska Seria Naukowa, DETERMINIZM, Tom I, Gdańsk 2008/2014

Authorised by the Author, translation on August 23, 2025, by Piotr Bein, from:
Psychopatologia według kategorii uniwersalnych
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Summary

This book, "Psychopathology According to Categories," aims to provide a new foundation for understanding fundamental concepts in psychology and psychiatry, in part by introducing a kind of alphabet known as the Categories and by discovering precise, cyclical sequences of changes occurring in the human psyche and neurotransmission systems throughout life. Categories are a concept familiar from the philosophies of Aristotle and Kant, but in a much more elaborate form in this book describing in detail the existence of a specific developmental clock in humans, as well as in animals, that tracks changes in psychological traits, behavior, and even abilities. The functioning of this clock in humans is easily discernible as twelve recurring phases in three synchronized cycles, each lasting a single phase: 12 years, 1 year, and 1/12 year. Some individuals experience characteristic phase shifts in this precise developmental clock. These individuals exhibit distinct behavioral patterns and are highly susceptible to chronic mental disorders such as schizophrenia or bipolar disorder.

The close connection between the course of mental disorders and the phases of the developmental cycle can be very helpful in selecting pharmacological or psychological therapy appropriate to the sensitivity of a given period. However, this requires determining the starting phase of the patient's developmental clock (or developmental option) based on their life history, particularly regarding their inner life, changes in psychological characteristics and interests, and episodes of mental disorders – all of which jointly constitutes the subject of a new branch of psychology and psychiatry called chronoanalysis. Overall, it is expected that the use of these methods will significantly improve the accuracy of diagnosis, with the expected consequence of reducing the number of cases of inappropriate treatment.

This book uncovers many previously unknown phenomena in the human psyche and explains a whole group of previously puzzling psychopathological problems. It is based on a reanalysis of the experimental material available in the scientific literature and the rejection of erroneous hypotheses. It will undoubtedly contribute to a better understanding of the human being in all their inner life. It contains Dr. Diana Wojtkowiak's many scientific discoveries, the fruit of the author's long-standing research. However, because the most interesting developments in science concern interdisciplinary areas, an effort has been made to avoid hermetic language, so that it can be useful not only to specialists but also to open-minded, high school graduates and students, embarking on the world of scientific inquiry. It can also provide much clarification for patients who seek to explain their incomprehensible mental experiences on their own by resorting to specialized literature.

This book can be divided into three parts. Chapters 1 to 4 discuss issues related to personality and human development within the limits of conventional norms. Chapters 5 to 6 address a static perspective on mental disorders at both the psychological and molecular levels. Chapters 7 to 14, however, address the temporally extended and rapidly changing processes of psychological

development (whether disrupted or successful) in individuals susceptible to mental disorders due to their different starting phases of the developmental clock.

This book is the first in a series entitled "Determinism" that will address naturally occurring torsion fields with specific properties; they possess twelve distinct phases, corresponding to twelve Categories, and form a specific fractal analogous to the phenomenon of octaves mentioned in esoteric teachings and partially observed in music. Subsequent books will address the impact of Earth's torsion fields on the ethnic characteristics of people inhabiting various regions, the emergence of clearly demarcated historical eras, and the impact of interfering planetary fields on humans.

Instead of foreword

[not translated]

Introduction: Depravation of contemporary psychology and psychiatry

The situation of contemporary psychiatry and psychology is, one might say, quite exotic, especially given the progress in the development of new weapons.

While psychiatrists-scientists admit that their diagnoses are 30-40% inaccurate, non-scientific psychiatrists do not. Psychiatry students don't find psychiatric case histories in libraries; they learn about disease cases only through contact with a live patient who has already undergone some stages of therapy—and at her or his expense. Psychology lacks an alphabet with which to describe human emotional life. Textbooks give the impression that virtually everything has already been discovered, that the human psyche can practically be replaced by a computer. The patient fears the psychiatrist...

A person—"born into the world, stripped of any distinctive features, molded like clay by upbringing in the image and likeness of a teacher"—the idea of tyrants implemented by their sycophants and ultimately institutionalized by the military-academic complex in a previous era—is still doing well, but the person is much worse: deprived of dignity, group affiliation, misunderstood, lied to, torn by commands and prohibitions, stressed and fearful! What more does it take for the dormant potential for mental illness to manifest itself in full bloom? Every year, more mentally ill people are registered. Psychological manipulation reveals its hidden underbelly, an uncontrolled side effect of civilization's social disease. After a period of aggressive totalitarianism, however, we have moved to an era where a person has a slightly higher value, and nothing, at least officially, stands in the way of officially restoring their dignity. This means letting the person be who they are, with the character they have had since birth, to have inner experiences, to be understood and not afraid to speak up, to have the right to be different from what they're told, to have their own values and a sense of freedom.

Freedom is, of course, a beautiful word, and most people work from dawn till dusk just to have something to eat and pay the most important bills before the bailiff arrives. So, is it an empty phrase? It depends on which definition of freedom you use. There's a definition, promoted by the Catholic Church, among others, that says freedom is the ability to act according to one's conscience. The word "conscience" here somewhat narrows the meaning of the image, but it's

important to remember that church vocabulary has certain preferred terms. Living in accordance with one's inner values is a broader term and doesn't involve social conflict, contrary to the definition of "everything is permissible." And it's no accident that I used the term "sense of freedom," because it speaks precisely of realizing one's inner values. You could say it's almost the same as "you're free to do anything."

However, it turns out that these internal values aren't numerous and have positive traits, with, let's say, one exception. Humans are unable to create them arbitrarily; moreover, they are condemned to them. Hence, I've adopted the term "determinism" as the leading motif of a series of books that I will be publishing successively, most of which will concern the condition of humans inhabiting planet Earth. We are condemned to our values, but we're comfortable with that because they are "our values," so determinism doesn't hurt us. However, it hurts when someone close to us, or someone we encounter daily, out of necessity, has different, stable values than we do, values that we don't understand. In this book and the next ones in the Determinism series, I will describe many cases and aspects of determinism that we might not have expected, or rather, certainly didn't expect, and which guides not only our personal lives but also our social lives, creativity, politics, and wars. There is, of course, a certain room for maneuver, which we can define as freedom even in a broader perspective than previously defined. The determinism I'm writing about cannot be eliminated at the current level of physical knowledge. Perhaps another time...

In this book, I introduce completely new terms to understand the entire field of many unexplained and previously controversial facts and mechanisms, such as: the twelve-phase developmental clock, the shift in the clock's starting phase, the constant and variable twelve-phase torsion field of the Earth, developmental option, etc., or the concept of Categories, known to philosophy, but presented here in a much more developed form. The need to introduce these terms arose from a thorough analysis of the experimental material available in the scientific literature, or rather, a reanalysis, enabling the creation of new functional models of animate and inanimate nature.

This book, "Psychopathology According to Universal Categories," aims to provide a new foundation for understanding psychology and psychiatry, in part by,

- introducing a kind of alphabet known as Categories,
- discovering precise cyclical sequences of changes occurring in the human psyche and neurotransmission systems, and
- discovering new relationships that might be very helpful in identifying in a particular period an appropriate therapy, be it pharmacological or widely defined psychological therapy.

The book will also contribute to a fuller understanding of a human being in all of his or her internal life. Employing named tools together with my collaborators, we call chronoanalysis an investigation of the essence of a human's psychological issues that longer-term obey a deterministic change process. Chronoanalysis constitutes a large part of this book.

The book contains a number of my own scientific discoveries, but considering that the most interesting development in science concerns interdisciplinary topics, I have strived to avoid a hermetic language where possible, so that not only a narrower specialist would benefit but also an open-minded, high school graduate or student who enters the world of scientific inquiry and does not shy away from dictionaries. I have here in mind also those patients who on their own try to explain their unclear psychic experience by consulting specialist literature. For such persons, a glossary at the book's end illuminates essential special terms that are necessary to comprehend this book.

In descriptions of psychic characteristics and experiences I quote large passages from other authors, so that crucial information stays in its context while ensuring for the sake of Reader and for myself that forceful fitting of evidence is avoided. Hence, these are not simply quotes to support a thesis, but material for own analysis of the text that may prove deeper and than mine.

I have realized quite fast that when something does not fit even a bit, it should be rejected. We don't force misfitting pieces of a puzzle physically into place, so when my thesis based on assumed models falls into place with a slightly misfitting component, I must reject the thesis. The misfit contained erroneous information and deserved rejection. However, when the misfit is significant, it is often a beginning of a new discovery. The sequence of chapters in my book follows more or less my investigation process from simple assumptions towards more complex results. For example, the existence of a shift in beginning phase of developmental clock was born during writing this book. I trust that such sequence of the book's contents should help the Reader to independently confirm the book's conclusions, and, hopefully, to draw own conclusions, perhaps going further than I have managed. I don't point to some connections, counting on bright readers to do it readily.

The book can be divided into three parts:

- Chapters 1 to 4 describe issues associated with personality and development of a human who is commonly considered to remain within the confines of a "norm".
- Chapters 5 to 6 look statistically at psychopathologies at the psychic and molecular levels.
- In contrast, Chapters 7 to 14 represent true chronoanalysis. They concern long-lasting, stepwise changes in psychic development processes (disturbed or not) of individuals who are susceptible to psychic disorders due to their discrepant starting phase of development clock.

Given the large volume of quotations from psychological descriptions, I desired to avoid quotation marks and have not used them, while enclosing own intrusions in brackets. I trust the Reader would agree it's a logical solution. In referring to books I give page numbers after colon. I tried to mark each piece of information taken from the literature with a number appearing in Bibliography. When a number is not cited in the text, it's usually my own thought.

The book was finished in 2008 roku. In 2014 I added in Chapter 6 some information previously missing on histamine associated with Category 9 and 12.

Chapter 1: Introduction to Categories - Categories in human life

Let's imagine a person whose psychological characteristics we wish to describe. We can do this as writers and poets have done for centuries, creating an accumulation of various adjectives and more descriptive terms that seem to best reflect their own subjective feelings. However, we can approach it differently, expecting that, just as there are basic colors, sounds, and smells, and not just a collection of thousands of their shades, there will be a limited number of certain basic characteristics that describe a given person. This book is devoted to demonstrating the existence of such natural (by no means arbitrarily adopted) basic characteristics, their role in the human psyche, and their functioning at various stages of life, in health and in pathology.

There are twelve of these basic characteristics, corresponding to some extent to the categories established by Immanuel Kant and the zodiac signs in astrology. Because these are not simple traits but rather conglomerates associated with human operations, values, abilities, and even goals, in this book I refer to them, following Aristotle and Kant, as "Categories," capitalized to distinguish them from the common understanding of the word.

The presence of Categories is not limited to human character; we find them in professional work, mental illness, the language we use, animal behavior, and many other areas. For example, consider the table below, which divides various genres of television creativity and information into groups roughly corresponding to Categories:

- K1 - sports
- K2 - nature and landscape films
- K3 - diaries
- K4 - drama films
- K5 - cloak-and-dagger films
- K6 - popular science films
- K7 - theater, opera, ballet
- K8 - crime stories, war films, sex
- K9 - films about mysterious forces, travel films
- K10 - films about morality
- K11 - films about social issues, class inequalities
- K12 - religious films

Each of us will be interested in more than one such area, and certainly not all of them. This is related to the multi-layered nature of our psyche. A real person cannot be pigeonholed into a single Category, nor can we say that everyone is the same and everyone represents all Categories simultaneously. It is precisely because of these individual differences, which imply that we are unable to personally understand some Categories, that many seemingly and logically incomprehensible social conflicts arise.

It is crucial that if we can determine the dominance of the psyche by specific Categories and determine the phase of the developmental clock, we can also use this to predict professional abilities, someone's preferences and behavior in specific situations, their sudden changes throughout life, susceptibility to mental illness, and the sequence of symptoms over longer time periods. In particular, based on the cyclical variation of Categories, it will be possible to adapt psychiatric treatment to current developmental changes in the brain. This variation likely applies to physical illnesses as well.

The concept of Categories

Categories are not easy to define simply. Even Immanuel Kant, who devotes a significant portion of his work "Critique of Pure Reason" to Categories, did not attempt to provide a clear definition. My own path to Categories began with an attempt to systematize feelings and emotions, much like colors, sounds, or smells. The premise was to find disjoint groups of feelings that could be expected to be basic. Moreover, there would be as few of them as possible, and their arrangement would create a closed system with as many symmetries as possible. By grouping all feelings and emotions that have names and can be found in one's inner world, a division was created into twelve basic feelings, forming a system with several symmetries.

However, I quickly noticed that each of the twelve basic feelings is also permanently linked to values, aspirations, goals, preferences, and overall character traits. Therefore, there exists a closed system of such "agglomerations" upon which the functioning of the human psyche is based.

I called them the Categories, after Aristotle, whose entire work is permeated with the search in the human and natural world for the elements he distinguished that characterize the phenomena he defined as categories. Aristotle's categories did not constitute a coherent system possessing symmetries. Back then, it didn't have the edifice of knowledge that we now possess after over two millennia. Because the word "category" is currently used with considerable freedom, in a very broad sense, essentially equivalent to the terms "kind," "type," or "class," stripped of their former philosophical significance, I capitalize the "categories" I've distinguished, similarly when referring to "categories" in the old philosophical sense.

One could say that Categories certain operational functions of the mind that everyone possesses. However, it turns out that we possess them to a greater or lesser degree. It's easy to see that most people cling to the overuse of some of these operations, neglecting others, simply liking them and using them well, thereby demonstrating a certain specialization. Thus, Categories are not only momentary operational functions of the mind but also enduring character traits of a particular person, which carries profound consequences.

Contemporary Western psychology seems to have completely ignored the issue of basic feelings, and therefore Categories. This was due, among other things, to the politically imposed behaviorism that reigned for decades. It rejected the real existence of feelings and emotions, thus excluding subjective human experiences from the scope of psychology, which thus became as effective for monkeys and mice as for humans... This doctrine can no longer sustain itself without the former support of authoritarianism, as it ignores large areas of the human psyche. Thus, a large number of psychologists have abandoned the behaviorist approach. A huge gap remains, however.

Beyond our cultural sphere, and already in ancient times, numerous systems dealing with the human psyche arose, including emotionality and characterology. Significantly, some of these systems also distinguished 12 basic feelings, or 12 Categories. Indian philosophy distinguished 12 basic feelings, at least for some time. The Chinese "Book of Changes" (I Ching) is based on the transformation of the 12 basic feelings, or perhaps rather Categories. Although it refers to 64 hexagrams, six feelings correspond to individual levels of the feminine hexagram and six to individual levels of the masculine hexagram. A division into twelve basic feelings can be found in the Jewish book Seraphim Yecira. Finally, Western astrology, which arrived in ancient times from Egypt and is being developed more or less sensibly today, is based on twelve feelings, or rather twelve Categories. The latter three systems exhibit certain internal symmetries.

Despite being completely independent of any influences from existing psychological or esoteric systems, the Category system I developed turned out to be exceptionally close to the system of zodiac signs in astrology, even though it doesn't actually discuss feelings or emotions associated with the zodiac signs. It turns out, however, that one zodiac sign corresponds to one Category, or, in a narrower sense, one feeling. It's important to note, however, that the constantly repeated and rehashed descriptions of the zodiac signs contain a great deal of informational noise. Some psychologists unofficially use this division into 12 zodiac signs to distinguish 12 basic character types. However, this approach is greatly simplified.

In Figure 1.1, copied from a manuscript I wrote in the 1980s, when I was still completing my chemistry studies, you can see the developmental stage of the Category system. This manuscript,

in relation to the emotional system, made me aware of the important role of symmetry in natural systems. Four levels relate to emotionality: lower feelings, higher feelings (I borrowed this idea of two levels of feelings from Abraham Maslow, for whom higher needs can only be satisfied after the satisfaction of lower needs, and therefore the feelings associated with them), then the emotional coloring of sensory perception, and the emotional coloring of the intellectual-spiritual sphere.

I didn't consider these last two levels later, since they were difficult to consider as feelings in the strict sense. Interestingly, years later I discovered that a similar approach was taken in Eastern philosophy, arbitrarily removing these two levels. These four levels are present, however, and can be seen in connection with the corresponding functions of the commonly discernible brainwave frequency ranges. However, I will address this topic in another book, which will be devoted to a deeper physical interpretation of the Categories as specific twelve-phase torsion fields. Additionally, based on semantic similarity, I've included Category numbers in the table that weren't originally included. It's worth comparing these terms with the Category names I later enriched with information from other sources, such as astrology, which I became interested in much later after seeing obvious similarities between the 12 units and the symmetries used, as well as information related to the developmental clock and ethnic sources.

The symmetries appearing in Figure 1.1 show some errors, as well as a domination of symmetry by secondary features, which I removed in later versions. However, this table demonstrates how far one can go using only terms of feelings, introspection, and finding symmetry. However, this has not been achieved over a century of psychology's existence – the "authorities," the titled European and American psychologists, who constantly get lost in this sphere of direct cognition and lack any "alphabet." Yet, virtually anyone who has no difficulty thinking, has a little patience, and can understand not only their own feelings but also those of others, can arrive at a very similar result — the same path I took. And I encourage you to do so, because it's a very interesting personal experience.

Emotional coloring of sensory perception

anxiety	harmony
emptiness	"out of place"
inhibition	agitation

Lower feelings

4 fear, mobilization	5 sense of control, pride, self
3 boredom, no object, "from", disgust	2 "beyond", "to", beauty
12 inhibition, gentleness, submission	1 arousal, orientation reflex

Higher feelings

10 guilt, anxiety	11 'over', dignity
7 emptiness, loneliness, sense of rejection	6 hope
8 bondage, apathy	9 activity

Emotional coloring of intellectual operations

strangeness, chaos	contentment
doubt, nonsense	faith
resignation	commitment

Figure 1.1 An example of attempts to identify basic "feelings".

Figure 1.2 presents a more extensive form of this system, encompassing as broadly as possible the individual aspects of each Category, as I can currently describe them in the purest, most mutually exclusive form possible. Individual terms refer to the emotional sphere of the Category, while actions are included in parentheses. Please note that there are two or even three levels of realization for each Category. The upper part of each column in the table contains terms related to the successful realization of the Category. The lower part describes situations where the Category is "frustrated," when its realization is currently impossible.

Therefore, in simple terms, we can speak of the positive and negative aspects of each Category. The middle part contains neutral terms, referring to situations when our Category has not yet "competed" with the real limitations or stimulations of reality. It would be necessary to explain the meaning of the numbering of the Categories, which is related to their specific, consistent logical sequence and their occurrence in nature in this order. In astrology, this order occurs, to put it simply, in cosmic space. However, we find no reasonable justification for why

the first number was assigned to the sign of Aries in ancient times. Except for the apparent sequence where individual signs, starting with Aries, are assigned characteristics related to relating to reality, successively: objective, individual (or rather interpersonal), and finally, social. Thus, from Aries to Pisces, there is a certain increase in the complexity of references.¹¹

<p>A sense of clear conscience, self-satisfaction (moral evaluation)</p> <p>A sense of duty, responsibility (self-discipline, fulfillment of duties)</p> <p>A sense of guilt (seeking forgiveness, punishment) K10</p>	<p>A sense of spiritual leadership, charisma (drawing people along)</p> <p>A sense of mission fulfillment (organizing)</p> <p>Rebellion (revolutions) K11</p>
<p>Freedom, adventure (discovering other worlds)</p> <p>Idealism, sense of justice (searching for universal values, learning about foreign cultures, the limits of knowledge)</p> <p>Captivity (escape) K9</p>	<p>A sense of unity with the world (mysticism)</p> <p>Humility, faith (sacrifice, altruism, mercy)</p> <p>Doubt, inner conflict (fatalism, escape into the world of fiction, addictions) K12</p>
<p>Love of desire, a sense of power (sex, enslaving someone)</p> <p>Desire (conquest, manipulation)</p> <p>Hatred, ferocity (war, destruction, killing) K8</p>	<p>Enthusiasm (activity, movement)</p> <p>Optimism, energy (curiosity about surprises, risk-taking, clout, exploring the surroundings)</p> <p>Disappointment, irritating boredom, emptiness, impatience (aggressiveness, fighting) K1</p>
<p>Security (attachment)</p> <p>Feelings of delicacy, fragility (protection)</p> <p>Fear (withdrawal, self-containment) K4</p>	<p>Feelings of power, dominion, haughtiness (dominance, generosity, magnanimity)</p> <p>Challenge, dignity (striving for power, getting to know people)</p> <p>Feelings of humiliation, anger, bitterness (contempt, tyranny) K5</p>
<p>The joy of an idea, solving a problem (creating ideas)</p> <p>Curiosity about the course of movement, wonder (construction, synthesis)</p> <p>Strangeness, emptiness (changing the object of interest) K3</p>	<p>The joy of discovering order, a sense of perfection (discovery)</p> <p>Curiosity about mystery (experimentation, analysis, ordering, perfection)</p> <p>Feelings of confusion, chaos, panic (seeking help) K6</p>
<p>Beauty (possession)</p> <p>Attraction (accumulation)</p> <p>Ugliness (repulsion, inhibition, sadness, depression) K2</p>	<p>Feeling accepted, admired (showing oneself off)</p> <p>Feeling of harmony (ingratiating, creating harmony, searching for someone)</p> <p>Loneliness, feeling of being unwanted (despair, death, illness) K7</p>

Figure 1.2 Systematizing the Categories

This numbering becomes obvious when we consider the developmental clock described below, where so-called "harmonics", or in other words, the "twelve-phase fractal" or "octave phenomenon" occur, and where we find the division of time into twelve segments, each of these segments into twelve, and then again into twelve. Each segment represents a specific Category, divided into twelve smaller ones, begins with the first Category and ends with the twelfth. This phenomenon can be observed as clearly, but spatially, in the occurrence of ethnic traits across the globe, which will be the subject of my book "Systematic Anthropology." Because the influences of small and large temporal or spatial segments related to a specific Category can be separated observationally, I often refer to them as layers of Categories.

For those interested, an Appendix Categories Without Harmonics Based on Astrological Data is included at the end of the book. Concluding that similar fractals should also occur in astrology, traits related to the zodiac signs can be superimposed on traits related to other signs. This will, of course, depend on the astrologer's ability to distinguish pure traits in the living person they are dealing with and to separate the various influences. In general, it should be noted that almost all descriptions of the zodiac signs, written by various authors of astrological textbooks, also contain a significant admixture of traits derived from other signs. Due to the existing wealth of astrological descriptions of human character, I attempted to eliminate as much interfering information as possible in the descriptions of the zodiac signs, based on my classification of the Categories. I also supplemented the summary descriptions with data from the developmental clock and ethnic characteristics.

This appendix can provide additional information for understanding the behavior of specific people, both healthy and those with mental disorders.

In the next section, I present a comparison of the twelve Categories I identified with Immanuel Kant's twelve Categories, based on an analysis of the human thought processes available to him introspectively, as well as through logical reasoning. Kant's concept of Categories, for which it is easy to find a correspondence between these two combinations, is, however, narrower than the Categories I identified.

Kant's Categories

I only came across Kant's Categories towards the end of writing the book. This makes the convergence of his approach, albeit general, with the basic features of the Categories I established, which will be presented in subsequent sections of the book all the more interesting. Here, I will use this convergence to further introduce what the Categories are. Kant defines the Categories as pure concepts of the understanding:

"We now have two concepts of an entirely different kind, which nevertheless agree in this: that both refer to objects entirely a priori, namely, the concepts of space and time as forms of sensibility, and the categories as concepts of the understanding." ^{1:185}

In his "Critique of Pure Reason" Kant uses two lists with corresponding elements: a list of types of judgments and a list of Categories. I present them in Table 1.1. He further writes:

The same function that gives unity to the different representations in judgment also gives unity to the mere synthesis of the different representations of visibility. This unity – generally speaking – is called the pure concept of the understanding. This same intellect, therefore, and precisely by the same operations through which it produced the logical form of judgment in concepts through analytic unity, also introduces into its

representations, through the synthetic unity of the manifold in visibility in general, a certain transcendental content, thanks to which they are called pure concepts of the understanding relating a priori to objects – something that general logic cannot bring about. In this way, there arise just as many pure concepts of the understanding relating a priori to objects of visibility in general as there were in the previously given list of logical functions in all possible judgments; for the functions mentioned completely exhaust the understanding and constitute the measure of its entire power. We will call these concepts, following Aristotle, categories, because at the very beginning our task is quite the same as his, although in its manner of execution, it departs greatly from it. ^{1:171-172}

This is a compilation of all the originally pure concepts of synthesis, which the intellect contains a priori and in virtue of which it is also only pure intellect, only through them being able to understand something in the diversity of visibility, i.e., to think the object of visibility. This division is derived systematically from one common principle, namely, the faculty of judgment (which is the same as the faculty of thought), and did not arise piecemeal from a random search for pure concepts. ^{1:173}

Kant's Categories	Kant's judgements	DW's Categories
1. Quantity	1. Degree of generality of judgments	(P)
unity	individual	K3
plurality	particular	K7
totality	general K11	K11
2. Quality	2. Quality of judgments	(O)
reality	affirmative	K1
negation	negative	K5
limitation	infinite	K9
3. Relation	3. Relationship of judgments	(W)
inherence and subsistence; substance and accident	categorical	K4
causality and dependence; cause and effect	hypothetical	K8
community, reciprocity	disjunctive	K12
4. Modality	4. Modality of judgments	(Z)
possibility	problematic	K6
existence	assertive	K2
necessity	apodictic	K10

Table 1.1 Kant's Categories. The first column contains Kant's Categories, as presented in the Polish edition of "Critique of Pure Reason." The second column contains the types of Kant's

judgments (the individual and general judgments in the first group have been rearranged to achieve consistency with the Categories). The third column contains the Categories corresponding to Kant's Categories, which I present in this book. (P), (O), (W), and (Z) correspond to the groups of Kant's Categories and Kant's judgments - the astrological elements: air P, fire O, water W, earth Z, whose designations are, of course, nowhere to be found in his work, but perhaps he took them into account...

Kant notes that individual Categories have more than just one layer of meaning.

It must also be noted that the Categories, as true primary concepts of pure understanding, also have their equally pure derived concepts, which cannot by any means be omitted in a complete system of transcendental philosophy, but in a purely critical consideration I can content myself with merely mentioning them. Allow me to call these pure but derived concepts of the understanding predicabilia (in contrast to predicaments). ^{1:174-175}

...However, this goal can be somewhat achieved if one takes ontological textbooks and, for example, subordinates the category of causality to the predicabilia of force, action, and experience; the category of community to the predicabilia of presence and resistance; and finally, to the predicabilia of modality, to the predicabilia of origination, transience, change, etc. ^{1:175}

Aristotle's Categories

A list of Aristotle's Categories below show their closest counterparts presented in this book.

substance
 quantity
 quality
 relation, ratio **K4**
 place
 time
 action **K1**
 experience **K2**
 arrangement of parts, position **K3**
 possession, state **K8**

Here, of course, we do not have the full correspondence of the Categories, and as Kant writes: "Aristotle's intention, worthy of a truly astute man, was to find these fundamental concepts. However, since he had no principle, he gathered them as they came to him and invented ten of them first, calling them categories (praedicamenta). Later, he found five more, as he believed, adding them to the previous ones under the name of derived predicates (postpraedicamenta). However, his compilation still remained incomplete." ^{1:233}

Reading Aristotle's works, it is impossible not to notice that they are permeated with discovering the presence of the Categories in all spheres of life; he tried to base his understanding of the world on them. Therefore, regardless of the imperfection of his separation of the Categories, he is the forerunner of this sphere of knowledge.

V. E. Frankl's concept of value

Here I present fragments of V. E. Frankl's concept. His way of thinking stems from the philosophy of M. Scheler and N. Hartmann. Frankl was one of the forerunners of humanistic psychiatry. Although he does not use the concept of Categories and does not create a system of basic units, but rather uses an expanded concept of value, he places it in the deeper context of the essence of man, the meaning of his existence. We will later see the convergence of his concept with the functioning of Categories.

According to Frankl, by rising above the limitations resulting from being a physical and mental being, man simultaneously acquires a freedom that opens him to a reality beyond individual existence: man becomes free to realize values and fulfill the meaning of human existence.^{19:21}

Spirituality is therefore that something within man that opens him to the world of values. By being open to the world (*welttoffen*), a person becomes capable of self-transcendence, that is, of going beyond what they currently are towards what should be. They become capable of realizing values and taking responsibility for their realization.^{19:21}

Ideal, universal, and eternal entities, values are common to all people regardless of the era in which they live or their current situation. Regardless of various conditions, values retain their binding force; they never cease to be values; they always exist and are the same. Therefore, Frankl calls them universals of meaning (*Sinnuniversalien*) and contrasts them with specific, so-called situational values (*Situationswerte*) and meanings that vary from person to person according to the uniqueness of each person and vary from hour to hour according to the uniqueness and unrepeatability of each situation.^{19:34}

The values that a person discovers in specific life situations *appeal* to them, *engage* them, and *attract* them. A person, hearing their *call*, feels called to *fulfill them* and can, with a sense of freedom and responsibility, say *yes* or *no* to them, follow them and realize them, or *escape* their demands—as is often the case with people affected by neurosis.^{19:34}

A person, living within the horizon of objective values, is not immediately equally open to them and does not live them to their fullest. A person's relationship to values — as emphasized by both proponents of axiological subjectivism and proponents of the objective existence of values — is subject to development over time. Throughout a person's life, preferences regarding "serving" specific values and the sources that inform these preferences change, as does the degree of knowledge about the values a person can and wants to realize, and the methods and degrees of this realization change. And although the way of understanding the changes that a person's relationship to values undergoes differs between the subjective and objectivist descriptions, each of them allows us to state that a person's being in relation to values is not a static being, but a process in which an individual world of values gradually develops, deciding which of the "encountered" values a person wants to "serve" and which ones they turn away from.^{19:35}

The discovery of meaning and value, which occurs — according to Frankl — thanks to the intuitive movement of conscience, is similar in nature to both the *aha effect* described by K. Buhler and the process of a figure emerging from the background, analyzed by Lewin and Wertheimer.^{19:38}

The discovery of value is also always accompanied by a subjective feeling of joy, which is not pure pleasure (*blosse Lust*), which might accompany the solution of a problem, but which is a spiritual movement of the person in response to the value discovered. ^{19:39}

The scope of Category occurrence

Categories are very common, yet we don't perceive them with the untrained mind; they are, as it were, the main organizer of the functioning of our psyche. Let's list the most important areas of their occurrence here, and some of them will be discussed in more detail below:

- emotions and feelings,
- constant values of the human psyche, character,
- ethnic characteristics,
- historical eras,
- mental illnesses,
- paranormal phenomena,
- the developmental clock,
- parts of speech, thought sequences,
- animal characteristics,
- objective domains of human activity,
- undefinable expressions (love, freedom, beauty...),
- physical quantities.

Emotions and feelings

In European psychology, there is still no closed system of emotions and feelings. While investigating the existence of a limited number of basic emotions and feelings, I determined, back in my student days, that there are twelve of them, each possessing numerous symmetries. It's true that they seem to lie in another dimension, capable of existing independently of the other aspects of the Categories—at least this is how it seems in fleeting, fleeting experiences when we recall them from our memories. In the subsequent chapters of this book, however, I only address the full scope of the Categories' meaning.

Constant values of the human psyche, character

The most easily discernible area of the Categories' occurrence is differences in human characters. In Europe and the USA, many more or less advanced typologies of human character have been created. Generally, these typologies do not assume the existence of any coherent system on which to base them, without multiple symmetries, and at most with the presence of bipolarity of traits. Generally, they are based on grouping people known to them based on random indicators.

Below are examples of divisions recognized in contemporary psychology, as well as those from recent authors, according to the increasing number of basic personality types identified:

- Jung, 2 personality types: extroverts, introverts. ⁴
- Freud, 3 personality types: oral, anal, phallic. ²
- Eysenck, 3 scales: introversion-extroversion, neuroticism, psychoticism. ²
- Dilthey, 3 types: sensual, heroic, contemplative. ⁴
- Sheldon, 3 personality types: endomorph, mesomorph, ectomorph. ^{2,3}
- Kretschmer, 4 types: asthenic, athletic, pyknic, dysplastic. ³
- The Big Five, 5 scales: neuroticism, extroversion, openness, agreeableness, conscientiousness. ²
- Spranger, 6 types: theoretician, economic type, aesthetician, social type, political-domineering, religious type. ^{4,17}
- Muller-Freienfels, 7 types: materialist, possessive, with an exaggerated sense of self, depressive, aggressive, compassionate, erotic. ⁴
- Heymans, Le Senne, 8 types: choleric, passionate, nervous, sentimental, sanguine, phlegmatic, amorphous, apathetic. ¹⁷
- MMPI Personality Inventory, 10 basic scales: hypochondria, depression, hysteria, psychopathy, masculinity-femininity, paranoia, psychasthenia, schizophrenia, hypomania, introversion.
- Cattell, 16 factors. ² (more detailed description in Chapter 4 - Personality Inventory by Category)
- Division used in homeopathy (Samuel Hahnemann and his successors) - image of the person (as well as image of the disease and image of the remedy) - several hundred images of the person. ¹⁰

More interesting, however, are those from ancient times that have stood the test of time:

- Hippocrates, 4 types: choleric, sanguine, melancholic, phlegmatic. ²
- Enneagram (Middle Eastern), 9 types: perfectionist, giver, performer, tragic romantic, observer, devil's advocate, epicure, boss, mediator. ⁸

Among them, the following deserve special attention:

- Egyptian astrology, 12 types (zodiac signs): Aries, Taurus, Gemini, Cancer, Leo, Virgo, Libra, Scorpio, Sagittarius, Capricorn, Aquarius, Pisces.
- The Chinese Book of Changes, the I Ching, 64 hexagrams, each composed of 6 bipolar factors. ⁹

It is difficult to discern any interrelationships between the various type divisions in this list; a strict approach is evident, in particular, the absence of the expected symmetries of natural systems, with the exception of Egyptian astrology, from which European astrology drew and in which some authors find many symmetries. Examples include a regular division into four elements ^{5:129, 135}, three qualities ^{5:129, 135}, three degrees of social involvement ^{5:150-151}, the symmetry of "rulers" ^{5:115}, and the symmetry of positive-negative signs ^{5:116}. The Book of Changes also provides a complete and symmetrical system.

The division of human types into 12 basic types using 12 Categories can therefore bring a lot of order to the area of characterology, especially since there are certain similarities with the last two systems mentioned.

Ethnic characteristics

The relationship between ethnic characteristics and Categories will be the subject of my second book in the Determinism series: "Systematic Anthropology." In this book, I describe the regular pattern of influences on humans by 12 Categories, which on the Earth's surface form a regular two-dimensional twelve-phase fractal. Thus, we see the impact of different Categories on the psyche of people living in different areas. In particular, there is an influence on individuals

born in a given area, and therefore on the culture they create. This influence is accentuated when successive generations inhabit the same area.

Knowing this relationship, one can, for example, predict in advance what ethnic characteristics will be present on an island where there is no intensive cultural exchange with other areas. This leads to numerous social and political consequences, such as the existence of an ethnic group, the existence of a nation, lasting ethnic conflicts, and denationalization through mass resettlement. The differences in the influence of the earth's field related to the Categories depending on the location can probably also be attributed to the fundamental healing factor of trips to distant sanatoriums.

Historical eras

Historical eras, changes in cultural trends, styles, and fashions are also subject to a specific clock related to the twelve-phase fractal of the Categories. These issues will be addressed in the third book in the "Determinism" series: "The Succession of Eras in History."

Mental illness

This book is devoted to this topic. The twelve Categories are associated with specific mental disorders, which are subject to changes measured by the twelve-phase developmental clock.

Paranormal phenomena

Paranormal abilities in humans are related to the twelve Categories, as well as to the developmental clock. In this book, I mention only some of them when discussing mental disorders—primarily drawing on the observations of psychiatrists. I also established certain connections based on the necessarily limited number of people I met who possessed exceptional abilities of perception and influence. This is a difficult topic due to limited access to reliable information, but at the same time, it is very interesting due to the presence of certain strange phenomena among some mentally ill people. We can expect that these extraordinary abilities, which many primitive cultures utilized daily, function improperly in these patients or in abnormal personal and social situations.

The developmental clock

A person goes through precisely defined phases of psychological development throughout their life, which can be described by individual Categories. Some people—a few to perhaps a dozen or so percent—experience a phase shift in the developmental clock, which is why debates have raged for many years about the feasibility of precisely describing the developmental stages of the human psyche. A significant portion of this book is devoted to the operation of the developmental clock, starting with the second chapter: "Categories in Developmental Psychology."

Parts of speech, sequences of thought

Parts of speech, universal across languages, such as nouns, verbs, and adjectives, can be assigned to individual Categories, meaning that Categories contribute to human thought sequences. It is no coincidence that sentence structure is the same in most languages, as it reflects the natural properties of the human mind.

Animal characteristics

It doesn't take much imagination to assign behavioral characteristics of more common animals to certain Categories, e.g., Category 4 – hare; Category 5 – cat, lion; Category 8 – wolf, most dogs, but certainly not the cuddly Golden Retriever. This is an important issue for understanding animal psychology.

Objective domains of human activity

That is, domains of life, fields of knowledge, professions, etc. If we arrange the subsequent Categories on a circle, as in Figure 1.3, we can precisely trace the existence of symmetries. In this case, those connecting different domains of activity. The most interesting thing is that these symmetries lead us to initially unexpected conclusions.

The drawing shows three rectangles inscribed in a circle, with the corners corresponding to individual Categories. These three rectangles correspond to three groups of domains: intellectual – satisfaction with thought creations; aesthetic – satisfaction with sensory experiences; ethical – concerning duty towards others and vice versa.

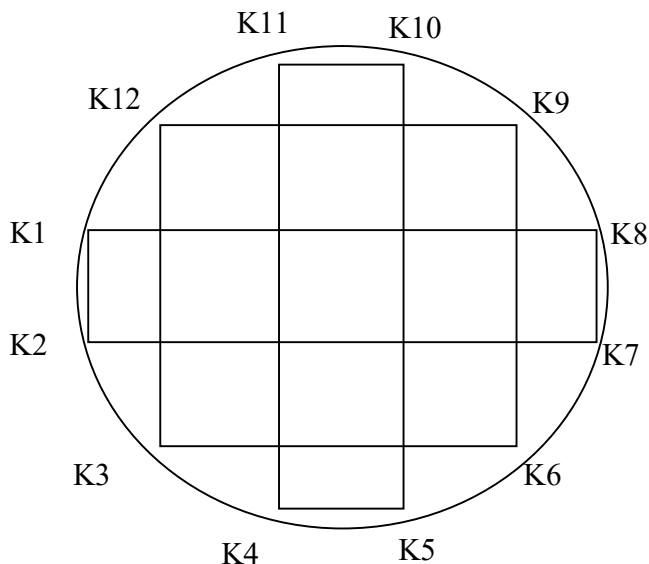


Figure 1.3 Categories arranged in a circle

Note, however, that this is the well-known Platonic triad: truth, beauty, and goodness, which he believed were innate human concepts. Below, the individual groups are described in more detail.

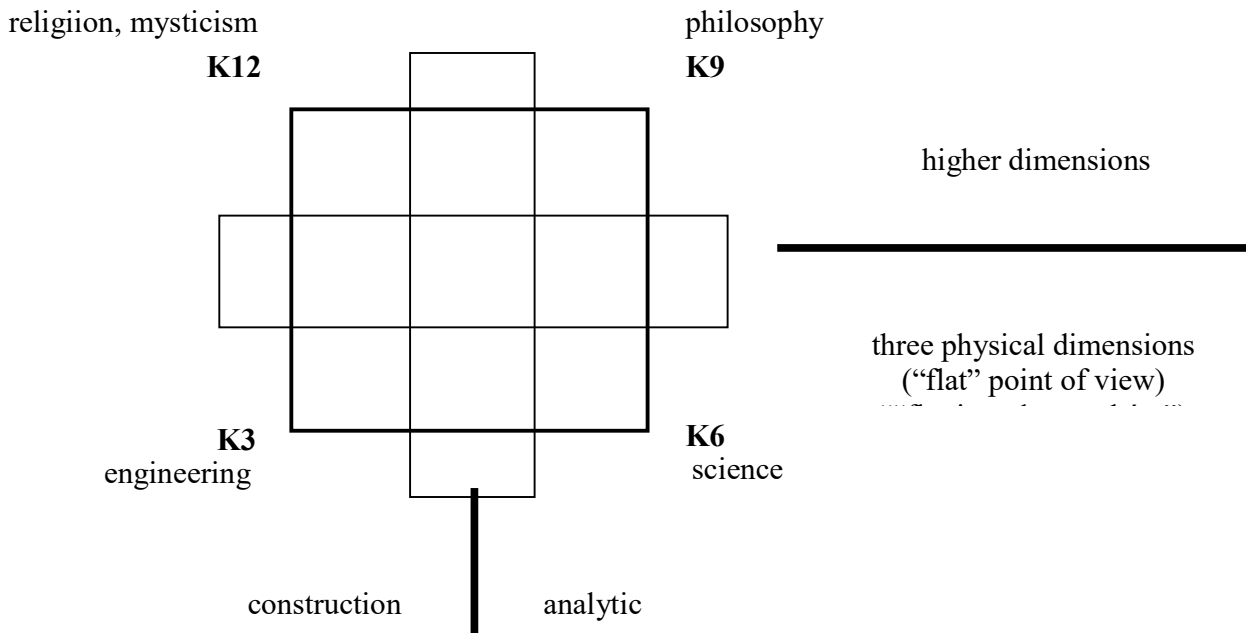


Figure 1.4 Intellectual Categories

Let's focus for now on the four Categories, associated with the four modes of thought. Symmetries are ubiquitous. Here, we have a contrast between analytical thinking, typical of scientific inquiry, and constructive, creative thinking, typical of engineering and various creative fields. At this level, we are dealing with concrete objects that we can place in three-dimensional space.

This juxtaposition also encompasses a higher level of intellectual function, higher in the sense that it is not limited to specific three-dimensional creations but operates in more abstract spaces, such as those found in philosophy or mysticism. Here, respectively, philosophy is associated with analytical thinking, while religion and mysticism with the creation of structures.

Religion is, of course, linked to the problem of God – it is least addressed when it is addressed by the intellect of scientists or engineers (those who love Occam's razor), as if "flatlanders" (those who, in mathematical deliberations, live on a plane) were to encompass everything in the universe with their imagination. The philosopher type begins with the existing world and seeks "new worlds." Perhaps one day they will reach God. The mystical type begins with God and introduces divine and spiritual laws into the world. Perhaps one day they will reach the real world from God. Just as science encounters engineering in certain areas and vice versa, even in the creations of living nature.

This brings to mind the fact that Christianity did not create a world philosophy, unlike Eastern religions, which seems a lack to many inquisitive people. But some Eastern religions have also forgotten God. Thus, we have philosophical, mystical, or philosophical-mystical religions.

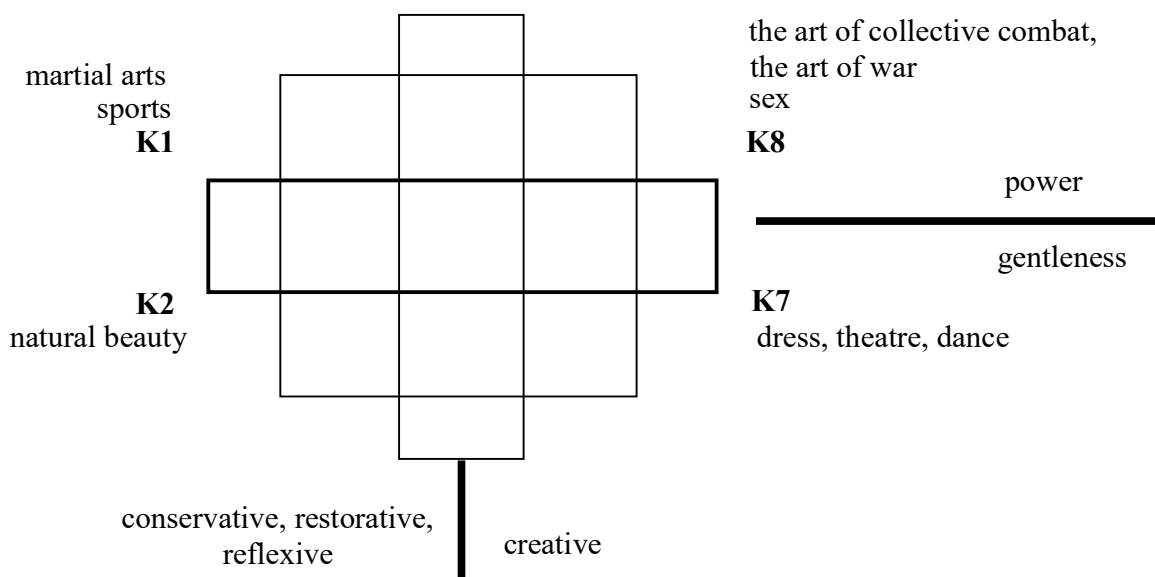


Figure 1.5 Aesthetic Categories

In the group of aesthetic categories (Figure 1.5), in addition to the Categories obviously related to aesthetics, two categories emerge, each with aggressive characteristics that only upon deeper analysis will we realize are based on aesthetic experiences. While aesthetic experiences have long included those that have little in common with the sense of beauty, despite the differences in current classifications, the observed symmetry evokes the ancient approach to sport as a game, a spectacle analogous to dramatic performances, as well as the existence of the concepts of martial arts and warfare.

Category 1 is an individual sport, an art of hand-to-hand combat, a form of rapid movement—providing many people with aesthetic pleasure. It's not simply a need to let off steam or release energy. That's why the mere observation of sporting events attracts so many. Team sports, such as football, are more of a Category 8.

Category 8 here corresponds to what is referred to as war "written in the genes." Therefore, war belongs to aesthetic experiences; it is a field of art. Once upon a time, when war was less brutal for entire societies, the term "art of war" was used. This was also the name given by Carl von Clausewitz to his major work on military strategy and tactics, which later informed several generations of European military officers.

The ethical categories (Figure 1.6) are related to the regulation of interpersonal relationships. In particular, they establish one's own attitude toward social relationships. Among the four ethical categories, at the "lower" level, we have those that refer to control over the current situation, and at the "higher" level, those that refer to "power of the souls".

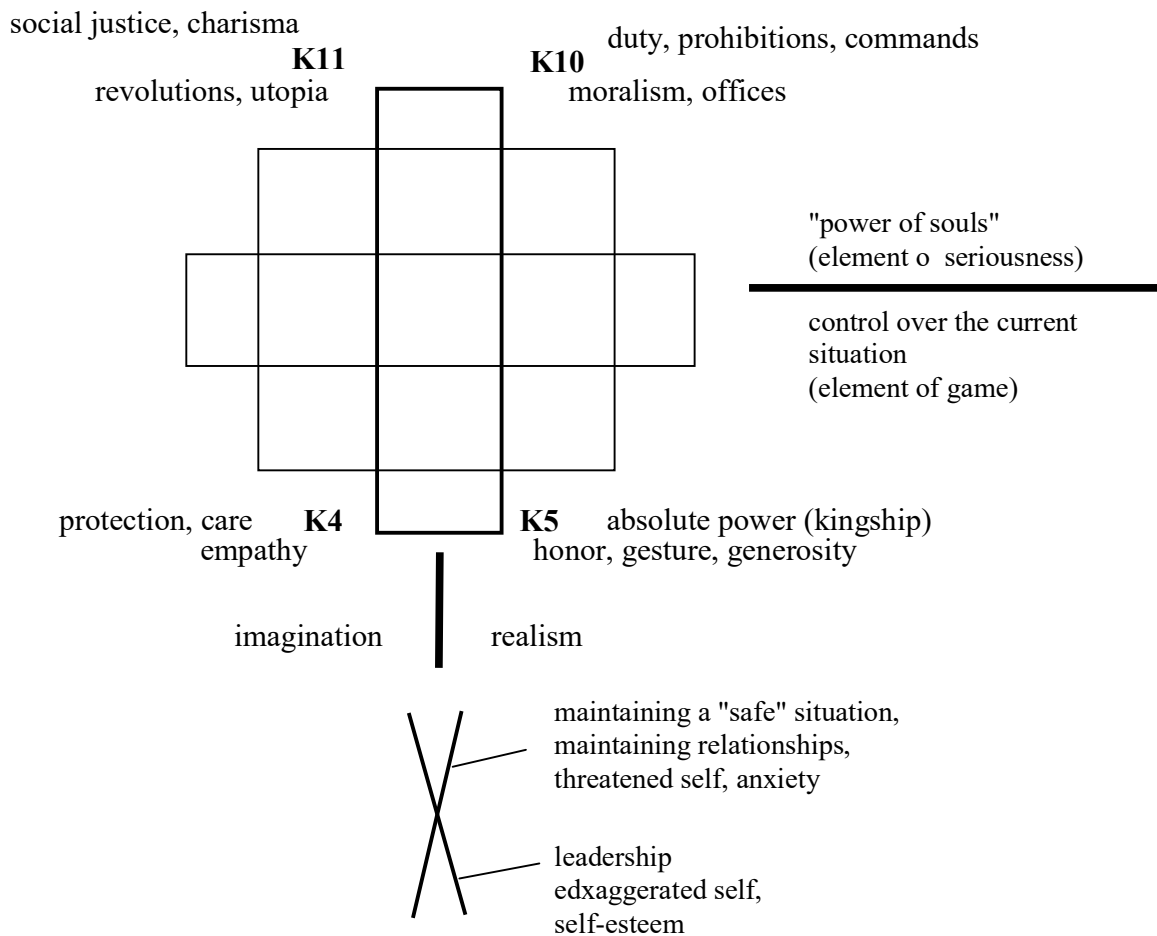


Figure 1.6 Ethical Categories

It seems that in this group, the most important symmetry is somewhat different than in the other groups (in the figure, the center of symmetry is more important than the axis of symmetry). These symmetries are represented by crossed segments connecting the categories in the lower part of the figure. Here, on the one hand, we have categories related to anxiety about the possibility of disrupting a stable and secure situation, and on the other, Categories related to leadership and managing people.

Areas of human activity are closely linked to character traits. Character differences lead to a natural division of preferences for various professions. If it weren't for this, everyone would probably want to trade, because it's the most profitable...

"Undefinable" expressions

This term refers to terms defined in a variety of ways by people with different character traits, depending on the dominance of one Category, for example: happiness, goodness, love, beauty, justice, pleasure, fun; or even freedom, God, illness, or health.

The existence of multiple approaches to these terms is generally known, but there is a lack of understanding of why this is so. An example is a fragment from Maria Gołaszewska's book

"Outline of Aesthetics," concerning a seemingly very narrow area of perception: the perception of landscape, which, for those less familiar with the subject, may seem unambiguous to all who perceive it. The presence of features related to the Categories is obvious here. In parentheses, I have provided Categories corresponding to the characteristics of a broadly understood aesthetic experience—as precisely as possible from short definitions.

Situations of aesthetic perception of landscape involve adopting various attitudes that play a role in discovering various varieties of beauty; depending on the type of attitude, aesthetic experiences occur in conjunction with experiences of other kinds. We can therefore distinguish:

- experiences permeated with a sense of nature's usefulness, which coincides with the perception of the possibility of introducing transformations into it and a sense of power over nature, freedom, and independence in relation to it. People then feel like "the masters of nature," since they can direct its development and change it according to their needs [K3];
- a sense of dependence on nature, helplessness in the face of it, when people are faced with elements threatening destruction or when they focus primarily on impenetrable, unfathomable natural elements (the vastness of the sky, the star-studded firmament, darkness, abysses) [K4];
- a cognitive attitude, when people are attracted to what is new and unknown in nature; this attitude is realized primarily in journeys undertaken to reach unexplored areas of the world [K1];
- a conquering attitude associated with risk, and accompanying feelings such as satisfaction from conquering space, overcoming fatigue, conquering heights; encountering surprises, sudden changes in nature, etc. [K1];
- amazement at the "wisdom" of nature also comes into play here. Regardless of the philosophical theory one adheres to, humans are struck by the balance of the landscape and the functionality of the structure of plant and animal organisms [K6];
- experiencing dialectical opposites in nature, its decay and rebirth, destruction and fullness of life, decay and indestructibility [K8];
- a vital attitude, associated with the feeling that being outdoors, in beautiful and lush nature, provides relaxation, regenerates mental and physical strength, and that contact with nature is beneficial and essential for maintaining organic balance (although there is also a sense of the possibility of unexpected threats and dangers associated with certain natural phenomena) [K2];
- a sense of freedom and liberty, the ability to behave in accordance with the needs of the body, freeing oneself from the constraints of city life [K9].

Some of these attitudes are complementary and can coexist, while others are mutually exclusive; many constitute a permanent component of the aesthetic experience of nature, and the predominance of one of them gives a specific character to the entire experience and contributes to the extraction of a specific type of aesthetic value, a specific type of beauty, from the natural world. ^{7:103-104}

Physical quantities

Individual categories can be linked to certain physical quantities or phenomena. Such connections have also been attempted in astrology, where physical quantities and phenomena

were identified with specific zodiac signs.^{6:396} This is a topic for another work, in which I will describe the involvement of the twelve-phase Category field in strictly physical phenomena.

Psychophysical dualism

For centuries, philosophers have been debating psychophysical dualism, specifically, the relationship between the psyche and the physical body, and the related debate over the division between soul and body (the mind-body problem). This problem almost always manifests itself in the form of a dichotomy: monism or dualism. Therefore, in the case of the psyche, are we dealing with the physical matter we know, or is there another, more elusive matter upon which mental phenomena unfold? In the case of monism, is the world of the psyche contained within the physical world of our body, or in the case of dualism, are we dealing with two separate realms, somehow connected or disconnected?

Most people overlook this problem, equating light with the subjective impression of color, acoustic waves with sound, and smells with specific chemical substances, while having a slightly greater problem with feelings. Despite the error of this identification, we readily accept the internal world we observe as real. However, light, as an electromagnetic wave, has no color at all; it only has certain quantitative characteristics—wavelength, amplitude, and phase. Objects composed of colorless atoms, have no color, either. Meanwhile, we see them as colored. "Along the way," the information received by the visual system was interpreted. Color is a creation of the mind projected onto the external world.¹³

The debate over the existence or nonexistence of this dualism arose in a time when nothing was known about the physiology of the brain; the brain could only be dissected and carefully examined. For example, the small, unpaired gland, the pineal gland, was considered to be the connection between the soul and the body. The 20th century saw enormous progress in biological fields. Today, we know that impressions in our minds are not the same as stimuli reaching our senses. Light entering our eyes is perceived in the retina by retinal (vitamin A1 aldehyde) bound to the protein opsin, which changes its conformation in response to light, causing a change in the conformation of the opsin. Opsin activates the protein transducin (G protein), which, with the help of the enzyme phosphodiesterase, produces cyclic GMP, a second messenger. Cyclic GMP binds to the cation channel, causing the channel to open and thus depolarize the photoreceptor cell. Photoreceptors form synaptic connections with bipolar and horizontal cells through the release of the neurotransmitter glutamate. These cells process the signal from different photoreceptors, generating differential signals of local contrast and color balance. This information is further encoded as the frequency of action potentials in retinal ganglion cells, whose axons form the optic nerve. Color balance information travels through certain other visual centers to the primary visual cortex in the occipital lobes, where it is radically processed.¹² However, our visual impressions, after traveling such a long way, likely originate even further, in the hypothalamus,¹³ as a simple-minded logical interpretation would suggest. However, there are also theories suggesting that consciousness may reside outside the brain or even beyond Earth.²⁰

So here we see that the light wave is eliminated at the earliest stage after capturing a photon, and only information is transmitted using a variety of media.

And what is the matter that fills our psyche? Can we answer this? Are there any candidates for this matter? The common belief that humanity knows physics and just needs to explore it, is

illusive. Modern physics actually resembles ancient maps of Africa with a large blank spot in the center and the inscription "Only dragons beyond." Such spots also have their advantages for those who venture there and become explorers. Since the 1990s, the field of torsion fields, or gravitomagnetic fields, associated with mass, the phenomenon of spin, and the atomic nucleus rather than electrons, has rapidly developed. It was quickly recognized that these fields have much in common with the mind. This is therefore the leading candidate, in fact even a "certainty." The problem is that these fields are more difficult to study than electromagnetic fields and are more complex, richer in diverse phenomena.

But how could communication with the physical body, especially with the brain, which we can cut out and place on a plate, occur? We know that there is only a very slight coupling of torsion fields with electromagnetic fields. However, under certain conditions, this can significantly increase in the presence of ionic current flow and the synchronization of electron and nuclear spins. ¹⁴ This means that under certain conditions created by biological systems, a persistent coupling between the brain and this "volatile" mental matter can also occur, to a much more widespread degree than we might initially imagine. I only mention torsion fields here to emphasize that the existence of psychic matter is not just an idle philosophical argument.

The debate: heredity or learning?

What determines our character, values, abilities, and ultimately the presence of categories that dominate our behavior? Why are we the way we are, even though we often wish we were different? Why do we often feel enslaved by determinism, no matter how long we've been told that we decide for ourselves, that we are free? Why do most children resemble neither their mother nor their father in appearance or personality, and why do the best parenting methods fail to shape their psyche in the image of their parents, or according to, say, the communist ideal? Why do schools, despite numerous efforts, impart knowledge but not skills? How many of their traits can we say definitely originated from one of their parents?

Much effort went into saving each of these philosophical schools, but where two schools clash for a long time without success, there is an inherent weakness in each, meaning that neither is right, that their concepts are flawed. An alternative is epigenetics, imprinting information during physiological oxygen shocks. These are conditions in which oxygen levels rise too rapidly for the body to activate compensatory systems, and for a period of time, a large number of free radicals are produced. The first oxygen shock occurs at the moment of fertilization of the egg – the fusion of paternal and maternal DNA occurs; the second shock occurs around the 20th day after fertilization – the heart begins beating and the neural tube closes; the third shock occurs at the moment of the first breath, when the great vessels switch from maternal to autonomic circulation. During the second shock, the developmental clock is triggered, and during the third shock, characterological and ethnic traits are recorded, including those addressed by advanced astrology. These topics will be developed in later parts of the book.

Why do I emphasize oxygen shocks so much? Because radical reactions enable the influence of the so-called spin of atomic nuclei. This is related to my hypothesis that places consciousness and long-term memory in atomic nuclei, away from the noise occurring at the electronic levels. A similar hypothesis was presented by Huping Hu and Maoxin Wu. ²¹ I will return to this issue in Chapter 6 – Involvement of Neurotransmitters.

In molecular biology, epigenetics primarily refers to the regulation of gene expression through the covalent binding of methyl groups to DNA or the strong binding of histone proteins to DNA. It ensures long-term memory of information independent of that occurring in the nervous system. It enables the transmission of information during subsequent somatic cell divisions. The resulting gene expression memory can last for months or even the entire lifespan of an individual. It is known that changes in gene methylation are associated with aging processes, numerous chronic diseases, such as cancer, as well as with psychological changes during the treatment of mental illness with neuroleptics. Small RNA (i-RNA, junk RNA) is often involved in achieving this "imprinting of DNA regions."

From the perspective of current knowledge, epigenetics is the most probable method for recording character traits, although other possibilities for recording information must also be considered, such as those found in homeopathy, where torsion fields likely participate.

Most general concepts regarding the functioning of the human psyche and physiology date back to a time when the structure of the world and living organisms was imagined to be relatively simple, just like what was perceived with the naked eye. At that time, such complex devices as a computer, a modern airplane, or a system of thirty thousand types of proteins inside human cells were unthinkable. Attempts were made to create simple models consistent with the creator's emotional attitude. These models have survived to this day, developed and supported by various political, religious, and elite institutions.

I took my first steps in creative fields of electronics, where large systems are not important, and the use of every single component must be meticulously refined. Thanks to this, I learned how trivial the philosophical principle of "Occam's Razor" is, and how much effort must be put into making a system "come to life." Hence, I don't rely on my own or anyone else's whims, but analyze all elements, even the most counterintuitive solutions, that lead to real measurement data, and to stable, precise, and highly fault-tolerant systems, too. The time of simple solutions passed with the Victorian era, and invoking Einstein's unproven words that the fundamental structure of the world is very simple will not help. Ultimately, he, too, doubted these words.

Returning to the debate over heredity versus learning, many authors who have attempted to address the issue comprehensively find a generally weak effect of heredity and a very weak or nonexistent effect of learning in shaping character traits.¹⁵ Scientists also tend to approach the issue emotionally, not devoid of moral, ethical, philosophical, religious, and political pressures.¹⁶

Furthermore, it should be noted that researchers studying these issues confuse the existence of innate traits with genetic transmission from parents. While the division into innate and acquired traits makes sense, dividing the scope of influence into the prenatal period, including birth, and the postnatal period until adulthood, the division into heredity and nurture is meaningless, as it ignores the entire prenatal period. This is typically throwing the baby out with the bathwater.

To introduce the Reader to the perspective of the rest of the book, I present below the various coexisting methods of imprinting information that will emerge from the analyses conducted in the chapters that follow.

Three oxygen shocks of the developmental period:

Shock I - the moment of conception

- psychological sexual characteristics (12 categories)
- species characteristics (12 categories)

- racial characteristics (various mutations)
- genetic characteristics (various mutations)

Shock II - "day 20" after conception

- generational characteristics of the developmental clock (12 categories)
- individual disturbances in the phase of the developmental clock (12 categories)

Shock III - the baby's first breath

- individual birth characteristics (12 categories)
- generational birth characteristics (12 categories)
- ethnic birth characteristics (12 categories)

The period after birth:

- characteristics of historical periods (12 categories)
- brain damage from diseases and accidents
- knowledge, practiced skills, masking¹⁵, experiences from one's own creativity¹⁸.

Over ten different influences seem like an unmanageable maze, but it's not. Most of these traits can be separated, especially with the help of the alphabet of twelve categories. However, to distinguish these traits, one must carefully analyze a person's biography, not just the situation at hand.

Gene mutations always have an impact. After all, we are "protein creatures," and each of the 30,000 proteins from which we are composed has a corresponding gene. When a gene mutation, deletion, or replacement of different gene variants occurs, it has an impact on the functioning of the system, but usually much less than we would expect. Important body functions are duplicated; a decrease in the activity of one gene is largely compensated for by an increase in the activity of another. Alternative gene variants inherited from parents usually differ in their activity only slightly. In descriptions of experimental results concerning genetic differences, it is usually stated that a statistically significant change was observed, i.e. a small one, and not, for example, a five- or ten-fold change. Mutations in specific genes responsible for the functioning of the neurotransmission system are known. Neurotransmitters have much in common with the Categories, but this is not a mutual correspondence. There are twelve Categories, and over twenty neurotransmitters have been discovered.

Studies considered genetic in nature on twins are pointless, as their shared fetal period involves successive oxygen shocks that imprint information. This information is the same for both twins, yet it has nothing to do with genetic inheritance. Such studies can only eliminate influences acquired after birth from consideration.

Among the experimental data on acquired traits, it is difficult to find reliable information on changes in character traits influenced by upbringing that are not the result of a regularly functioning developmental clock or brain damage. However, there are examples of childcare, role-playing, and the temporary abandonment of one's own demands under environmental pressure.

The scope of Categories' action

How involved are Categories in the functioning of the body? It is certainly not a mechanism that underlies all vital functions. It is an element responsible for the high efficiency and competitiveness of an individual in both the natural and social environments. Therefore, it is important to distinguish between what Categories apply to and what they do not apply to. Living organisms, from bacteria to humans, are adapted to numerous external and internal catastrophes that can threaten their survival. When a vital system fails at the biochemical level, whether due to disease invasion, genetic defect, or other events, it is replaced, at least in part, by another, parallel system or systems.

This seems to be the rule in living organisms. This phenomenon is often seen in attempts to isolate a system or disable a gene, which therefore encounter numerous difficulties. In the construction of a living organism, whenever possible, there is always a duplication of vital functions. A similar phenomenon should also be expected in the case of Categories. If regulation by Categories fails, or through some mechanism of Category interaction, the organism must possess a mechanism that, although less perfect, will nevertheless undertake the functions necessary for survival, not only as a single organism but as an independent being in an unfavorable environment.

Thus, when I find and demonstrate that a given Category is involved in a specific phenomenon, one should not draw far-reaching conclusions from this, that the Categories also apply to everything that is in some sense associated with that phenomenon. If, for example, the development of language or the acquisition of the ability to move freely on two legs in the environment requires the acquisition of subsequent partial skills according to the countdown of a clock in a specific first cycle of the clock, or possibly in the next, this does not at all mean that, in the same way, within a specific countdown period, the completion of sexual maturity occurs, for example, which is known to be strongly influenced by external circumstances, whether favorable or unfavorable to offspring, so as to ensure the offspring's survival and development with greater probability.

For example, rats do not reproduce above a certain density in a given area, and in the case of the worm *Caenorhabditis elegans*, if there is not enough food before reproductive maturity, the worm transforms into a smaller form, the so-called Dauer larva, in which the aging process is several times slower, is infertile, and when food becomes available after some time, normal development and reproductive maturation resume.

Category Search

Comprehension - understanding

Understanding is related to certain principles of logical thinking. Some use comprehension interchangeably with understanding, but the term "understand something instantly" means something different. It's easy to notice that in a conversation with someone with whom we enjoy exchanging ideas, we discover certain things within ourselves that the person is talking about, which instantly become obvious and familiar. We discover a certain correspondence between archetypes and, further, Categories. And this is likely what distinguishes a normally developing

child from an autistic one. A healthy child recognizes a Category or its element through comprehension, while an autistic child in the same situation must use logical thinking because they lack access to Categories.

Introspective perception of Categories

Categories are not elusive; we can learn many of their aspects through introspection; however, we must become accustomed to self-observation of what is happening in our psyche. In this way, for example, we can identify two-hour periods within each 24-hour period in which specific Categories dominate. Our mood, intellectual abilities, and sensitivity to certain stimuli change. Our arousal changes, it becomes easier to get out of bed after sleep, and so on. I leave this issue to individual exercises in perception, or rather, understanding, for the more ambitious.

It's easier to independently search for manifestations of Categories in original texts, unbiased by a specific school, or only slightly so, other than those cited in this book. We'll quickly see how a vast number of seemingly incomprehensible events and relationships fit together like a puzzle into a clear and logical structure, creating a larger picture that makes us not want to abandon it. And we experience a sense of wonder at how we could have missed it.

This connection of the order created by the Categories in the functioning of the psyche with what we find in the natural world reflects the thought of Immanuel Kant: "Although it sounds exaggerated and even absurd to say that the intellect itself is the source of the laws of nature, and therefore of its formal unity, such a statement is nevertheless true and consistent with the object, namely with the object of experience." ^{1:233}

Bibliography

1. Immanuel Kant; *Krytyka czystego rozumu; część I*, Państwowe Wydawnictwo Naukowe, Warszawa 1986.
2. Lawrence A. Pervin, Oliver P. John; *Osobowość: teoria i badania*; Wydawnictwo Uniwersytetu Jagiellońskiego, Kraków 2002.
3. Calvin S. Hall, Gardner Lindzey; *Teorie osobowości*, Państwowe Wydawnictwo Naukowe, Warszawa 1990.
4. Ks. Wincenty Granat; *Osoba ludzka: próba definicji*, Wydawnictwo KUL, Lublin 2006.
5. Rafał T. Prinke, Leszek Weres; *Mandala życia: astrologia: mity i rzeczywistość, Tom 1*; Krajowa Agencja Wydawnicza, Poznań 1982.
6. Fred Gettings; *The Arkana dictionary of astrology*; Arkana Penguin Books, London 1990.
7. Maria Gołaszewska; *Zarys estetyki*; Państwowe Wydawnictwo Naukowe, Warszawa 1984.
8. Helen Palmer; *The Enneagram: understanding yourself and others in your life*; HarperCollins, New York 1991.
9. Richard Wilhelm; *The I Ching or Book of Changes*, Bollingen series XIX, Princeton University Press, Princeton, New Jersey 1990.
10. Rajan Sankaran; *Duch homeopatii*; Wydawnictwo Lekarskie „Similimum”, Nowy Sącz 1999.
11. Leszek Weres; *Homo-Zodiacus*; Cinpo International, Poznań 1991.

12. Gary G. Matthews; *Neurobiologia: od cząsteczek i komórek do układów*; Wydawnictwo Lekarskie PZWL, Warszawa 2000.
13. Andrzej Chmielecki; *Między mózgiem i świadomością: próba rozwiązania problemu psychofizycznego*; Wydawnictwo Instytutu Filozofii i Socjologii PAN, Warszawa 2001.
14. M. Tajmar, C. J. de Matos; *Coupling of electromagnetism and gravitation in the weak field approximation*; *Journal of Theoretics* 2001, **3**(1): 8.
15. Judith Rich Harris; *Geny czy wychowanie?: Co wyrośnie z naszych dzieci i dlaczego*; Jacek Santorski i CO Wydawnictwo, Warszawa (Copyright 1998 by Judith Rich Harris).
16. Steven Pinker; *Tabula rasa: spory o naturę ludzką*; Gdańskie Wydawnictwo Psychologiczne, Gdańsk 2005.
17. Mario Fedeli; *Temperamenty, charaktery, osobowości: profil medyczny i psychologiczny*; Wydawnictwo WAM, Kraków 2003.
18. praca zbior. pod red. Marii Tyszkowej; *Rozwój psychiczny człowieka w ciągu życia: Zagadnienia teoretyczne i metodologiczne*; PWN, Warszawa 1988.
19. Małgorzata Opoczyńska; *Kim jestem: Doświadczenie choroby psychicznej a stawanie się sobą*; Wydawnictwo Uniwersytetu Jagiellońskiego, Kraków 2002.
20. Jan Trąbka; *Neuropsychologia światła*; Wydawnictwo Uniwersytetu Jagiellońskiego, Kraków 2003.
21. H. Hu, M. Wu; *Spin-mediated consciousness theory: possible roles of neural membrane nuclear spin ensembles and paramagnetic oxygen*; *Medical Hypotheses* (2004) **63**: 633-646.

Chapter 2: Categories in Developmental Psychology

Currently, psychologists specializing in child developmental psychology can identify the occurrence of psychological changes and the acquisition of specific abilities within fairly specific time frames. However, they fail to recognize that this relationship is clearly cyclical. Certain traits exhibited by children recur at regular intervals. While childhood and adolescence are the most researched periods, this cyclicity applies throughout a person's life.

Children themselves, at certain times, undertake activities that allow them to develop their abilities in interaction with the world around them. This includes, for example, developing and thus remembering broadly defined reflexes, such as walking, grasping, isolating words, or searching for interesting information in the area of visual perception. Parents are often not educators, as they believe, but merely "tools" for the child in teaching these broadly understood reflexes, with the advantage of largely subconsciously adapting to the child's needs at a given time.

This chapter is devoted to demonstrating the existence of cyclical changes in the dominance of individual Categories in the human psyche. I have named this phenomenon the "developmental clock." The functioning of this clock is unique in that it is not a simple succession of Categories, but rather the superimposition of at least three cycles of different durations, absolutely synchronized in phase. This cycle of twelve-year periods of individual Categories is superimposed on a cycle of one-year periods of Category duration, and on this cycle — a cycle of individual Categories lasting 1/12 of a year. Figure 2.1 illustrates it. I abbreviate Category numbers as K1, K2, etc.

The developmental clock begins not at birth, but around the 20th day after fertilization. The phase from which the clock begins for most people (those we usually say are developing normally) is not Category 1, but the twelve-year K4 phase, the one-year K3 phase, and the twelfth-year K1 phase.

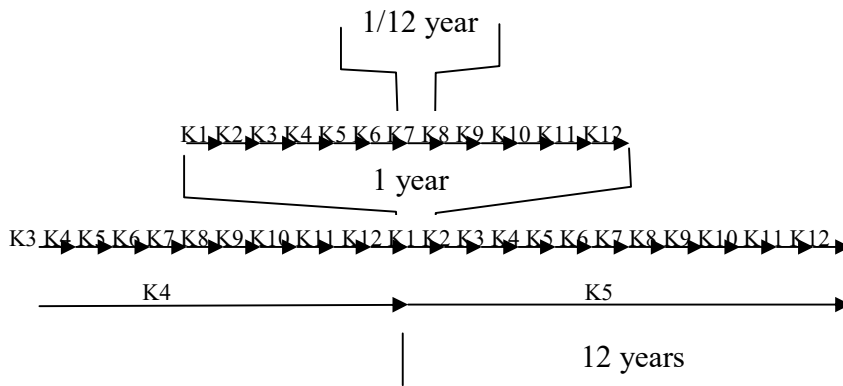


Figure 2.1 Developmental Clock Cycles

Linking Development Stages to Categories

Below, I present detailed data taken from books on developmental psychology, which illustrate the convergence of traits from specific developmental periods with the successive traits of the Category. Descriptions providing psychological information in this chapter and throughout the book are copied verbatim, with the cited pages, so that the credibility of the observational data is beyond question. The problem is broader. Considering that, due to years of ideological distortions in science, particularly the application of politically correct schools of interpretation that still exist today, a vast amount of research data will require reinterpretation in the coming years, it is absolutely preferable to quote verbatim large excerpts from the texts of the authors of experimental studies rather than to write one's own filtered interpretation in the form of "what the author meant."

Addressing possible objections, it must be stated that the widely accepted politically correct citation rules can be rejected in the face of the higher-ranking principle of scientific integrity. Scientific credibility is absolutely paramount. This is precisely what I am doing. Quoted passages are indented on the left. My own commentary appears in square brackets within the cited psychological or factual descriptions.

The subsequent personal changes presented in this chapter are linked to the following Categories. The observed correspondence between developmental periods and subsequent Categories is unquestionable. The most important terms associated with a given Category are in bold. It is worth examining this data in more detail, as it is one of the most reliable sources of psychological data on the Categories, in the sense that it meets the official requirements of contemporary scientific research.

To more precisely understand the connections that occur, it is important to realize that the Categories, as I use them in this book, have the following important characteristics:

1. There are exactly twelve of them.

2. Each Category is a set of rather rigidly interconnected feelings, aspirations, modes of action, attitudes, etc.
3. Each Category has two poles within it: successful implementation and failure.
4. The intensity of a Category's activity is constant throughout the period of its occurrence.
5. Each Category has "harmonics"; it is divided into twelve identical basic Categories. The effects of the basic Category layer and the Category harmonics are cumulative.
6. In developmental psychology, at least three Category layers can be observed: Layer 1—basic (12-year period), Layer 2—harmonics (1 year period), Layer 3—harmonics of harmonics (1 month period, i.e., 1/12 of a year).
7. Categories change over time in order from the first to the twelfth, after which the sequence repeats.
8. The division of Categories into harmonics always begins with the first harmonic, meaning the boundary line for the end/beginning of the basic Category is the harmonic boundary: Category 12/Category 1.

Child's Psychological Development in the First Months

Figure 2.2 shows new psychological and functional features appearing in the subsequent months of the child's life, with Categories of the II and III layers.

Categories IIw. IIIw.		Months from birth	Observed behaviors
K 3	K8	0	0,23 nothing or ver little
	K9	1	0,92 imosing one's will on the world, more active, responds to external stimuli, wide-open eyes - [K9]
	K10	2	1,84 a smile towards the surroudings
	K11	3	2,76 tossing and turning, sleeps poorly
	K12	4	3,68 a social being, perfect balance, sleeps well, respond to the behavior of others, can reciprocate with a smile - [K12]
K 4	K1	5	4,60 motor attempts ending in frustration - [K1]
	K2	6	5,52 - 6,44 frustration passes
	K3	7	6,44 - 7,36 grasping, passing from hand to hand, independent play, demanding to be tossed, friendly attitude toward people, listens - [K3]
	K4	8	7,36 - 8,28 fear, more sensitive, distinguishing between the known and the unknown - [K4]
	K5	9	8,28 - 9,20 well adapted to family life, sociable, warm smile towards people, stands, vocally agile, repeats syllables, increasingly boldly steps onto the stage - [K5]
	K6	10	↑ before 10,11 strangeness
	K7	11	↓ after 10,11 friendly attitude, self-confidence, loves having an audience, repeats behaviors that caused amusement - [K7]
	K8	12	12 first steps
	K9	13	
	K10	14	
	K11	15	15 a period of running, beating, throwing, enjoying freedom
	K12	16	
K 5	K1	17	
	K2	18	18 endlessly going up the stairs, doing everything out of spite - [K5 IIw.]
	K3	19	
	K4	20	

The delay in Category relative to months since birth is approximately 0,1 - 0,7 months.

Figure 2.2 Child's mental development in the first months. IIw - second layer of the developmental clock categories - categories change annually, IIIw - third layer - change monthly. Source of information on children's activity periods: Frances L. Ilg et al. ^{2:21-31}

The non-integer numbers of months in the data from the literature sources in Figure 2.2 are derived from the conversion of weeks. The comparison of month-long Categories and months since birth is only approximate. The categories are lagged by approximately 0.1 to 0.7 months relative to months since birth.

In addition to this information, Schaffer and Emerson (1964) conducted a study using natural observations of attachment reactions in 60 infants. They observed that the first manifestations of a strong attachment to a specific person occur at 7 to 8 months of age.^{7:25} [8 months - K4]

Development at Annual Intervals

Below are presented changes occurring in subsequent years of life and corresponding to subsequent Categories. When considering these, attention should be paid primarily to what is new, and to a lesser extent to the closure of the previous period. Acquired abilities are further enhanced in the subsequent period due to the phenomenon of hysteresis, which is associated with delays in the reduction of the activity of complex neurotransmission structures to a constant optimum after their main period of activity, and the related prolonged persistence of elevated levels of a given neurotransmitter even during the period when the next Category is active. The issue of the relationship between the intensity of neurotransmission systems and the current activation by the Categories will be discussed in Chapter 6 - Involvement of Neurotransmitters.

The first period of each phase corresponding to a Category is more nervous and emotional, with negative feelings associated with the given Category dominating, as it involves the difficult learning of new skills. The end of the phase is a period of calm, the use of skills, and the dominance of positive feelings associated with the Category.

First months 0 - 0.3 years [K3 - movement, analysis, mechanics]

One-month-old infants imitate facial expressions. If you show an infant their tongue, they will show theirs; if you open their mouth, the infant will open it too. Newborns less than a day old, one only 42 minutes old, also imitated facial expressions. At first glance, this ability to imitate might seem interesting and charming, but not particularly significant. But when you think about it for a moment, it turns out to be truly astonishing. There are no mirrors in the mother's womb; therefore, newborns have never seen their own faces before. How, then, did they know when their tongues were in their mouths and when they were out? To imitate, newborns must somehow understand the similarity between internal, kinesthetic sensations and the facial expressions they see. [Adults also experience visible movement kinesthetically, perhaps especially those with a strong Category 3.]

Nature has cleverly endowed us with something that helps us begin to solve the problem of Other Minds. We know, quite literally, that we are like other people, and they are like us.

There are other reasons to believe that very young children are particularly oriented toward people [the first month in monthly terms - K9]. Babies flirt. One of the greatest pleasures in life is holding a three-month-old baby and saying utter nonsense. "My, my,

my, my, you beautiful bunny, aren't you my sweetest, cuddly bunny?" You raise your eyebrows, pout, and make absurd faces. But far more surprising is that the little one responds to all these absurdities. They respond to words with a coo, to smiles with a smile, and they gesture in time with the adult's voice. Flirting is, above all, a matter of coordination. If you look around at a party, you'll immediately know who's flirting with whom. What you see is two people synchronizing their gestures only to each other and no one else in the crowded room. She brushes her hair away from her face, and he puts his hand in his pocket; she leans eagerly toward him and speaks, he leans back sympathetically and listens. It's the same with babies. When you talk, the baby freezes; when you stop, the baby takes over, and an explosion of cooing, fist waving, and kicking ensues. Like adult flirting, infant flirting bypasses language and creates a more direct connection between people. ^{1:44-47}

Infants love human voices and faces more than anything else, but they also love stripes and edges. Babies just a few days old gaze intently, squinting with effort at a corner of the ceiling or a striped shopping bag, while ignoring all the expensive, colorful toys with subtle prints Grandma has brought. They gravitate toward patterns with stark contrasts. At the peak of a newborn's aesthetic sensitivity are checkerboards and target panels. If we show young infants a complex image and record their eye movements as they look at it, we'll see that babies trace the outer edges of an object.

Of course, the world of an infant isn't static. Even in the hospital room, things are in constant motion. And even newborns follow moving objects with their eyes. Movement provides clearer clues than edges alone about where objects begin and end. Imagine a child looking at a stuffed Big Bird lying on a bunny quilt. The toy is composed of different parts, each with its own distinct edges — the head is distinct from the body, which in turn is distinct from the feet. Each bunny on the quilt also has its own outline. But if you pull the blanket out from under Big Bird, all the outlines of the quilt will also shift and move along a different path than all the parts of Big Bird.

Small infants can not only track an object moving in front of them, they can also predict the object's future motion. Suppose you show infants an object moving along a certain trajectory—that is, along a given path at a given speed—say, a ball rolling across a table. When the ball rolls behind a screen, the infants will anticipate the ball and look at the edge of the screen where it should appear, provided it is moving at the same speed and along the same path. If the ball does appear there, they will be unaffected and continue to follow it. However, if the object doesn't appear where it should, or if it appears in the wrong place, too soon, or too late, they will stare significantly longer and intently at the edge of the screen. Sometimes they may also look at the opposite edge of the screen or further along the path the object should have taken. This indicates that they can predict where the object should be and when it should arrive. ^{1:78-80}

Meanwhile, there is surprising evidence that it doesn't particularly interest young infants if a blue car enters the screen from one side and a yellow duck emerges from the other, following the same path. An adult will assume that the duck that emerged is a completely new object, and that the other toy is still somewhere behind the screen. And young infants are clearly pleased, thinking that the toy behind the screen has somehow magically transformed into a new thing. However, as can be demonstrated in various situations, the exchange of a toy car for a duck will surprise one-year-olds, suggesting that they have already developed a new approach to classification. ^{1:94-95}

First year 0.3 - 1.3 years "peace and conflict" research ¹ [K4 - empathy, connection]

When a baby is about a year old, they begin to point at various objects and **look at those pointed at by others**. What happens when you show a toddler something new, something a little strange, perhaps wonderful, or perhaps even dangerous—say, a walking robot toy? **The baby looks at their mother questioningly and checks**. What does she think? **Does her face show an encouraging smile or a look of terror?** A one-year-old **matches their reaction to their mother's**.

An adult looks into two boxes, the first with a look of joy, the second with a look of disgust. The child will happily reach into the box whose contents delighted the adult, but will not open the one that disgusted them.

... As you can see, children and adults work together to successfully familiarize themselves with and overcome the fear of a strange object. New skills allow children to use other people to achieve their goals. A one-year-old can point to a toy out of reach, expecting an adult to hand it to them, or place their hand on an adult's hand to ask the adult to give them a spoonful of applesauce. Even before they can speak, children can communicate.

As children learn that adults share their attitudes toward objects, they also discover with dismay that sometimes other people have different opinions.

Just as research on infants confirmed parents' suspicions that they share a **special bond**, research on older children shows that this bond sometimes breaks with age. ^{1:48-49}

Second year 1.3 - 2.3 monster two-year-olds ¹ [K5 - self, perversity]

When children turn eighteen months old, they begin to understand the nature of differences between people, even becoming fascinated by them. They begin to understand that people have different desires.

All parents fear the infamous "monster two-year-olds" and remember the times when a sweet, perhaps a bit playful, one-year-old turns into a steely-eyed two-year-old monster straight out of a horror movie. What makes monster two-year-olds so monstrous isn't that they do something you don't want them to — one-year-olds are just as good at that. Two-year-olds do something because you don't want them to. While one-year-olds give the impression of succumbing to the irresistible charm of forbidden objects, two-year-olds are **deliberately contrary** (as the British would say *bloody-minded*, stubborn as donkeys). A two-year-old won't even look at a lamp cord. On the contrary, his hand will be reaching out to it, while he will be staring stubbornly and seriously at you. Fourteen-month-olds believe that our desires are the same as their own. Monster two-year-olds are clearly beginning to systematically verify this belief and are implementing a kind of research program. Eighteen-month-olds systematically explore **areas where their desires and ours might conflict**. When a child becomes a budding psychologist, we parents become laboratory mice.

It may be somewhat comforting to know that toddlers aren't really interested in driving us crazy, but merely in understanding our behavior.

The monster two-year-old reflects the genuine contradiction between a child's need to understand other people and the need to live happily with them.

A two-year-old's discovery of other people has a brighter side. One day, Alison came home from work completely devastated, sat on the couch, and burst into tears. Her son, not yet two, looked at her worriedly and, after a moment's thought, rushed to the bathroom. He returned with a huge box of Band-Aids, which he began to randomly apply to her, as if she were injured. Like many therapists, he misdiagnosed her, but the treatment proved remarkably effective. Alison stopped crying.

Scientific studies show that two-year-olds begin to feel true empathy for another person. Younger children also become saddened by the distress of others. However, only **two-year-olds can offer comfort**. They not only feel your pain; they also try to soothe it. The two-year-old monster is also a caring angel. True empathy requires understanding how others feel, even if you don't feel the same way yourself, and knowing how to comfort them. ^{1:50-54}

An eighteen-month-old child tends to do everything **out of spite**. When asked, "Come here, honey," a child either stands still or runs away. Ask them to throw something into the trash can, and they'll likely throw whatever's inside. Reach for a cup they've just emptied, and they'll throw it on the floor. Give them a second sock to wear, and they'll likely take off the one they're already wearing.

It's not just that a child **doesn't come when called**; they **rarely follow any instructions**. **"No" is their favorite word.** ^{2:31}

By the age of two, the basic components of a **sense of self** are developing, including the ability to use language appropriately to describe themselves. When one-year-olds are shown their own photos, they typically refer to themselves as "baby." Shortly before age two, most children begin **using their own names**, and by the middle of age three, they begin using personal pronouns. By the end of age three, almost all children describe themselves in a photo using their name and personal pronouns correctly. ^{7:109}

Third year 2.3 - 3.3 child-scientist ¹ [K6 - order, analysis]

We scientists sometimes stay up at night over something, even forgetting to eat. In children, we see this drive to understand the world in its purest form. Our children, during the first three years of life, are consumed by the desire to explore and experiment with objects. ^{2:99}

At the same time that children learn the differences between their own desires and those of others, they also learn about the differences between what they perceive and what others see. The researcher placed a screen on the table, dividing it into the child's side and the researcher's side. The researcher hid a toy from the child, placing it on their side of the screen. Then they gave the child the toy and asked them to hide it. To do this correctly, the child had to place the toy on their side of the screen so they could see it but the researcher couldn't. Meanwhile, the youngest children, aged 24 to 30 months, placed the object on the examiner's side so that it was hidden from them, not the examiner. The children struggled with the problem in every possible way. They would move to the examiner's side to see what the screen looked like from the other side. Some found innovative workarounds, such as hiding the toy behind their backs so no one could see it.

Apparently, they couldn't imagine that they could see the toy while someone else couldn't. By the time a child turns three, they already know a lot about the differences between what they see and what other people see. A 30-month-old child will always correctly hide a toy on their side of the screen. They know that the other person can't see the toy, even though they can. ^{1:54-56}

The change in behavior that occurs in the first half of the third year can be overwhelming, both for the child and for the adults around them. The age of two and a half is a moment of extreme imbalance. Parents often say they're completely lost. Two-and-a-half-year-olds are incredibly stubborn and inflexible. They want **exactly** what they want, when they want it. They can't adapt, give in, or wait a moment. Everything must be done **exactly** as they want it. Everything must always be **in its proper place**—the place they deem appropriate. Daily household chores must be performed in a **specific sequence**, always in **the same order** and in **the same way**. Secondly, children this age are extremely **demanding** and tend to dominate. They must give orders and make decisions. If they decide, "Mommy will do it," then under no circumstances can Daddy do it. If they decide, "**I will**," then no one is allowed to rush in to help, even if the task is beyond their capabilities. Two-and-a-half is an age of intense emotions. Moreover, it's an age of polar opposites. Unable to choose between alternative options, children this age endlessly vacillate between two contradictions, trying to incorporate both into their decision. ^{2:34-35}

Another annoying feature of this age is stubbornness: the child insists on constantly doing a given activity. Not just at a given moment, but **from day to day**. If you read them four fairy tales yesterday, there should be four today too – and the same ones. The child wants **everything to continue as before**, or at least for the **old routine to continue**, regardless of new ones arriving. ^{2:35}

Fourth year 3.3 - 4.3 three-year-old opera: kove and deception ¹ [K7 - eroticism, role play, imagination]

One of the things Freud was right about is the astonishingly **erotic** nature of three-year-olds. Three-year-olds truly behave toward their parents like lovers. More precisely, like lovers straight out of an Italian **opera**, full of ardent and sensual embraces and no less ardent despair at separation, as well as jealousy of rivals. ^{1:63}

Children's discoveries about beliefs also influence other aspects of their relationships with others. To deceive others, or to recognize when they are being deceived, you must discern the difference between what others believe to be true and what you believe to be true. This depends on understanding how belief is formed. It depends on knowing what it takes to make someone believe something that isn't true. Two- and three-year-olds are very poor liars, if they can be considered liars at all. We can clearly demonstrate that **true lies** only emerge in four-year-olds, when children begin to understand the concept of **false belief**. ^{1:64}

Three-year-olds are characterized by fantasy. ^{7:30}

At three and a half years of age, a terrifying change occurs for many. It's as if the transition from the equilibrium typical of three-year-olds to that of five had to be accomplished through a breakdown, disintegration, and reintegration. This occurs in the

middle of the fourth year of life. This is a period of great uncertainty, imbalance, and coordination problems.

Motor and language difficulties are often accompanied by significant difficulties in relationships with others. A three-and-a-half-year-old expresses feelings of insecurity by frequent crying, whining, and constantly asking their mother, "**Do you love me?**" or by complaining, "You don't love me anymore." They also make various demands on their elders: "Don't look," "Don't talk," "Don't laugh," or they demand that **all attention be focused on them**. The age of three and a half is not without its **charms**. One of its most charming qualities is often a **vivid imagination**, expressed in a child's penchant for creating imaginary companions. Although some believe that only a **solitary** person can play with imaginary friends, both our research and the work of others clearly demonstrate that inventing various creatures can demonstrate a child's considerable abilities and vivid imagination. These creatures are very real to them, very important. Reserving an extra seat at the table, in the car, or on the family couch for a "friend" who exists only in your child's imagination can be challenging at times, but the effort will be worthwhile. ^{2:37-38}

Three years is an age when the relationship between mother and child is developing well, in a mutually satisfying way. For many children, this is the period of "**we**," and mother is a particularly welcome companion. In the second half of their third year, children transition from focusing on "I" and demanding "you" to a friendly, communal "we."

The younger child wanted everything immediately, so bargaining wasn't effective. A three-year-old, on the other hand, can be persuaded to do something they dislike "now" if they can **expect a reward later**. If you let them in on a "secret" or tell them a "surprise," they'll respond with sincere joy. What's more, you can persuade them to do something by promising a "surprise" in return. ^{2:193}

Fifth year 4.3 - 5.3 [K8 - hierarchy, manipulation, realism]

Four-year-olds are said to be "uncontrollable" – physically and emotionally. The vocabulary of a typical four-year-old can shock anyone except perhaps a seasoned preschool teacher. "Throwing meat" is unbridled. **Vulgar expressions** enter the normal vocabulary. A four-year-old doesn't just use them occasionally, where they might be appropriate, but returns to them with relish, rhyming them, roaring with a silly laugh that demonstrates his full awareness of their inappropriateness.

He loves to **defy his parents' orders**. Being as resistant as possible seems to be his *raison d'être*. One gets the impression that some powerful spirit of insubordination has taken possession of him: he **struts**, curses, **brags**, and **provokes**. A three-and-a-half-year-old was undoubtedly too insecure about life situations, while a four-year-old might seem **overconfident** in themselves and their abilities. ^{2:39-40}

A four-and-a-half-year-old is beginning to move away from the "uncontrollable" behavior of a four-year-old. They're moving toward the more focused age of five, when life belongs more to the realm of facts. A four-and-a-half-year-old is **trying to separate reality from imagination** and no longer gets lost in their own fantasies as easily as they did six months ago, or a year ago, when they were actually a cat, a carpenter, or Captain Kangaroo. "Is this real?" is their constant question.

Four-and-a-half-year-olds are somewhat more consistent than younger children. When they do start something, they do it with more persistence and don't require as much supervision. When they start building a house with blocks, the end is a house—not, as six months ago, first a fort, then a truck, and finally a gas station. Their **desire for realism** can sometimes be too insistent for adults—when they demand details about, for example, **death**.^{2:40-41}

"My mom says so!"—this is the four-year-old's way of invoking the highest **authority**. He has proven his point beyond any doubt. He has the final say.^{2:195}

Sixth year 5.3 - 6.3 [K9 - freedom, "other worlds," philosophy]

Around the middle of the sixth year, the even-tempered five-year-old gives way to the **boisterous** six-year-old. By the age of six and a half, the horizon will likely clear again. Behavior at this age closely resembles that of a two-and-a-half-year-old [K6]. The child is subject to violent emotions and is torn by extremes. One moment they love you, the next they hate you. The mother no longer holds the central place, as before. Now the child wants to be the center of the world. Everything is placed on the mother. Whatever goes wrong is always her fault. And many things go wrong because five-and-a-half- and six-year-olds, like two-and-a-half-year-olds, demand a lot from others and are persistent in their demands. A child at this age reacts negatively to others. **If you ask them for something, in their eyes, this fact alone is reason enough to object** [freedom]. They usually respond to commands reluctantly and negatively, although if you ignore the initial "I won't do it," they often find themselves picking up the command themselves in subsequent words, as if it were their own idea. Many five-and-a-half-year-olds and six-year-olds are rebellious, naughty, and impertinent, and are **willing to spend hours arguing over an order**.

However, this age also has its advantages. Children can delight with their vigor, energy, and **eagerness to learn new things**. This is an **age of expansion**, and children are capable of almost anything. They have a colossal **appetite for new experiences**. As a result, they desire too much. Having to choose between two options is unbearable for them, because they want both. They also find it extremely difficult to accept criticism, their own guilt, or punishment. They have to win. If they actually win, fine. Unfortunately, to win, they are even willing to cheat. If someone else wins, a five- or six-year-old can raise an uproar and accuse the other of cheating. When things go their way, they can be warm, enthusiastic, eager, and ready to help. However, when things go wrong, there's wailing and gnashing of teeth.

Five-and-a-half-year-olds and six-year-olds also engage in petty theft.^{2:43-44}

Seventh year 6.3 - 7.3 [K10 - responsibility, conscience]

Although the age of seven, like any other, includes moments of exuberance, self-confidence, and great joy, a child is generally much more reserved. A seven-year-old is calmer and, in a sense, easier to get along with, but you should expect them to **complain** rather than to be happy. They're more likely to withdraw, mumbling under their breath

than to assert their rights. Seven-year-olds have rightly been described as moody, apathetic, and capricious. A seven-year-old avoids not only fighting but also other people. They **prefer to be alone**. They want their own room, where they can hide and guard their belongings. They like to watch, listen, and be on the sidelines. They are an avid television and radio watcher, and sometimes even a reader. One gets the impression that they build a sense of self-identity solely by watching, observing, and **reflecting**.

A seven-year-old often **demands too much of themselves**. They understand the tasks, but they can't always fully cope with them. Sometimes they go too far and suddenly become completely exhausted. They need help determining where to stop.

For a short time, life takes on a **dark tone** for many seven-year-olds. They believe that no one likes them, that everyone is conspiring against them. Other children cheat; teachers nag; even their parents are not fair. **Dissatisfaction with life** can sometimes be read directly on seven-year-olds' faces. The corners of their mouths turn down in a constant tearful grimace.^{2:45-46}

Seven-year-olds learn to be **self-critical** and like to **do everything right**. This self-introspection leads to a state of autonomy. They accept a certain amount of **responsibility**.^{3:216}

Eighth year 7.3 - 8.3 [K11 - "I," revolutions, leadership of souls]

A seven-year-old flees from the world, an eight-year-old goes out to meet it. For an eight-year-old, nothing is impossible. No task is too difficult, no distance too great. Every new thing or obstacle is a **challenge**, which they undertake with the utmost eagerness, often overestimating their own abilities. An eight-year-old doesn't see everything through to the end. They tackle every new endeavor with great enthusiasm and energy, but sometimes they fail, and when reminded of this, they become discouraged or even cry. However, this doesn't stop them from undertaking further endeavors – tomorrow.

Eight-year-olds are often described as expansive and fast-paced. One gets the impression that they need constant contact with their surroundings. Therefore, they are constantly active and busy, **eager for new experiences, activities, and connections**. For all their brashness and arrogance, a child this age is far more sensitive than one might think. Therefore, if, as is often the case, a bad ending comes after a good beginning, it's important to protect the child from an overly intense sense of failure and excessive self-criticism.

An eight-year-old **prefers directions over a full-blown command**, which they consider childish. It's better to say briefly, "Dinner," than "Wash your hands and get ready for dinner."

A seven-year-old was primarily concerned with themselves and how others treated them. Eight-year-olds go further. They are no longer simply interested in how others treat them, but in **how their relationships with others are shaping up**. They are ready—and willing—for two-way relationships. Moreover, they are **concerned not only with what people do, but also with what they think**.^{2:47-48}

Year nine 8.3 - 9.3 [K12 - serving others, uniting with the world]

The eight-year-old was unstoppable, expansive, enthusiastic, and unwavering. The nine-year-old is once again **on the calmer side, more confident in his interactions with the outside world**, more reserved, and **more self-sufficient** than the rowdy eight-year-old who simply couldn't sit still.

The nine-year-old can be, and often insists on being, extremely independent. In his own eyes, he's already an old hand and resists excessive parental authority. At the same time, however, many children this age are able to interrupt their current activities (which was so difficult before) to **fulfill an older person's request or command**. Sometimes they postpone it for a while, and then, absorbed in something else, they forget. They **argue much less**, however. If an order particularly displeases them, they may frown, object, or protest violently; however, if given no other option, they will ultimately obey. Many children this age prioritize simple approval of their work over praise or reward.

Typical nine-year-olds are usually more interested in their peers than in their families; some, for short periods, even shun their family circle. The opinions of friends in the neighborhood certainly matter more than those of their parents.

Nine is often a time of honing one's skills and truly significant achievements. However, there is cause for concern. A nine-year-old can **take certain things very seriously and worry about them**. Sometimes, something that a year ago would have prompted only a brief cry now completely devastates them. Consequently, it's sometimes said that nine is a neurotic age (or rather, potentially). A child not only worries a lot at this age but also complains. Complaints might concern, for example, that too many responsibilities are being placed on them at home or at school. They might also take the form of lamenting about their general well-being: burning eyes, stomach aches, or aching hands. These complaints almost always signal a genuinely bad mood. However, they often occur when a child is asked to do something they don't like. This is how a nine-year-old reacts to unpleasant situations.^{2:48-50}

Ten years 9.3 - 10.3 [K1 - directness, movement]

Ten, as you'll hear from many parents, is the most pleasant age. A child this age wants to be good and do the right thing.

A ten-year-old is happy not only with their parents and teachers but also with the world in general. They **like life as it is** and are able to enjoy it. They are kind and friendly, and they expect the same from others. A ten-year-old is very specific and **direct**, but not rigid. They don't take anything too seriously. Ask them about a behavior, and they'll casually answer, "Well, sometimes I do it, sometimes I don't." Or: "If I do something wrong, I don't feel much remorse; enough to say I'm sorry."^{2:50-51}

Ten-year-olds are even-tempered but not particularly scrupulous (easy-going). They rarely cry and don't get angry easily. **However, when angry, they are physically and emotionally violent** and immediate, but soon become resolved (resolved). They may plan revenge but rarely remember to carry it out. They seem to enjoy the noise; at least they make enough of it. They have fewer worries and anxieties than they cause others. Their worries center around school, such as homework, grades, and being late. They are

terrified of: blood, ghosts, dead animals, criminals, wild animals, high places, and the dark. ^{3:267}

Eleventh year 10.3 - 11.3 [K2 - beauty of nature, material security]

Eleven is one of the most **worry-filled** periods of childhood. Children worry about school, **money**, parents, **well-being**, and their own health. Some children even worry about their father's entrepreneurship, family relationships, and the state of the world. ^{3:267}

Twelve years 11.3 - 12.3 [K3 - mathematical, design, information, communication]

The eleventh and twelfth years are a period of voracious **information absorption and idea gathering**. These children ask **many questions**. Nearly two-fifths of the questions are **scientific in nature, concerning the physical world**. About half of the questions concern social inquiry, an area in which they gain some insight. They understand the **importance of natural laws in science**, but are only beginning to develop a sense of their own path within social reality.

Children at this age seek reality in social and physical relationships. They are interested not only in what they are dealing with directly, but also in matter separated in time and space. Their sense of time and space has developed sufficiently to reach back to ancient times and lands and forward to the world of tomorrow. They are fascinated by distant places and distant times. Boys and girls, as a group, enjoy reading books about travel, biographies, science, nature, home, and school. Girls especially enjoy books about heroines and romance. Boys enjoy adventure books, expeditions, science fiction, mystery, and unbelievable stories.

Boys excel in numerical manipulation and **mathematical reasoning**. Boys' reasoning abilities in fourth, fifth, and sixth grades appear to be better than those of girls. Boys are curious, inquisitive, and **love manipulating objects**. They are **creative thinkers**. Girls are more likely to remember the details of something like a presidential campaign. A boy will likely ask about its purpose. Boys outperform girls in math, science, and creative thinking. Children this age remember what they see longer than what they hear. Words should be reinforced with **images**. By age 12, children acquire the ability to understand the point of view of the person they are talking to. ^{3:262-266}

Eleven- and twelve-year-olds typically believe in justice and fair play. ^{3:268}

The ages of 9-12 are interesting because they represent childhood at its highest developmental level. Soon, the child will leave childhood and move on to the next major phase of growth and development—adolescence. ^{3:245} [This completes the cycle of twelve categories, which occur annually.]

Thirteenth year 12.3 - 13.3 [K4 - empathy, anxiety, gentleness]

Although thirteen-year-olds are generally quiet, they are sullen, cry, and make faces. They generally ignore the situation or person that has hurt their feelings. They confide in reliable friends, hiding their hurts from others.

The early phase (ages 12-14) of adolescence requires the development of ego strength and the experience of acceptance and love. They need to be able to give these qualities as well as receive them. It is important for them to be able to demonstrate **gentleness**, admiration, and appreciation. Depriving them of these qualities only leads to exaggerated, often unacceptable behavior.

Even in the best family circumstances, **fear, anxiety, and uncertainty** occur at the beginning of adolescence. There is a great discrepancy between who they are and who they believe they must become. But how can this be achieved? There is so much to learn, and it's hard to even know where or how to begin. **Fears** of ridicule, personal failure, and inadequacy are present.

Adolescents evaluate their entire existence through the reactions of their peers. They accept them and reinforce their behaviors. If ignored or criticized by peers, they may develop feelings of inferiority, inadequacy, and incompetence. The peer group is largely responsible for modifying behavior and providing a forum through which adolescents see themselves as superior or inferior.

The form of interest that seems most characteristic of early adolescence is fads. A trend or practice pursued with excessive zeal, bordering on a cult. These are usually temporary and unpredictable. Early adolescents are extremely focused on **being accepted by their peers**. This intense desire for acceptance partially explains why they pick up fads so quickly during adolescence. **Journaling** is also typical during this period. ^{3:283-297}

At the third level (concerning friendship, according to Damon), reached around age thirteen, **friendship** is understood as a deeper and more lasting relationship. The quality of friendship depends on the degree of **mutual understanding** and the **sharing of thoughts, feelings, and secrets**. Friends offer each other support, especially in situations of loneliness, sadness, and anxiety. ^{7:118}

Fourteenth year 13.3 - 14.3 [K5 - self, defiance]

A fourteen-year-old is more adept at controlling his anger. He may lock himself in his room and occasionally slam the door or later respond with a sarcastic tone to express his **displeasure**. **Against teachers and parents** he often **uses humor, usually of an insulting or teasing nature**. He's actually a joker, which can sometimes be quite irritating. He's generally happier than not. He doesn't cry often, and when he does, it's usually out of **anger**. ^{3:285}

A teenager's room and its cleanliness are always a source of friction, especially if it's a girl's room. Conflict over appropriate appearance and dress is greatest before the age of fourteen. ^{3:289}

Fifteenth year 14.3 - 15.3 [K6 - order, analysis]

About a year after the onset of sexual maturation, individuals **begin to feel confident in their intellectual abilities**. There is a growing insistence on **testing everything with their minds**. During this time, they think they know everything. Despite this attitude, which can certainly cause them problems with adults, they begin to show an **interest in thinking, experimenting, and generalizing**. Often, these interests are focused on scientific fields. The act of formulating a hypothesis and testing it gives them great satisfaction. Before this period, they typically used trial and error to achieve their cognitive goals. Now, they spend part of their time thinking about solving a problem rather than acting immediately and making corrections.^{3:299-300}

During this period of development, they become capable of **scientific reasoning and formal logic** expressed through verbal arguments; moreover, they reflect on the logic and quality of their own thinking. They do not need to focus on the immediate situation. They can imagine what is possible and consider hypotheses that may or may not be true; they can also consider what might result from them if they are true. By the time they reach fifteen, they are able to use formal logic in an adult way and when it is needed.^{3:327}

Sixteenth year 15.3 - 16.3 [K7 - eroticism, role play, imagination]

Typically, fifteen-year-olds are able to think realistically about themselves. They are primarily interested in the present, but they **begin to think more about their future**. After this period, they become more impartial and liberal in their attitudes. When necessary, they are able to **compromise** their intellectual stances according to the challenges and demands of their life situation. However, their collective cognitive abilities to exercise good judgment and possess deep intellectual insight are limited by the accumulation of still inexperienced, undeveloped knowledge, based on which they establish a perspective on the problem they seek to solve. Their **idealistic and pseudo-optimistic nature also distorts their perspective**.^{3:326}

At the age of sixteen, most teenagers learn to accept the adults in their lives. Parents, if relegated to a subordinate role during the previous two years, are usually restored to their distinguished position in the adolescent's thinking.^{3:311}

Seventeenth year 16.3 - 17.3 [K8 - hierarchy, manipulation, realism]

Eighteenth year 17.3 - 18.3 [K9 - freedom, "other worlds," philosophy]

Nineteenth year 18.3 - 19.3 [K10 - responsibility, conscience]

Twentieth year 19.3 - 20.3 [K11 - "self," revolutions, leadership of souls]

Twenty-first year 20.3 - 21.3 [K12 - serving others, unity with the world]

Empirical data is lacking here in the literature available to me, but it should be expected that the characteristics of youth found during these periods will be consistent with predictions.

The next cycle is closing. We already had the first-layer K4 at ages 0-9.3, and the first-layer K5 at ages 9.3-21.3. Now, the first-layer K6 begins.

Reaching adulthood

As G. Kaluger et al.³ wrote in 1979 about the situation in the United States: "The age of 20 or 21 is usually cited as the age at which full maturity and development are achieved. In recent years, it seems unrealistic to call 19- or 20-year-olds mature, even though they are already grown up. The level of complexity of the world for today's 18- to 21-year-olds is significantly higher than for this age group of previous generations. Their behavioral patterns are rather adult-like. Voting privileges for parliament are guaranteed for 18-year-olds. However, the question still remains: Are these individuals, in any way, mature for adult life before the age of 21?" People believe that today's 18- to 21-year-olds are socially different from people of the same age two or three decades ago.^{3:307}

It's important to note that for many years in the United States, the age of adulthood was 21, including the right to vote. During World War II, vast numbers of men under that age volunteered for military service on the front lines. Upon their return, a moral dilemma arose: why shouldn't these 18-year-old boys, returning en masse from the war and voluntarily risking their lives for their country, be allowed to vote? It was decided that the voting age should therefore be lowered to 18. And so it remained. From a psychological perspective, however, things are different. The period of adolescence, from 9.3 to 21.3, is a rebellious, combative period associated with courage and a lack of deeper reflection on the future or existing problems. They make excellent front-line soldiers, provided they've learned something from the art of war, grown enough, and gained enough strength to carry a rifle and fight the enemy. The period from 21.3 to 33.3 is a time of prudence, reflection, the acquisition of difficult life and academic knowledge, and the avoidance of hasty decisions. This is a period in which choices are guided not only by emotions but also by reason, by one's own reflections on the political knowledge gained. Therefore, it's the right time to begin participating in social and political life. A similar problem exists with the issue of allowing alcohol consumption or driving cars and motorcycles with powerful engines. By the age of 21, most people abandon the recklessness of binge drinking or speeding. There are, of course, exceptions to this, but that's another matter. Therefore, 21 should be considered the age of adulthood worldwide, conferring numerous rights. L. Steinberg⁸ writes that behavioral data show that adolescents are poor decision-makers (for example, they often engage in risky activities, car accidents, unprotected sex, and often use drugs). This leads to the hypothesis that adolescents have poor mental capacity for decision-making or that information about the consequences of dangerous behavior is unclear to them.⁸

It seems that closing the second cycle—in the case of 18-year-olds—is also necessary to supplement the influence of the missing three second-tier social categories, which, while they did operate in childhood, were at a much more elementary level.

Twelve-year periods of the first layer

Childhood [0-10.3 years K4 - dependence, bonding, empathy, anxiety]

[Many psychologists struggle to define childhood.] They meticulously divide childhood into small segments of time, precisely so that nothing important from the

perspective of subsequent life periods escapes analysis. This leads to difficulties in integrating all the data and presenting a sense of developmental changes over a longer period of time, for example, throughout childhood. We have also followed this path and are taking a somewhat more analytical approach to childhood... - as written in the collective work edited by A. I. Brzezińska:^{5:10} [Thus, it is not easy to find characteristics in the literature that bind childhood together, even though they clearly exist.]

Adolescence (puberty) [10.3-21.3 K5 - self-confidence, defiance, risky behavior]

[The boundary between childhood and adolescence is usually given in various publications as 10-12 years^{5:10}.]

Adolescence is a bridge, bridging the gap between dependence and maturity. It is usually an uncertain period for young people, because it is when parents relax their control over them, shifting onto them the responsibility they have not yet learned to manage. It is a time of testing, experimenting, and learning.^{3:309}

The developmental goals of pre-adolescence are:^{3:245}

1. Achieving freedom from adult, identification by learning to rely on oneself;
2. Developing social skills to form and maintain friendships with peers;
3. Learning to live in the adult world by gaining a clearer perspective of one's peer group's place or role in it;
4. Developing moral references, behaving more based on principles than on rules;
5. Consolidating identification based on sexual roles;
6. Learning realistic ways of exploring and controlling the physical world;
7. Developing appropriate symbol systems and conceptual abilities for learning, communication, and reasoning;
8. Developing an understanding of oneself and the world (both social and universal).

Early adulthood [21.3-33.3 K6 - order, analysis, arduous work], developmental years

According to Levinson: transition period 17-22 years, entering the world of adulthood 22-28 years.^{3:371}

After the turbulent late adolescence, the developing individual is faced with a significant test: proper and satisfying integration into adult society and culture. Early adulthood, or the period from about 20 to 35 or 40, is a **busy** and exciting period for most people. It is a period during which adults invest **enormous amounts of energy in their work**, seeking promotion, position, and upward mobility. In addition, they expand their social contacts, increasing their circle of friends and seeking opportunities to become part of an organized social unit. They marry, **establish a home, and have children**. The developmental period of adulthood is one of constant growth, constant expansion. It is a beautiful but devastating period! People in early adulthood learn to tolerate frustration and anxiety.

They can be expected to utilize **logical thinking and insight in their decisions**. They **formulate goals and explore new areas**. Self-direction means being free from group

domination in establishing or determining a social pattern of life and thought. This is in contrast to adolescence, when the need for social acceptance is so great that whatever the group says, a person of this age will do or think. A mature person has a certain perspective. Their behavior is based on a good balance of **intellectual insight** and some emotions and ideas. They learn to live with problems they recognize as insoluble and work to solve problems that can be solved. They are open to suggestions, but they are not unduly influenced by others. They learn not only from their own experiences but also from the experiences of others.

A mature person takes **responsibility** for their behavior. They do not blame their environment for their own mistakes, nor use it as an excuse for their shortcomings. They do not shirk responsibility or shift blame onto others. They are willing to endure present discomfort for future gain and satisfaction.

Their behavior is **principled**. They do things because they consider them valuable, not because someone tells them to. They are probably **more capable of learning than any other age group**. However, young adults, especially those who have married, are plagued by numerous limitations that can act as barriers to learning. ^{3:367-372}

Advanced Maturity [33.3-45.3 K7 - eroticism, role play, imagination]

According to Levinson: transition period 28-33, stabilization years 33-40. ^{3:371}

This is a wonderful period of life because it ushers in years of stability and freedom. The period of anxiety is over. Now a person can shift their interests inward to achieve personal satisfaction and self-control. Activities that foster personal satisfaction can be very important now. Children have finished school, many are married, so parents now have more time for themselves and their interests.

Tasks are now more internal in nature, relating to **interpersonal roles** and interpersonal development, and for the first time, many people are emphasizing comfort in life.

Now is the time to fully develop the **husband-wife relationship**. Now is the time to break through the thick veneer of child-centered habits and **develop deep and lasting intimacy as a couple**. This renewed awareness of the initial interdependence in the marital partnership will lead to a rich and fulfilling interaction between husband and wife. As a couple, they will find mutual encouragement, support, and reassurance in each other. There will come a time and desire to **do things together again and rediscover each other after years** of struggling with the physical, financial, and emotional demands of parenthood.

Couples rediscover each other as individuals and **redefine or modify their roles as husband and wife**.

Midlife adults also face the challenge of developing a healthy relationship with their aging parents. Being aware of their interests and needs, without allowing domination or excessive submissiveness, requires considerable maturity and compassion. Adults in this age group must act as a bridge between the younger generation and their aging parents, enabling each to understand and value the other. ^{3:398-399}

As a group, middle-aged individuals seem to feel a need for prestige in society. Most people are perceived as most **attractive** in their late thirties and early forties. ^{3:401-402}

Late Maturity [45.3-57.3 K8 - hierarchy, manipulation, realism]

45-65 middle age

According to Levinson: the midlife transition period 40-45, entering middle adulthood 45-50.^{3:371}

There has been a significant increase in divorces among midlife couples these days. Many people are shocked to see friends who were married for 25 or 30 years and who seemed to have a good marriage suddenly divorce. Many of these cases of drifting in different directions occur because partners lost touch during parenthood and no longer share a common bond.

Some people in midlife find themselves suddenly trapped in life and marriage. They try to recapture some of their youth and experience a fulfilling "good life" before it's too late. This feeling of being trapped usually hits women in their mid-40s and men in their late 40s. Some mid-life couples suffer from an identity crisis and sometimes temporarily lose sight of their values by engaging in **extramarital affairs**. These affairs often don't depend on the wife or husband; many of these couples often remain in love with their spouse. However, they **jeopardize** their marriage, the prestige of their company, and their relationships with friends in pursuit of a "romance from a bygone era." Sometimes, a spouse never learns of an extramarital affair. Sometimes, when they do, they forgive and forget—but this often leads to divorce after many years of marriage.^{3:410-413}

Middle adulthood is usually a time of life's full potential and achievement. Adults bear the greatest responsibility for social destiny, holding the highest offices, **occupying the highest positions in the power structure**, and **playing the leading role in society**. The period between 45 and 60 years of age is referred to as the **dominance** phase, as members of the dominant generation play the most important role in **managing social institutions** and are **one of the main driving forces** determining the future of society.^{5:536}

For a person in middle adulthood, **social sanctions are not a factor that determines their course of action**. Their behavior is guided by the principle of **realism**, according to which their actions should correspond, on the one hand, to their internal needs and, on the other, to the objective conditions of life. It is the individual who exercises control over their own behavior; they shape their life, taking advantage of both the opportunities and possibilities offered by their environment and utilizing their own resources, in which they have a good understanding.^{5:538-539}

In middle adulthood, we have [among other things] the opportunity to:

- **exert the greatest influence on the social environment, be an authority**, a mentor, a natural **leader** in their own community;
- play the leading role in society...
- enter the phase of self-regulation, creatively exceeding the demands of their roles, **transcending prevailing conventions**;
- **independence from external influences**, achieving a level of autonomous regulation, where the most important regulator of functioning becomes the self-structure, **personal goals**, and vision of one's own development...^{5:551-552}

Midlife crisis... This is most evident in a depressive attitude, accompanied by bitterness, a sense of **injustice, resentment, claims** against the social environment, or isolation, a lack of motivation to engage in activity, or a routine that robs one of the joy of life. ... **alcohol** and drug abuse, workaholism, the emergence of the first symptoms of psychosomatic illness, the **use of violence, aggression**, or other forms of direct or indirect self-destructiveness. ... **Anxiety and a vague sense that something terrible is approaching**, which is a harbinger of the **fear of death** breaking through to consciousness; ... Growing nervousness, lack of patience, irritation in the face of obstacles appearing in life; ... **Obsession with death**, illness, old age.^{5:556-558}

[57.3-69.3 K9 - freedom, "other worlds," philosophy, social interests]

According to Levinson: the transition period 50-55, the culmination of middle adulthood.^{3:371}

The period from age sixty until death focuses on altruistic and **social activities**.^{3:371} In **philosophy** the peak of creativity is between the ages of 60-64.^{3:415}

[The chart in the book by G. Kaluger et al.^{3:403} shows that the period from approximately 48-86 is the period of greatest abstract abilities, up to philosophy.]

The period 60-75. The youngest seniors are usually fit after retirement and often experience a **social revival**. ... Women who devoted themselves primarily to caring for the home and children or supporting their working husbands often begin to develop their own activities during the empty nest period. This takes the form of volunteering, **involvement in charitable or church organizations**. ... The social network of the youngest and the oldest is usually well-developed. ... Remaining in good health allows one to enjoy free time, utilize skills developed over the years, develop a social life, one's own interests, and act as a consultant, advisor, and authority.^{5:610}

[My own observations of people I know: interest in esoteric philosophical problems, a penchant for traveling abroad.]

[69.3-81.3 K10 - responsibility, conscience]

According to Levinson: the transition period 60-65, the period of late adulthood 65-70 and beyond.^{3:371}

[My own observations of people I know: seriousness, not understanding jokes, stubbornness, principledness.]

[81.3-93.3 K11 - "I," revolutions, leadership of souls]

[My own observations of people I know: openness to what is different, to unconventional solutions, a kind of intellectual rejuvenation.]

[93.3-105.3 K12 - serving others, unity with world]

[no empirical data]

105.3 - [Transition to the second phase of the zero-level Category or system catastrophe]

The whole lifespan

A comparison of 12-year developmental periods with the Categories, based on three books on developmental psychology, looks roughly as described in the previous section. It's worth comparing people you know, children, and yourself, to this comparison, also taking into account layers I and II, listed in Table 2.1.

These results demonstrate the existence of a highly precise human clock that determines how we operate during the individual developmental periods associated with the Categories. It should come as no surprise, however, that such a perfect "computer" as the human brain and mind utilizes a correspondingly perfect clock. The intensity of this clock's influence is particularly noticeable at a young age, when it's easy to perceive not only twelve-year periods but also single-year periods. However, one must also consider the ever-present innate individual characteristics associated with astrological and ethnic influences, and similarly expressed through the Categories.

Layer I Layer II	K4	K5	K6	K7	K8	K9	K10	K11	K12
12 years	0 -9,3	9,3-21,3	21,3-33,3	33,3-45,3	45,3-57,3	57,3-69,3	69,3-81,3	81,3-93,3	93,3-105,3
K1		9,3-10,3	21,3-22,3	33,3-34,3	45,3-46,3	57,3-58,3	69,3-70,3	81,3-82,3	93,3-94,3
K2		10,3-11,3	22,3-23,3	34,3-35,3	46,3-47,3	58,3-59,3	70,3-71,3	82,3-83,3	94,3-95,3
K3	-0,7-0,3	11,3-12,3	23,3-24,3	35,3-36,3	47,3-48,3	59,3-60,3	71,3-72,3	83,3-84,3	95,3-96,3
K4	0,3-1,3	12,3-13,3	24,3-25,3	36,3-37,3	48,3-49,3	60,3-61,3	72,3-73,3	84,3-85,3	96,6-97,3
K5	1,3-2,3	13,3-14,3	25,3-26,3	37,3-38,3	49,3-50,3	61,3-62,3	73,3-74,3	85,3-86,3	97,3-98,3
K6	2,3-3,3	14,3-15,3	26,3-27,3	38,3-39,3	50,3-51,3	62,3-63,3	74,3-75,3	86,3-87,3	98,3-99,3
K7	3,3-4,3	15,3-16,3	27,3-28,3	39,3-40,3	51,3-52,3	63,3-64,3	75,3-76,3	87,3-88,3	99,3-100,3
K8	4,3-5,3	16,3-17,3	28,3-29,3	40,3-41,3	52,3-53,3	64,3-65,3	76,3-77,3	88,3-89,3	100,3-101,3
K9	5,3-6,3	17,3-18,3	29,3-30,3	41,3-42,3	53,3-54,3	65,3-66,3	77,3-78,3	89,3-90,3	101,3-102,3
K10	6,3-7,3	18,3-19,3	30,3-31,3	42,3-43,3	54,3-55,3	66,3-67,3	78,3-79,3	90,3-91,3	102,3-103,3
K11	7,3-8,3	19,3-20,3	31,3-32,3	43,3-44,3	55,3-56,3	67,3-68,3	79,3-80,3	91,3-92,3	103,3-104,3
K12	8,3-9,3	20,3-21,3	32,3-33,3	44,3-45,3	56,3-57,3	68,3-69,3	80,3-81,3	92,3-93,3	104,3-105,3

Table 2.1 Correlating a person's age with Categories in layer I and II of the developmental clock, lasting 12 years and 1 year, respectively. Commas mark decimal place in numbers.

When analyzing the factual information cited from the three books cited, one might conclude that these authors wrote astrological books, and very good ones at that, even better than that, because they delve deeper into the essence of the Categories.

For most psychologists, the possibility of determinism poses a serious problem. They are terrified to think that if something were determined, it would be the end of freedom! Disaster! It's better not to think about it at all! Meanwhile, we have examples of individuals who lack the simple determinism that so many psychologists fear. Not subordinated to the normal sequence of Categories, the autistic children are not interested in anything, and lack empathy for problems and other people. This is truly a disaster...

In the history of research on children's developmental processes, Jean Piaget deserves mention. He was the first to provide a reliable description of the individual stages of a child's development at each age, using a systematic method devoid of the ideological overtones that have plagued the humanities for almost a century. Currently, we can see that more and more authors of psychological works are setting out with an open mind into the field, instead of returning to the musty library, as they had done before. This is a sign of new times, the turn of the century.

An important perspective of existing theoretical developmental psychology that deserves mention is the phase model of developmental change.

This approach assumes that in the long-term process of directional change, a constant sequence of successive phases can be identified, common to all humans—developmental stages—through which every developing person must pass. In this sequence, each later stage grows from an earlier stage, which is a necessary condition for reaching the later stage. The graphical representation of the course of change in such models takes the form of a staircase (Fig. 2.3). Each level of the "staircase" represents a specific state of the process, or a developing system, at a specific age. This way of understanding development and the course of developmental change can be found in the psychoanalysis of Sigmund Freud, Carl Jung, and Erik Erikson, as well as in the cognitive-developmental theories of Jean Piaget and Lawrence Kohlberg.^{4:30-31}

It is no coincidence that I first observed the convergence of the developmental cycle with Categories many years ago, based on psychoanalytic developmental theory. However, I quickly distanced myself from psychoanalytic and psychodynamic methods, seeing the primitive views that the next developmental cycle was a recollection and reliving of what occurred during a certain period in childhood. What follows the reappearance of the same Category has nothing to do with what occurred in childhood. Simply put, the sun rises again the next day and illuminates the landscape.

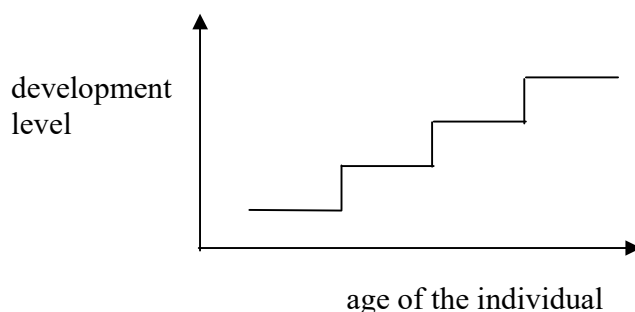


Figure 2.3 Phase model of developmental change

Piaget described the stages of intellectual development. He stated that children progress through each of these stages sequentially, in a consistent order and at similar ages, consistent with generally defined age ranges. ... Development cannot be accelerated; a child must mature to the next stage. In each stage, new, more sophisticated levels of thinking emerge, complementing the existing cognitive repertoire.^{7:42}

Maria Montessori (the Montessori method of education is named after her) writes about the occurrence of sensitive phases in a child's development, periods in a child's life in which sensitivity is focused on specific types of stimuli. During these periods, the child easily masters various skills. These periods are transitional in nature. Maria Montessori lists several sensitive phases, including sensitivity to learning to read, a period of sensitivity to sensory stimulation, and a period of sensitivity to developing everyday skills. During this period of particular sensitivity, a child learns eagerly and intensively. However, if this period is overlooked, the child will learn with significantly more difficulty and greater effort. The sensitive phase is the most beneficial time for a child, when learning and parenting yield the best, most desirable results.
9:105-106

It is obvious that not all children and individuals develop at exactly the same time. On the one hand, there is a period of waiting for stimuli to activate developmental processes, and on the other, disruptions to the developmental clock occur, often in dramatic forms, which I describe in the chapters on developmental disorders. The incidence of developmental clock disruptions is high, probably, I estimate, around 10% of the population, which may be related to the existence of some adaptive mechanism to environmental conditions. In the rest of the population, the developmental clock seems to operate very precisely and uniformly for everyone.

Conclusions Regarding the "Boundary Conditions" of the Functioning of Categories in Developmental Psychology

The Starting Point of the Developmental Clock

Analyzing the temporal sequence of the occurrence of Categories in the first postnatal period, it is easy to see that the start of the clock begins neither at birth nor at the moment of fertilization. Logic dictates that the clock begins counting from some round number. Specifically, at some point between conception and birth.

During the fetal period, there is a moment when the first layer of the Category is in the K4 range, the second layer at the beginning of K3, and the third layer at the beginning of K1, the universal beginning of the Category cycle. If the gestation period from the moment of fertilization is assumed to be 266 days, or 8.74 months (a month represents 1/12 of a year), and the shift of the Categories relative to the months is 0.1-0.7 months, as shown in Fig. 2.2, this time point will lie within the range of 25-44 days after fertilization. This immediately brings to mind Aristotle's description of the moment of union of the soul with the body on the 40th day after conception, later incorporated into Church teachings for many years as a dogma. Especially since these considerations remain within the realm of Aristotle's Categories, perhaps he was right!?

The End of Life

The presented correlation of developmental psychology data with the Category cycles indicates that at the age of 105.3, the Category cycle ends (the K12/K1 boundary), and logically, either a transition to the next 144-year cycle with a different psychological tone or a systemic catastrophe occurs.

Figure 2.4 shows the percentage of individuals who survive to a given age as a function of lifespan. The graph suggests the overlap of two effects: the clock-like countdown to the moment of death and the presence of a statistical distribution independent of the clock. The graph, taken from the website of longevity researcher Ben Best, is unfortunately not to scale. Given that the age limit for longevity is 115 years, I've included it in this graph.

Extrapolating the rectilinear portions of the graphs for the 19th and 20th centuries, the intersection of the clock component with the time axis roughly falls at approximately 105 years. This result suggests a need for a more precise determination of this value.

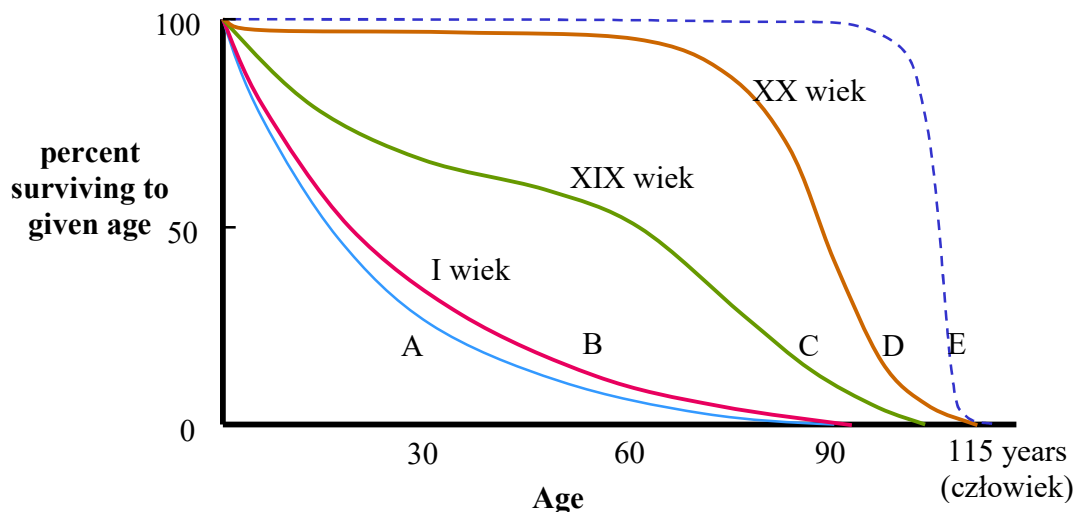


Figure 2.4 Mortality Curves (based on Ben Best¹⁰, modified graph)

- A - Exponential decay curve;
- B - Human lifespan in ancient Rome (average length 22 years); the nature of this curve is similar for small animals, such as mice;
- C - Human lifespan in the 19th century in the USA (average length 40 years);
- D - Human lifespan in the USA determined in 1995 (average length approximately 80 years);
- E - Theoretical human lifespan if the main diseases associated with aging (heart disease, cancer) were under control.

Fig. 2.5 shows a graph taken from another article by Ben Best, this time showing the number of deaths in subsequent years of life in the US population in 2000. Note that this is a semi-logarithmic graph. There's a distinctive peak in adolescence, which is primarily associated with risky activities and only to a lesser extent with disease. There's also a longevity threshold around

the age of 100-110, at which point there's an additional influence that's unclear how to interpret it.

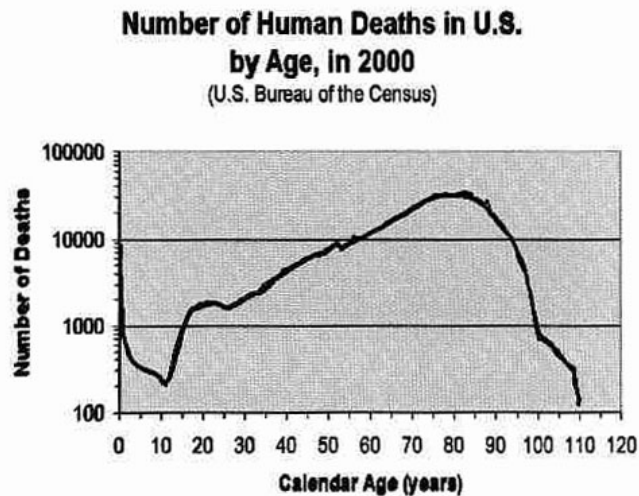


Figure 2.5: Mortality by year from birth. Taken from Ben Best ¹¹.

It is therefore highly probable that the same clock that measures developmental milestones plays some role in the limited lifespan, which remains a scientific mystery. The cases of individuals with a phase shift in the developmental clock, cited in later chapters, indicate that this is not a limit that cannot be exceeded; they live successfully in this "second" cycle for many years. However, individuals with chronic mental disorders, who, as further analysis indicates, have a phase shift in the developmental clock, typically live shorter lives. However, this may be related solely to the consequences of the disorder, not to the cycles of the developmental clock, and the 105-year-old age limit may be a coincidence. This issue will require research on a population of well-functioning individuals with a phase shift in the developmental clock.

Bibliography

1. Alision Gopnik, Andrew N. Meltzoff, Patricia K. Kuhl; *Naukowiec w kołysce: Czego o umyśle uczą nas małe dzieci*; Media Rodzina, Poznań 2005.
2. Frances L. Ilg, Louise Bates Ames, Sidney M. Baker; *Rozwój psychiczny dziecka od 0 do 10 lat: Poradnik dla rodziców, psychologów i lekarzy*; Gdańskie Wydawnictwo Psychologiczne, Gdańsk 2005.
3. George Kaluger, Meriem Fair Kaluger; *Human development: The span of life*; The C. V. Mosby Company, St Louis - Toronto - London 1979.
4. Janusz Trempała; *Modele rozwoju psychicznego: Czas i zmiana*; Wydawnictwo Uczelniane Akademii Bydgoskiej im. Kazimierza Wielkiego, Bydgoszcz 2000.
5. praca zbiorowa pod redakcją A. I. Brzezińskiej; *Psychologiczne portrety człowieka: Praktyczna psychologia rozwojowa*; Gdańskie Wydawnictwo Psychologiczne, Gdańsk 2005.
6. Diane E. Papalia, Sally Wendkos Olds; *Human Development*; Mc Graw-Hill, Inc., New York 1992.

7. Ann Birch, Tony Malim; Psychologia rozwojowa w zarysie: Od niemowlęctwa do dorosłości; Wydawnictwo Naukowe PWN, Warszawa 1999.
8. L. Steinberg; Cognitive and affective development in adolescence; TRENDS in Cognitive Sciences (2005) 9(2): 69-74.
9. Małgorzata Sekułowicz ; Wykorzystanie metody Marii Montessori w pracy z dziećmi autystycznymi; w pracy zbior. pod redakcją T. Gałkowskiego i J Kossewskiej; Autyzm wyzwaniem naszych czasów; Wydawnictwo Naukowe Akademii Pedagogicznej, Kraków 2001.
10. Ben Best; Mechanism of Aging; strona internetowa <http://www.benbest.com/lifeext/aging.html>
11. Ben Best; Causes of death; strona internetowa <http://www.benbest.com/lifeext/causes.html>

Chapter 6: Involvement of Neurotransmitters

This chapter is devoted to demonstrating the connections between the elusive matter of the Categories and the biochemical and molecular levels of the nervous system. A special role here is played by some of the at least fifty known neurotransmitters, associated with their corresponding neurotransmission systems—that is, the systems of nerve cells between which information is transmitted using a given neurotransmitter. Generally, each Category is associated with a neurotransmitter. However, the situation is somewhat more complicated, as there is often more than one neurotransmitter, and some neurotransmitters can be associated with several Categories. However, this is not chaos. There are certain symmetries and unique relationships between individual Categories and the several neurotransmitters corresponding to them. The connections I have established are presented in Figure 6.1. In many cases, however, it is possible to use a simplified picture and say, for example, that noradrenaline corresponds to Category 1, serotonin to Category 4, and dopamine to Category 5.

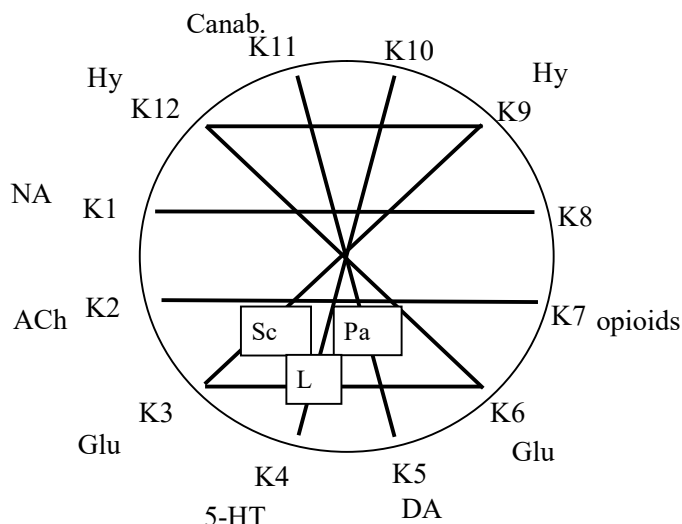


Figure 6.1 Symmetry of mental illnesses on the Category field model. Sc - schizophrenia axis, Pa - paranoia axis, L - anxiety axis (fear, guilt); NA - noradrenaline, ACh - acetylcholine, Glu - glutamic acid, 5HT - serotonin, DA - dopamine, Hy - histamine, Canab. - cannabinoids, opioids - opioids.

This chapter presents experimental data from various authors demonstrating changes in the activity of various neurotransmission systems during human and rodent development, which precisely correspond to the Category sequence consistent with the phases of the developmental clock. It is thus shown that rodents possess an analogous developmental clock, but with different cycle lengths, derived from a duodecimal fractal whose cycle length corresponds to the solar year. The neurotransmission pathways that link Categories to mental disorders and human gender are also shown.

Because this chapter examines biochemical and molecular biology issues, psychologists who are not typically familiar with these topics will find them challenging, unlike psychiatrists for

whom they are now commonplace. Nevertheless, these issues can be omitted and the next chapter continues without losing sight of the main theme of Categories in the human psyche.

Neurotransmitters

Are the Categories reflected among neurotransmitters? It is known that at least some neurotransmitters can be associated with specific psychological traits. Over the past decade or so, many authors have attempted to link neurotransmitters or neural systems with various mental activities and psychiatric symptoms. Generally, they have looked at brain systems fragmentarily, for example, in relation to a single mental disorder. The results have been more or less successful, but over the years, some progress has been observed in establishing these correlations. Thus, more recent analyses demonstrate greater systemic coherence across the entire human psyche and largely align with the division of disorders into Categories.

For example, dopamine was initially associated with schizophrenia, later that it plays a role in schizophrenia insofar as it is paranoid schizophrenia and is responsible for paranoid-type production, meaning excessive sensitivity to one's own "self." Contemporary research findings, however, point to a direct link between the initially neglected glutamine and schizophrenic symptoms. A solution to the ubiquitous co-occurrence of serotonin disorders in both schizophrenia and other chronic mental disorders, frequently mentioned by various authors, will emerge from the analysis in the following chapters. Noradrenaline is associated with agitation and mania, but generally, in affective disorders, acetylcholine and the interrelationship between these two neurotransmitters should also be considered.

To further explore the psychological aspects of various neurotransmitters, a brief description of each is provided below, along with their assignment to individual categories. Unfortunately, due to limited research data, it was not possible to assign specific neurotransmitters to all categories. The assignment presented here is largely based on information contained in subsequent chapters. However, it is worthwhile to present a comprehensive overview now to gain a better understanding of the topic. It should be noted here that although a single nerve cell typically uses a single neurotransmitter, in many cases the same cell has been shown to secrete more than one neurotransmitter, often from the same synaptic vesicles.

The following mental and physiological activities refer to neurotransmitters, not Categories, but there is a clear correspondence with the previously presented characteristics of the Categories.

Noradrenaline (Norepinephrine) - Category 1, Category 8

- (noradrenaline is associated with adrenaline)
- novelty seeking ^{4:370}
- activity, aggressiveness ^{4:367}, arousal level ^{107:391}
- involved in altered mood states in mania and depression ^{1:64}

Acetylcholine - Category 2

- involved in the processing of sensory stimuli ¹⁰⁷
- seeking out relevant or reward-related stimuli ^{107:401}
- involved in learning, memory, and altered mood states in mania and depression ^{1:62}

Glutamic acid - Category 3, Category 6

- (associated with glycine and GABA - for K3)
- higher mental functions ¹⁰⁸
- basis for learning and memory ¹⁰⁹
- schizophrenia, hallucinations, illusions

Serotonin - Category 4

- plays a role in anxiety ^{1:70}
- association with defensive behavior ¹¹¹
- carbohydrate cravings ^{112:18}
- post-traumatic stress disorder

Dopamine - Category 5

- association with the reward and motivation system, including reward anticipation ³⁰
- decreased appetite ⁵⁰
- paranoia

Opioids - Category 7

- (association between opioids and acetylcholine - for K7)
- modulation of pain perception ⁷⁷
- appetite for carbohydrates and fats
- depersonalization, dissociation, derealization ⁸⁰

Cannabinoids - Category 11

- reward effect ⁵¹
- increased appetite, especially for sweet foods ⁵⁰
- paranoid features ⁵⁰

Histamine - Category 12

- appetite regulation ¹²¹
- thermogenesis regulation ¹²¹
- substance addiction ¹²⁶
- anti-epileptic effect ¹³¹
- arousal of consciousness ¹³²
- illness behavior ¹³³

Although currently available psychoneurological research does not allow for the connection of all Categories with neurotransmitters, nor for the identification of the psychological functions of associated neurotransmitters (with the exception of adrenaline), a certain picture emerges in which a single Category and its most fundamental neurotransmitter are responsible for a certain group of behaviors, upon which the successful functioning of a given individual can be based, to the neglect of the other Categories and neurotransmitters, which in this case would merely serve as background. This single neurotransmitter would be associated with both prosperity and momentary disaster, the presence of which would be determined either by other neurotransmitters or by neural structure. However, the resulting connection of neurotransmitters

with Categories does not imply the identity of these chemical compounds with conscious emotional experiences.

We will now proceed to a more detailed description of the individual neurotransmitters associated with Categories.

Psychological effects of noradrenaline

Noradrenergic neurons respond to the appearance of stimuli to which the animal has been trained to pay attention.^{107:390} However, this activity is independent of the stimulus characteristics.^{107:394}

In object recognition studies, noradrenaline is primarily responsible for the intensity of the alarm response.⁸⁷ Noradrenergic α -2 receptor [autoreceptor] agonists such as clonidine and guanfacine have been shown to reduce this response in a dose-dependent manner. The effect of these agonists is blocked by the α -2 receptor antagonists idazoxan or yohimbine.⁸⁷ Acetylcholine, which interacts with noradrenaline, is responsible for the detection of the stimulus.⁸⁷

Increased activity of the noradrenergic system and the sympathetic nervous system causes the following symptoms: excessive mental activity, palpitations, changes in blood pressure, often reflecting an exaggerated fight-or-flight response.²¹ Rage is intense anger, and its expression depends on the release of noradrenaline and adrenaline.²¹ Mania and many symptoms of psychosis resemble an intense fight-or-flight response, while in the vegetative states characteristic of depression, this defensive system is largely inhibited.²¹

A theoretical hypothetical noradrenaline deficiency syndrome has been described, which would include: impaired attention, problems with concentration, difficulties in remembering, and Reduced information processing speed, as well as psychomotor retardation, depressed mood, fatigue, and apathy. This syndrome often accompanies depression, but also other conditions associated with impaired cognitive processes and attention, such as attention deficit disorder, schizophrenia, and Alzheimer's disease.^{2:45}

E. Winkle writes:

Research conducted over the past 50 years has demonstrated with statistical reliability that dysfunction of the noradrenergic system is associated with *schizophrenia*, manic-depressive disorder, Parkinson's disease, Alzheimer's disease, and Tourette's syndrome. This also includes anxiety, panic disorder, depression, mania, *autism*, *generalized developmental disorder*, ADHD, *post-traumatic stress disorder*, addictions, aggression, and criminal behavior.²¹

As will become clear from further analysis, the disorders I italicize have not necessarily been correctly associated with noradrenaline...

Psychological effects of acetylcholine

The forebrain cholinergic system is crucially involved in various aspects of attentional function, such as sustained attention, selective attention, and the ability to increase or decrease attention to a stimulus.⁸⁶

Acetylcholine is associated with response precision, both in reflexive and conscious attention.⁸⁷

In primates, cholinergic neurons in the forebrain temporarily change their activity during the performance of a behavioral task, particularly when reinforcing stimuli (positive or negative) or stimuli that consistently precede reinforcement are presented. Acetylcholine induces long-lasting facilitation of neurons in the neocortex and hippocampus. The cholinergic system of the cerebrum may therefore be an excitatory system activated by salient or reward-related events, and may also support associative learning.^{107:401}

The stress response induces the release of acetylcholine in the forebrain.⁸⁵ Acetylcholine is involved in the modulation of sensory information, in the organization and modification of receptive fields, in spatial memory, and enables the detection and discrimination of tones.⁸⁵

The cholinergic system has been described as an "action system" that allows for the development of the ability to focus on the environment and achieve a coherent action response.⁷⁶

Psychological effects of glutamic acid

Glutamic acid is involved in neuroplasticity and higher mental functions.¹⁰⁸ It is the main activating neurotransmitter in the mammalian central nervous system, plays a role in long-term neuronal potentiation, and is considered a substrate of learning and memory.¹⁰⁹

Antagonists of the glutamatergic NMDA (N-methyl-D-aspartate) receptor causes delusions, hallucinations, thought disorders, waxy flexibility, and negative symptoms of schizophrenia in humans.⁴⁸ Phenylclidine likely owes its hallucinogenic properties to its effect on the NMDA receptor.^{1:145}

Glycine interacts with glutamic acid. It is an "obligatory coagonist" of glutamic acid, meaning glutamic acid cannot act on the NMDA receptor in the absence of glycine.^{108, 109}

Psychological effects of serotonin

Serotonin is associated with anxiety¹¹⁰ and defensive behavior.¹¹¹

Mildly aggressive silver foxes, selectively bred for 40 years to this end, had elevated serotonin levels compared to their wild counterparts. Similarly, selection of Norway rats over 20 generations for reduced aggressiveness produced individuals with elevated serotonin levels. This applies only to defensive aggression, for example, towards humans or other fearful stimuli. In another case, rats bred over 20 generations for their ability to easily experience catalepsy, i.e., freezing under threat, also showed elevated serotonin levels. From a molecular perspective, in these cases, altered activity of serotonin metabolism enzymes and altered activity of serotonergic receptors were observed. N. Popova¹¹¹ hypothesizes that all domesticated animals possess elevated serotonin levels.

The association of serotonin with anxiety does not mean that it is anxiogenic or anti-anxiety, as some authors¹¹⁰ attempt to establish. The serotonin system itself represents a certain group of response modes, while the triggering factor for this response is as yet unknown. However, 5-HT_{1A} receptor agonists are used as anxiolytics and antidepressants; 5-HT_{1B}, 5-HT_{1D}, and 5-HT₃ antagonists as anxiolytics, 5-HT_{2A} antagonists as anxiolytics and antidepressants, and 5-HT_{2C} antagonists as neuroleptics.^{1:137}

Although widely used benzodiazepine anxiolytics interact primarily with GABA receptors, extensive experimental data indicate secondary changes in the excitation of serotonergic neurons.^{1:147}

A hypothetical serotonin deficiency syndrome has been created, which would include depression, anxiety, fear, phobias, obsessive-compulsive behaviors, compulsive behaviors, and excessive eating (bulimia).^{2:64}

LSD, mescaline, psilocybin, and hallucinogens classified as LSD-like and mescaline-like produce their effects by stimulating 5-HT_{2A} receptors.^{1:145}

Psychological effects of dopamine

Some authors link the role of the dopaminergic system to the reward and motivation system, including reward anticipation.³⁰

Considering the effects associated with dopaminergic activity, it is worth noting that the dopamine-related Category 5 is associated with relating all problems to the self.

Increasing dopaminergic activity

Increasing dopaminergic transmission is a key element in the induction of paranoia, hallucinations, and other manifestations of psychosis. For example:

- L-DOPA (3,4-dihydroxyphenylalanine), which is converted to dopamine in the body, causes psychosis as a side effect.

- Amantadine, another dopaminergic drug, can also induce psychotic symptoms.

- Psychostimulants, such as amphetamine and methylphenidate, which release dopamine, and cocaine, which also interferes with its reuptake, increase dopamine concentration in the synaptic region and induce a paranoid reaction in some addicts. Bromocriptine, apomorphine, lisuride, and other direct-acting dopamine agonists, which have been shown to be beneficial in Parkinson's disease, can induce a psychotic reaction in large doses.^{3:104}

Large doses of amphetamine, cocaine, and other sympathomimetics can induce an acute paranoid reaction, either spontaneously in addicts or experimentally in normal volunteers. Injection of a large dose of amphetamine, for example, often induces a paranoid psychosis within hours. Frequent small doses over several days can also induce a paranoid psychosis.^{3:104}

Additional support is provided by studies of increased dopaminergic activity in patients with active psychosis. Small intravenous doses of methylphenidate (e.g., 0.5 mg/kg) can significantly exacerbate an acute schizophrenic episode, while the same doses typically do not produce psychotic symptoms in normal individuals or patients in remission.^{3:104}

Reducing dopaminergic activity

Reducing dopaminergic activity is beneficial in psychosis.

The changes in blood levels of the primary dopamine metabolite, homovanillic acid (HVA), observed during neuroleptic therapy are consistent with the hypothesis that the mechanism of action of neuroleptics involves a progressive, slow decline in the synthesis and release of presynaptic dopamine.^{3:103}

Prolonged sadness accompanying work, rest, eating, sexual intercourse, and other activities commonly perceived as pleasurable is associated with dopamine hypoactivity. Central dopaminergic pathways form a brain system that, when aroused, induces specific changes in the level of satisfaction with the stimulation received. Administration of drugs that increase dopaminergic activity (e.g., amphetamine) leads to increased satisfaction with the stimulation received, while administration of drugs that decrease dopaminergic activity (e.g., neuroleptics) leads to a feeling of sadness associated with the stimulation received. At the psychological level, the effects of neuroleptics on schizophrenic patients include, among other things, a reduction in the level of satisfaction associated with delusions and hallucinations, which can consequently lead to a reduction in the patient's attraction to and withdrawal from this type of stimulation (mistaken judgments and false experiences).^{93:107-108}

Psychological effects of opioids

Opioidergic neurotransmission is involved in the modulation of pain perception, both at the sensory level and at the level of its emotional component. During psychological stress, the endogenous opioidergic system is activated, which can independently inhibit the affective and sensory components of pain.⁷⁷ For example, uncontrolled, aversive events induce stress-induced analgesia. This occurs (at least in part) through an increase in μ -opioid receptor neurotransmission in cortical and subcortical pain-controlling circuits.⁷⁷ Other intense negative emotions, such as anxiety, that reduce pain may also act through an opioidergic mechanism.⁷⁷

Administration of opioids can blunt the affective component of pain without necessarily extinguishing the sensation itself. In particular, opioid release in cortical areas involved in emotional processes suppresses the emotional aspect of pain and affective states such as depression, while blocking μ -opioid receptors with naloxone increases activity in these areas.⁷⁷

In general, women have greater pain sensitivity than men. For example, women experience more severe postoperative pain and require larger amounts of morphine than men to achieve a similar degree of analgesia.⁷⁷

Furthermore, placebo-induced analgesia—mediated by the release of endogenous opioids—is greater in women than in men.⁷⁷ This analgesia is reversed by the administration of naloxone.⁷⁸

From a broader perspective, pain can be viewed as one of a larger number of motivational stimuli from which the body must choose in conflict situations, for example, those involving threat (straining fingers gripping the edge of a rock) or the expectation of a greater reward (sitting on an uncomfortable chair waiting for your favorite dessert).⁷⁸

Similar reactions occur in rodents in laboratory conditions; the pain response is suppressed in the anticipation of a reward or in the presence of a predatory threat, for example, in a rat frozen in the presence of a cat. Administration of non-selective opioid receptor antagonists, such as naloxone, reverses this effect.⁷⁸

And finally, we come to soldiers in combat, who commonly suffer serious wounds without experiencing pain.⁷⁸

Much evidence indicates the involvement of opioids in the hedonic pleasure of eating. In general, administration of opioidergic agonists increases, and antagonists decrease, food consumption in satiated rats.⁷⁹ For example, opioidergic antagonists such as naloxone and naltrexone (naltrexone) reduce the consumption of highly palatable sweet or fatty foods, while opioidergic agonists such as morphine or DAMGO increase it.⁷⁹

It has also been shown that opioid-like analgesia can be produced in rats by the ingestion of a sweet solution or fat, and that ingestion of these substances enhances the analgesic effect of morphine.⁷⁹

Opiates help to calm feelings of rage and aggression, producing experiences of depersonalization, thus helping to distance oneself from emotional stress and physical pain, as well as altering mood and leading to euphoria.⁸⁰

Heroin causes dissociative experiences, depersonalization, and derealization.⁸⁰

Exemplified by GR89696, κ -2 opioid receptor agonists have analgesic properties, but can also produce dysphoria, hallucinations, catatonia, and immobility.⁸⁴

The opioidergic system is closely linked to the acetylcholinergic system. Studies on the effects of alcohol and nicotine have shown that they exhibit analgesic and antinociceptive effects (reduced sensitivity to noxious stimuli) in both humans and rodents, which are at least partially mediated by the opioidergic system.⁸² This is confirmed by the fact that these effects are blocked by naloxone. When alcohol and nicotine act simultaneously, it can be said that the antinociceptive effect of alcohol is enhanced by nicotine, rather than the other way around.⁸² Cross-effects also occur in alcohol and nicotine addiction.⁸⁴

The opioidergic system also exhibits close connections with the cannabinoid system, as seen, for example, in the interaction of these two systems during the consumption of tasty, sweet, and fatty foods that give a sense of reward.⁸³

In post-traumatic stress disorder (PTSD), beside the involvement of catecholamines, corticotropin-releasing hormone, and serotonin, overactivation of the opioidergic system occurs.⁸¹

In PTSD cases, treatment with opioid antagonists such as nalmefene and naltrexone reduced symptoms of this syndrome, such as flashbacks, dissociations, obsessions, and hyperarousal.⁸¹

Psychological effects of cannabinoids

The cannabinoidergic system owes its name to the cannabinoids contained in the *Cannabis sativa* plant, the most important biologically active compound of which is Δ 9-tetrahydrocannabinol, THC). This plant has been known for centuries as the herb cannabis and as the drug marijuana, and its resin as hashish. Following the discovery of specific cannabinoid receptors in the nervous system, their natural endogenous ligands, derivatives of arachidonic acid, were also discovered: anandamide (N-arachidonyl-ethanolamine), 2-arachidonylglycerol (2-AG), and 2-arachidonylglyceryl ether (2-arachidonylglyceryl ether).⁵⁰

From a functional perspective, it shares certain features with the dopaminergic system, namely: reward effects,⁵¹ relaxation,⁵⁰ stress reduction,^{50, 52} increased ability to concentrate,⁶⁰ euphoria,⁵⁰ excitement,⁵³ disorientation,⁵³ paranoid features,⁵⁰ such as illusions of being controlled by an external force or some other force, a sense of grandeur, being persecuted, and auditory hallucinations.⁵⁰ (Authors of various studies associate these latter features with paranoid schizophrenia, but currently do not distinguish between paranoia and paranoid schizophrenia.) Catalepsy is also observed under certain conditions.^{50, 57}

The symmetry of the Categories suggests that Category 11, associated with cannabinoids, should have a similar analogy with Category 5, associated with dopamine, but represented at a "higher level" of socio-spiritual advancement. A fairly close interaction between the dopaminergic and cannabinoidergic systems has been observed,^{50, 51, 55} making it difficult to separate which features are directly related to which system. However, there is a lack of detailed

data in publications indicating whether and to what extent the features associated with these two systems are different, and correspondingly at a higher level, considering case history of experiences and the identified values and desires. The differences between these systems are as follows: the dopaminergic system – decreased appetite; the cannabinoid system – increased appetite, especially for sweet foods.⁵⁰

There are suggestions that schizophrenics (and potential schizophrenics) can be divided into two groups with respect to cannabinoid use. The first group experiences symptom relief, while in the second, cannabinoid use can trigger the onset of the disease.⁵²

Research shows that, to some extent, the reward effect can be achieved independently by the dopaminergic system or the cannabinoid system alone. The reward effect occurs to some extent in both mutant mice lacking dopamine production⁵⁶ and in mice with a genetic deletion of the CB-1 cannabinoid receptor, considered the primary receptor of this system.⁵⁵ A genetically modified mouse lacking dopamine is, while cataleptic and hypoactive, nevertheless capable of moving, finding food, eating it, and returning to the same food source. It does so very rarely and can starve to death in the presence of food.⁵⁶ However, these mice exhibit a more hedonic and motivational approach to sweet-tasting substances than normal mice.⁵⁶

Cannabinoid use during adolescence is associated with a two- to three-fold increased risk of schizophrenia.⁵³ Conversely, cannabinoid use during schizophrenic psychosis exacerbates symptoms.⁵⁴

So-called cannabinoid psychosis following the ingestion of significant amounts of these substances is characterized by severe anxiety, panic attacks, paranoid delusions, and hallucinations. These symptoms bear some similarity to paranoid schizophrenia.⁵³

A study of anandamide and mRNA levels of anandamide-degrading enzyme (FAAH) in the blood of patients with schizophrenia revealed high levels in most patients during the acute phase of psychosis, which decreased after pharmacological treatment.⁵⁴

A unique property of the cannabinoidergic system, among other neurotransmitter systems, is its exceptionally strong influence on the immune system. Some authors consider it a natural system that mitigates the effects of physical trauma. For example, endocannabinoid levels increase in cases of head injury and stroke.⁵² Cannabinoids are an important regulator of immune system homeostasis, among other things, promoting the Th2 immune response pathway while simultaneously inhibiting the Th1 pathway. However, given their homeostatic role, both too little and too much can be harmful.⁵² Cannabinoids often exhibit a biphasic response. Low doses of cannabinoids can stimulate a Th2 immune response, while high doses inhibit it, shifting the balance toward Th1.⁵² Cannabinoids may have beneficial effects on the destruction of cancer cells,⁵² on pain relief,^{52, 57, 58} and in the treatment of depression.⁵⁹

Psychological effects of histamine

The histaminergic system contains two normal H1 and H2 receptors and two auto-receptors, H3 and H4. The extensive involvement of the histaminergic system in the functioning of many neurotransmission systems suggests that the histaminergic system may act as a regulatory center for all brain activity.¹²⁰

Regulation of appetite and energy metabolism

Neural histamine in the hypothalamus acts as a central transmitter in the regulation of body weight, acting as an anorectic factor, and increasing thermogenesis in brown adipose tissue and lipolysis in white adipose tissue. Intracerebral administration of histamine reduces food intake via the H1 receptor in many experimental models and increases thermogenesis via the uncoupling protein-1 (UCP-1). Mice knocked out in the histidine decarboxylase gene have reduced histamine levels; when raised on a high-fat diet, the mice develop obesity.¹²¹

This issue is closely related to the action of thyroid hormone-releasing factor (TRH), which, when administered intracerebrally, produces similar effects: a dose-proportional reduction in food intake and an increase in body temperature (independent of T3 thyroid hormone levels). TRH increases the activity of the histaminergic system directly through TRH type 1 and type 2 receptors located on histaminergic neurons. The anorectic effect of TRH can be attenuated by lowering histamine levels with a histidine decarboxylase inhibitor.¹²¹

Histaminergic neurons also mediate the wakefulness-promoting effects of TRH.¹²¹

Histaminergic transmission is associated with appetite for low-protein diets¹²² and appetizing foods. Histaminergic brain activity increases after food consumption under conditions of hunger.¹²² The mere anticipation of an approaching meal after a period of hunger increases histaminergic activity and, concomitantly, arousal.¹³⁴

Histamine reduces food intake via the H1 receptor. H1 receptor concentration increases during a low-protein diet.¹²²

Histaminergic neurons are influenced by various stressors (e.g., dehydration increases histaminergic activity) as well as appetite modulators: leptin, orexin A, and neuropeptide Y.¹²²

Leptin [which reflects the body's fat stores] increases histamine release in the hypothalamus and thus reduces appetite. At the same time, it also reduces the levels of cannabinoids with an opposing effect.¹³⁴

The scent of grapefruit, or limonene, the main component of grapefruit oil, acts on rat olfactory receptors and increases the activity of the histaminergic system, resulting in increased lipolysis in adipose tissue, increased body temperature, increased blood pressure, and decreased food intake.¹²³ The scent of lavender oil has the opposite effect on the activity of the histaminergic system, reducing lipolysis, body temperature, and increased blood pressure and food intake in rats.^{123, 125} The skin temperature on the back of three volunteers increased by 3°C from 31°C after 90 minutes of 30-minute exposure to the scent of two halves of a grapefruit.¹²⁴

Substance addiction

The histaminergic system has much in common with substance addiction and can be used in the treatment of addiction by reducing the rewarding effects of stimulants, such as alcohol or morphine addiction. In this case, increasing histaminergic activity can be achieved by blocking the H3 receptor.¹²⁶

Addictive consumption of stimulants such as alcohol, opioids, cocaine, or amphetamine derivatives, in addition to addiction, leads to serious mental deficits related to memory, speech, executive functions, difficulty making decisions, reduced attention, and increased impulsivity. These deficits persist despite abstinence; in some cases, they reverse after a long period, sometimes years, while in others they persist. They are primarily associated with a decrease in the functions of the acetylcholinergic system. Stimulation of the histaminergic system, for example, by blocking the histaminergic H3 receptor with antagonists/inverse agonists, improves acetylcholinergic function and can, in many cases, reverse existing mental deficits.¹²⁶

The histaminergic system is believed to play a role in alcohol dependence due to the polymorphism of the enzyme HNMT (histamine N-methyltransferase), which is associated with alcoholism and is responsible for histamine metabolism and removal.¹²⁶

Studies suggest a role for the cerebral histaminergic system in the reward effects of stimulants and their addiction, but there is no consensus on whether histamine inhibits or promotes the reward effect.¹²⁷

Selected alcohol-preferring rats have high brain histamine levels and an increased number of nerves showing histamine immunoreactivity when stained, whereas alcohol-avoiding rats have low brain histamine levels. However, alcohol-preferring rats have a low-binding H3 receptor, and ethanol self-administration by rats is reduced by H3 receptor antagonists.¹²⁷

Antiepileptic action

The histaminergic system participates in the action of antiepileptic drugs. This action occurs via the H1 receptor, and there is a certain optimum level of histaminergic stimulation for an anticonvulsant effect (inverse U curve). Excessive doses of drugs that stimulate histaminergic activity, which at low concentrations have anticonvulsant effects, enhance epileptic discharges and seizures.^{128, 129, 130} Analogous drug action via the H1 receptor also occurs in temporal lobe epilepsy.¹³¹

Arousal of consciousness

Increased levels of histaminergic neurotransmission promote a state of consciousness-awakeness. There is a direct correlation between histamine levels in the hypothalamus and the behavioral state observed electroencephalographically. The synthesis and release of histamine are controlled by feedback through the H3 autoreceptor.¹³²

Orexinergic neurons (named after the orexin peptide - orexin) also influence the histaminergic system, resulting in an induction of consciousness. The orexinergic system is closely linked to muscle tension, body posture, and mobility.¹³²

Orexin neurons integrate the light-synchronized circadian clock and nutritional-metabolic stimulation with sleep-wake phases.¹³⁴

Histamine levels in the hypothalamus correspond to oscillations in individual sleep phases (arousal > non-REM sleep > REM sleep).¹³² Neurons stimulated during REM sleep are those containing MCH (melanin concentrating hormone). They likely participate in memory consolidation during REM sleep.

Activation of the histaminergic system increases the amplitude and velocity of the action potential elicited by a flash of light, indicating an amplification and acceleration of visual processes. These phenomena reflect the integrity of processes occurring throughout the brain.¹⁴⁰ Attempts were made to determine intelligence quotient (IQ) from the parameters of this flash-stimulated action potential.

It is worth mentioning the regulatory role of adenosine, although it is not directly linked to the histaminergic system. Adenosine has been identified as a substance that accumulates in the brain during intense neural activity amidst a prolonged state of consciousness. It causes sedation and likely induces sleep.¹³² Adenosine receptors are blocked by caffeine, causing arousal, especially when endogenous adenosine has accumulated during sleep deprivation. However, the stimulation of histaminergic neurons is independent of adenosine. While adenosine levels

correlate with low energy reserves, high levels of the energy-rich ATP (adenosine triphosphate) increase the stimulation of neurons, including histaminergic ones.¹³²

Sickness behavior

The systemic action of LPS (bacterial lipopolysaccharides), which stimulate inflammation, causes a reduction in the activity of orexin neurons, and subsequently a reduction in the activity of the histaminergic system, manifesting as so-called sickness behavior: reduced mobility and interest in the environment, social withdrawal, drowsiness, and decreased appetite.^{133, 139} Interleukin-1 produces a similar effect.¹³⁹

Effects on social interactions

Activation of the histaminergic system enhances so-called social memory, as demonstrated in social memory tests in rats.^{120, 134} Activation of histaminergic neurons increases social interactions.¹³⁹

Neuroplastic theory of brain functioning

The significant delay in the effective action of psychotropic medications is known to alter neurotransmitter levels within hours, or at most within days, while psychological effects take weeks. This has led to the development of numerous theories, of which the currently accepted one is that neurogenesis (the formation and dissolution of new synapses, axons (dendrites), and even neurons, generally new neural pathways) occurs in both the development of the disease and its treatment. Such significant changes require several weeks and the involvement of the entire complex system of new neural structure creation that is responsible for brain formation during the fetal period and childhood.

Regarding depression, Jean-Pierre Olie et al. write:

According to the neuroplasticity hypothesis in depression, depression results from changes in the neuroplasticity of various brain areas associated with mood control. This hypothesis is supported by experiments on animals exposed to strong emotional stimuli and by *post-mortem* studies of the brains of individuals with depression.^{20:14}

Neural adaptations, or plasticity, are ultimately related to the brain's ability to adapt to external stimuli and enable the animal to make appropriate adaptive responses to the same or similar stimuli, whether pharmacological, environmental, or behavioral.^{20:15}

One of the target genes identified in studies of the effects of antidepressants is the gene for the protein BDNF (brain-derived neurotrophic factor), the main neurotrophic factor in the brain. Neurotrophic factors such as BDNF are important for neuronal differentiation and growth during development, but are also essential for the survival and function of neurons in the mature brain. Similar to the induction of CREB (cAMP response element binding protein), increased BDNF expression is caused by chronic antidepressant administration and occurs with a variety of medications, indicating that BDNF may be a common target for thymoleptics. Unlike the effects of antidepressants, exposure to stress causes a significant reduction in BDNF synthesis in the hippocampus.^{20:17}

Administration of BDNF directly into the hippocampus produces antidepressant effects in animal models of depression.^{20:17} In contrast, antidepressant treatment increases the number of newly formed neurons (neurogenesis) in the hippocampus of adult rats and the hippocampus of treeshrews. Until recently, new neurons were believed not to form in the adult brain. However, research conducted in recent years has shown that neurogenesis occurs in the brains of various adult animals, as well as in the adult human brain.^{20:17}

Here is a short summary of neurogenesis from the book by Jean-Pierre Olie et al.^{20:18}

Neurogenesis is increased by:

- antidepressants,
- electroconvulsive therapy,
- enriched environments,
- physical activity,
- learning.

Neurogenesis is decreased by:

- antidepressants,
- stress,
- glucocorticoids,
- age.

There is also evidence from studies in animal models and humans that stress causes structural brain changes. However, to date, human data primarily comes from studies on post-traumatic stress disorder (PTSD).^{20:43}

Similarly, schizophrenia is considered a disorder with a neurodevelopmental cause. J. McGrath et al.¹⁰⁵ write:

The neurodevelopmental model suggests that, beside disruptions in normal development long before the onset of psychosis, active biological processes also occur during psychosis, and medical treatment has a beneficial effect on these processes. These processes may underlie the changes observed with certain neuroimaging methods and neuropsychological functioning.¹⁰⁵

R. Schmidt-Kastner et al.¹⁰⁶ suggest that hypoxia in early developmental stages is the cause of neurodevelopmental changes leading to susceptibility to schizophrenia. Occurring in the prenatal and perinatal periods, the hypoxia can lead to neurodevelopmental changes later in life. The authors suggest the involvement of proteins whose expression is regulated by hypoxia. This is a very large group of proteins, as this type of modulation of expression affects as many as 1-2% of all genes. Since low oxygenation occurs in the fetal period before the vascular system is formed, this is an important regulatory mechanism during fetal brain development, and dysfunction of this system may be associated with schizophrenia.¹⁰⁶ Of the 27 genes suspected of being associated with schizophrenia, as many as 20 meet the criteria for regulation by hypoxia or ischemia.¹⁰⁶ These include the gene encoding the aforementioned BDNF protein, but more interestingly, the NPAS3 gene (Neuronal PAS Domain Protein 3), about which little is known. However, its analogue, NPAS2, binds to the CLOCK protein of the circadian rhythm regulatory system.¹⁰⁶ So we're getting closer to timekeeping systems...

A growing number of publications appear at present, demonstrating the influence of neurogenesis in various mental disorders. I have cited only examples here to highlight the existence of this mechanism.

Epigenetic regulation

One of my assumptions about the emergence of Categories that the body memorizes at critical development moments is the influence on epigenetic regulation, which is revealed, among other things, in the correlation between a person's appearance and psyche. Epigenetic regulation of HOX genes that influence the formation of the final dimensions of long bones, etc., likely plays a role here.

Thus, in parallel with the association between mental illnesses and Categories, we can expect an association with epigenetic regulation—in particular, with DNA methylation of specific gene groups. Numerous authors postulate such a connection between complex mental disorders and aberrations in epigenetic processes.²⁶

Epigenetic mechanisms alter gene activity by chemically modifying DNA or chromosomal histone proteins without altering the DNA sequence.¹¹⁸ DNA modification through methylation not only records information within the cell; it is also transferred within the body during somatic cell division to the daughter cell. DNA is demethylated in early embryonic stages and then methylated during embryogenesis.¹¹⁷ M. Shimabukuro et al.¹¹⁷ write that although the traditional view that DNA methylation does not assume its transmission from parents to offspring, it is becoming increasingly clear that some epigenetic signals may possess partial meiotic stability and be passed from one generation to the next.¹¹⁷

Some associations between schizophrenia and gene methylation have already been discovered, for example, reelin (REELN) and GAD67. These genes are involved in GABAergic neurotransmission that belongs to a broader group of glutamatergic neurotransmission.²⁴ Differences in genomic DNA methylation were also observed in the dopamine receptor 2 (DRD2) promoter region,²³ as well as in the methylation of the SOX10 gene, responsible for oligodendrocyte formation.²⁶

Reelin is an extracellular matrix protein produced by GABAergic neurons in the developing and mature brain, in the cortex and the hippocampus.²³ In schizophrenia, but also in bipolar disorder, approximately 50% reduction in reelin mRNA expression occurs.²³ The GAD67 protein is an enzyme that synthesizes γ -aminobutyric acid (GABA) by decarboxylation of glutamic acid.²⁴ In schizophrenia, a reduction in the amount of this protein occurs.²³

In people with schizophrenia, administration of L-methionine exacerbates symptoms in 60-70% of cases. It has no effect in healthy individuals.²³ L-methionine is a precursor in the biosynthesis of S-adenosylmethionine, a source of methyl groups in the DNA methylation process. Studies in an epigenetic mouse model have shown that administration of L-methionine to mice for 15 days induced methylation of the RELN promoter in the frontal cortex and reduced protein and mRNA expression of both reelin and the GAD67 gene. The repression of these genes was reduced by treating mice with valproic acid, a well-documented histone deacetylase (HDAC) inhibitor.²³ Valproic acid preferentially acts on class I histone deacetylases, causing acetylation of the N-terminal tails of histones H3 and H4, which is associated with increased reelin and GAD67 mRNA expression.²³

In studies of an epigenetic mouse model, L-methionine administration to mice for 15 days induced methylation of the RELN promoter in the frontal cortex and reduced protein and mRNA expression of both reelin and GAD67. Repression of these genes was reduced by treating mice with valproic acid, a well-documented histone deacetylase (HDAC) inhibitor.²³ Valproic acid preferentially targets class I histone deacetylases, causing acetylation of the N-terminal tails of histones H3 and H4, which is associated with increased reelin and GAD67 mRNA expression.²³

The proteins MeCP2 and MBD2, belonging to the group of proteins interacting with histone deacetylases (HDACs), and therefore associated with transcriptional repression, bind to the methylated reelin and GAD67 promoters.²⁴ The MBD2 protein is also suspected of participating in the demethylation process.²⁵

Increased DNMT1 methylase activity has also been demonstrated in schizophrenia. Namely, schizophrenia is associated with a greater number of neurons in which DNMT1 mRNA is detected, which correlates with a lower amount of neurons in which reelin and GAD67 mRNA are detected. This methylase is found primarily in cortical GABAergic neurons.²³

It has also been observed that administration of haloperidol, commonly used in the treatment of schizophrenia, to rats causes certain changes in DNA methylation.⁴⁹

Considering the presence of both epigenetic regulation and the phenomenon of neurogenesis dependent on the availability of neurotransmitters released during the neurotransmission systems activity or the presence of psychotropic drugs in mental disorders, as well as during development and adaptation, the scheme of interactions (Fig. 6.2) seems reasonable; there is a positive feedback loop maintaining the activity of a given neurotransmitter at a specific level.

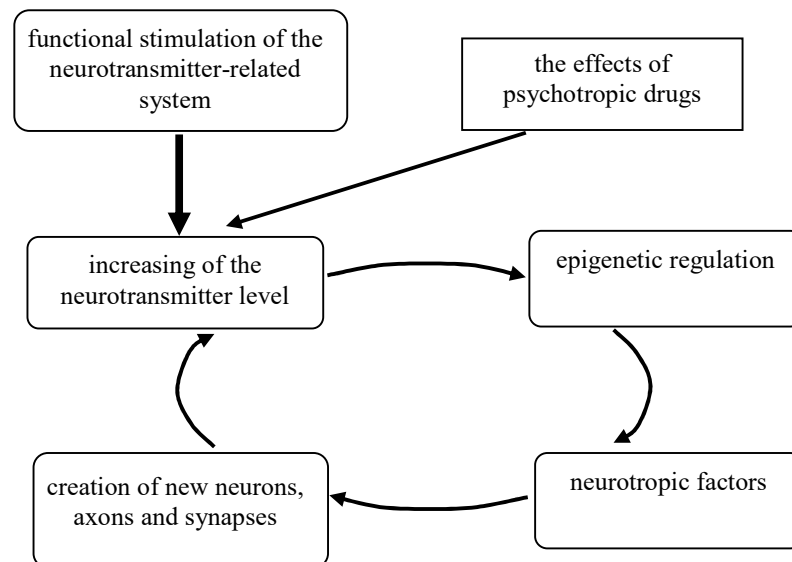


Figure 6.2 General scheme of the regulation of neurogenesis in the postnatal period.

The developmental clock of neurotransmission systems

Not only in humans, but also in many animals, we can distinguish the periods of childhood, adolescence, and adulthood. We see the play of kittens or monkeys as analogous to the play of children. These seemingly unproductive activities serve to develop functional neural connections and establish patterns for the nervous system, both in terms of movement, perception, and thinking.

Adolescence, across species, is defined by characteristic behaviors such as high risk-taking, intense exploratory activity, novelty and sensation-seeking, and the presence of social interaction.

Studies in rats, monkeys, and humans demonstrate nonlinear developmental changes in serotonergic receptor levels. An initial increase is followed by a decline in the number of these receptors during adolescence. In studies of children, the amount of the 5-HT₂ serotonin receptor (in platelets) was higher in six-year-olds compared to both newborns and the 13 to 14-year-old group.¹¹⁵ The period of Category 4 dominance ends at age 9.3 years, so the results are consistent with expected changes.

Mice appear to possess all of the neurotransmission systems found in humans. Some of these neurotransmission systems have also been found in bees, which have relatively large brains (1 cubic mm) for insects.

Below, in Tables 6.1-6.4, I present available data on the activity of individual neurotransmission systems, primarily in the form of observed concentrations of specific neurotransmitters. These data agree with theoretical expectations of the Category sequence of the developmental clock, although the basic speed of the developmental clock differs between primates and rodents. Thus, in general, the periods of childhood, adolescence, and early adulthood correspond to periods of 12 years for humans and rhesus monkeys, and to one month (1/12 year) for mice and rats. The developmental clock's starting point, the moment of neural tube closure in the fetal period, is considered in the next chapter.

Category	Cycle expected for primates	Measurements on humans	Measurements on rhesus monkey
Formation of the neural groove	G20	G20-G24 ⁷⁵	
[K4] Serotonin (5HT)	Prenatal period of personality development	5HT: G35 - ⁶⁴	
Birth		G266 ⁷⁴	
[K4] Serotonin (5HT)	Childhood: P0-P9,3 years		5HT: P14-10 years ⁶⁴
[K5] Dopamine (DA)	Adolescence: P9,3- P21,3 years	Adolescence: P12 years-P20 25 years ⁶³	
[K6] (Glutamic acid/GABA)	Early adulthood: P21,31- P33,3 years		

Table 6.1 Category layer I of the primate developmental clock and corresponding timing. Cycle leap = 12 years; G - gestational day, E - embryonic day, P - postnatal day, 5HT - serotonin.

Category	Expected rodent cycle	Measurements on rats	Measurements on mice
Formation of the neural groove	G11	G11, ⁷⁵	
[K4] Serotonin (5HT)	Prenatal period of personality development	5HT: E12-P14 ⁶⁴	
Birth		G21-G23	G20 ⁶⁵
[K4] Serotonin (5HT)	Childhood: P0-P21,4	5HT: prenatal to early adolescence	
[K5] Dopamine (DA)	Adolescence: P21,4-P51,8	Adolescence: P25-P42 ⁶³ ; P30-P50 ⁶¹ ; P30-P40 (social game) ⁶² ; P21→ („swim test”) ⁶² P35-maturity sex ⁶⁴ DA: P35-P60(1/3) ⁶³	
[K6] (Glutamic acid/GABA)	Early adulthood: P51,8-P82,3		

Table 6.2 Category layer I of the rodent developmental clock and corresponding timing. Cycle leap = 1/12 year = 30.4375 days; G - gestational day, E - embryonic day, P - postnatal day, 5HT - serotonin, DA -dopamine.

In Tables 6.3 and 6.4, the columns containing data on neurotransmission system activity, due to the limited research data, include not only elevated levels of specific neurotransmitters and enzymes related to their amounts in the frontal and prefrontal lobes, which seem to most closely reflect Categories-associated neurotransmission activity, but also receptor levels, etc. The dozen or so publications I used to create these tables also reported peaks in the activity of elements influencing neurotransmission at time ranges other than those listed in the table, which were inconsistent with the predictions derived from the developmental clock parameters used. However, their number did not exceed ten cases, which could result from a variety of causes, such as studies of specialized brain regions or specialized receptors, or in the case of post-mortem studies of humans, the presence of pathological changes.

Category	Cycle expected for primates	Measurements on humans	Measurements on rhesus monkey
Formation of the neural groove	G20	G20-G24	
K1 Noradrenaline	G20-G50,4	G35-G56 ⁶⁴	G28-G70 ⁶⁴
K2	G50,4-G80,9		
K3	G80,9-G111,3		
K4	G111,3-G141,7		
K5 Dopamine	G141,7-G172,2	>G140 ⁷³	
K6	G172,2-G202,6		
K7	G202,6-G233,1		
K8	G233,1-G263,5		
K9	G263,5-G293,9 -P2,5-P27,9		
K10 Serotonin	G293,9-G324,4 P27,9-P58,4	5HT: P0-P14 ⁶¹	
K11	G324,4-G354,8 P58,4-P88,8		
K12	G354,8-G385,3 P88,8-P119,3		

Table 6.3 Category layer III of the primate developmental clock and corresponding timing. Cycle step = 1/12 year = 30.4375 days; G - gestational day, P - postnatal day, 5HT - serotonin. The measurement data show the temporal range of the presence of markers of the expected neurotransmission system. Gray shading in the table cells indicates the prenatal period.

Category	Cycle expected for rodents	Measurements on rats	Measurements on mice
Formation of the neural groove	G11	G11,5	
K1 Noradrenaline	G11-G13,5	G10-G13 ⁶⁴	
K2 Acetylcholine	G13,5-G16,1	E16 ⁷²	E15-E17 ⁷²
K3 Glutamic acid	G16,1-G18,6	E16-E19 ⁷²	
K4 Serotonin	G18,6-G21,1 -P1,4-P1,1	E19 ⁶⁴	≈ P3 (<P 3) ⁶⁶
K5 Dopamine	G21,1-G23,7 P1,1-P3,7		≈ P4 ⁶⁶
K6 GABA	G23,7-G26,2 P3,7-P6,2	α ₅ GABA _A :P5 ⁶⁷ ; α ₁ , α ₂ GABA _A : P10 ⁶⁸ GBR1 _{a,b} : 4-12 ⁶⁹	
K7 Opioids	G26,2-G28,8 P6,2-P8,8	MOR≈P6 ⁷⁰	
K8 Noradrenaline	G28,8-G31,3 P8,8-P11,3		NA: ≈ P14 ⁶⁶
K9 Histamine	G31,3-G33,8 P11,3-P13,8	≈P13 ¹³⁵ , ≈P9H3 ¹³⁶ , ≈P14-28 ¹³⁷	
K10	G33,8-G36,4 P13,8-P16,4		
K11 Cannabinoids (Dopamine)	G36,4-G38,9 P16,4-P18,9	D3 and other max. P15 ⁷¹	
K12 Histamine	G38,9-G41,4 P18,9-P21,4		P21 Hy, H1 ¹³¹

Table 6.4 Category layer II of the rodent developmental clock and corresponding timing. Cycle step = 1/144 year (1/(12 x 12)) = 2.5365 days; G - gestational day, E - embryonic day, P - postnatal day, α₅GABA_A - GABA_A receptor subunit α₅, GBR1_{a,b} - GABA_B receptor 1 subunits a,b; MOR - opioid receptor μ, H3 - histamine receptor 3, D3 - dopamine receptor 3, H1 - histamine receptor 1.

The obtained comparison of the temporal sequence of neurotransmission activity and the Categories influence shows very good convergence with the expected cycle. For ethical reasons, the most biochemical results, and the most precise ones, were obtained for rodents. Therefore, the most significant table here is the last one, where every 2.54 days (1/(12 x 12 years)) the dominant neurotransmission system changes, and the corresponding neurotransmitters are consistent with predictions. Only in the Category 6 case we have gamma-aminobutyric acid (GABA) instead of the expected glutamic acid. Information enabling the determination of

neurotransmission for Category 6 is very sparse. However, it is known, and this is repeated in several publications, that in adulthood, GABAergic and glutamatergic neurotransmission predominate, and that these two systems interact. Neurons involved in GABAergic neurotransmission then accounts for approximately 50% of all brain neurons, and glutamatergic neurotransmission for 40%.

However, this is not necessarily the case in early adulthood. GABAergic neurons essentially do not have an activating function, but only an inhibitory one for a number of neurotransmitters. For some reason, the glutamatergic system is exceptionally complex compared to other neurotransmission systems, for which the share of brain neurons, even when they are the dominant system, does not exceed 3%.

Therefore, GABAergic activity maybe reflects glutamatergic activity to some extent, which is otherwise difficult to measure due to the presence of glutamic acid in the metabolic pathways of each cell.

Histamine occurs in both neurons and mast cells. Some publications indicate that the peak histamine concentration in rats 2-3 days before birth is related to the histamine contained in mast cells.¹³⁸

The above data demonstrate that both the cycle length and the phase of the developmental clock in various organisms can be determined not only through psychological testing but also by measuring neurotransmitter concentrations or other markers of neurotransmission system activity. In this case, based on existing data, it was possible to determine the duration of individual phases of the different layers of the developmental clock for humans: 12 years and 1/12th of a year, with the clock starting from Category 1 after the formation of the neural groove, which is likely replicated in the rhesus monkey (no data for one-year periods are available).

For mice and rats, however, it was 1/12th of a year and 1/144th of a year, with the clock starting from Category 1 after the formation of the neural groove. The division of the year into twelfth harmonics and subharmonics is derived from my own research on the Earth's torsion field, which creates a unique and universal fractal with multiple divisions into 12 phases. These results will be presented in subsequent books.

Sex - Categories - gender

From the perspective of the simplest division of human beings, politically correct psychology adopts the division by sex (male, female) and the parallel division by gender (masculine, feminine), linking the latter division to cultural values.¹ From the Categories' perspective, gender will be attributed to a greater extent than to culture (the division of Categories into masculine and feminine), or otherwise active and passive, assuming that the dominance of specific Categories results from both geophysical and cosmic influences and, simultaneously, from the influence of physiological sex, either at the genetic or endocrine level.

The results of basic research, for example, using the MMPI personality inventory (which I conducted for the Polish version WISKAD years ago) show that personality traits are often stronger than those resulting from one's sex. The gender intensity represented on the masculinity-femininity scale exceeds the norm for a significant portion of the normally functioning student population (several percent) for the opposite sex. Therefore, a separate division by gender and sex is important, not only in the case of psychological and psychiatric patients, but also in the healthy population.

Without delving into the issue of cause and effect, we can observe that the psychological characteristics we associate with sex correspond to the corresponding Categories' characteristics. We can also observe that mental illnesses related to a specific Category have a significant predominance in one of the sexes, which would mean that the effectiveness of a specific Category, or neurotransmission system, is the sum of personality traits, the clock, and sex influences. We can also observe that externally administered sex hormones influence the course of specific mental disorders. Furthermore, from a molecular perspective, we know that estrogen, progesterone, and testosterone receptors are located in different parts of the brain and exert a wide range of effects on various neurons, including serotonergic, noradrenergic, GABAergic, dopaminergic, acetylcholinergic, and glutamatergic.

Below is an attempt to summarize the sex predominance in various mental disorders and the influence of sex hormones on their course, as an indicator of the sex-dependent association of the Categories with each other, independent of psychological factors. The designations (M) for male sex and (F) for female sex are derived from the presented data.

K1 Noradrenergic system (M)

ADHD is associated with the noradrenergic system, occurring more frequently in men than in women, with a ratio of approximately 2:1 in the general population and approximately 9:1 in the clinical sample. This advantage is smaller in the ADHD-inattention subgroup.⁸⁸ The boys/girls sex ratio is 9:1, but some epidemiological studies have also shown a ratio of 3:1.¹¹³

K2 Cholinergic system (F)

In rats, estradiol increases acetylcholine levels and cholinergic system activity.³⁵

In humans, estrogens reduce the risk and delay the symptoms of Alzheimer's disease,³³ which is primarily related to the functioning of the cholinergic system.

K3 Glutamatergic system (M)

In mental disorders such as schizophrenia, the issue of gender is considered regardless of the influence of physiological sex characteristics.²⁹ Research shows that both women and men with schizophrenia often exhibit genderlessness.²⁹ This likely reflects the particular intensity of the glutamatergic system compared to other neurotransmission systems. Emotionality in this system is not as readily apparent as in other systems, and the dominance of intellectual processes may obscure the references to characteristic gender traits derived from other neurotransmitters.

The number of cases of schizophrenia is higher among males. Compared to men, women experience a less severe course of schizophrenia in terms of milder symptoms, better response to antipsychotic treatment, and better social, intellectual, and professional recovery. A common interpretation of these epidemiological data concludes that estrogen plays a neuroprotective role in schizophrenia. Women with schizophrenia have lower estrogen levels compared to healthy women. Furthermore, schizophrenic symptomatology in women increases during periods of low estrogen levels (postpartum) and decreases during periods of high estrogen levels (pregnancy).²⁸

The incidence of Asperger's syndrome (known to be linked to glutamic acid) is higher in boys.

K4 Serotonergic system (F)

Two of the Categories with strongly emphasized gender-related features are Categories 4 and 5. They are extremely different from each other, in some ways opposite: Category 4 - serotonin, Category 5 - dopamine.

Serotonin is directly linked to maternal behavior, dopamine — to male sexual behavior. Other neurotransmitters are also involved, but these are considered dominant. Both estrogens and androgens affect the neurotransmission levels of both serotonergic and dopaminergic systems, but in opposing ways. Estrogens stimulate the serotonergic system,^{33,40} and androgens the dopaminergic system,⁴¹ respectively. Estrogens inhibit the dopaminergic system, and androgens inhibit the serotonergic system. The latter two cases are not as obvious, but are indirectly indicated by the following results: dopamine facilitates male sexual behavior, serotonin inhibits it,⁴² and serotonergic system inhibits androgen-dependent aggression directed at males,⁴³.

Stimulation of the following systems is responsible for testosterone-dependent male sexual behavior: dopaminergic (related to motivation), glutamatergic, nitric oxide^{41,42}, and the neuropeptide-based system.⁴⁴

Unfortunately, most of these experiments, out of necessity, were performed only on animals.

Estrogens, particularly 17- β estradiol, increase serotonin levels and serotonergic activity in humans via estrogen receptors.^{31,33}

In rats, serotonin levels and serotonergic activity are higher in females.^{33,35} Studies in humans are inconclusive.³⁵

K5 Dopaminergic system (M)

Oppositional defiant disorder is more common in boys than in girls, especially in the period preceding the onset of puberty.⁵

K6 Glutamatergic system (M)

Childhood-onset obsessive-compulsive disorder is more common in boys and is often associated with motor tics.^{91,119}

In obsessive-compulsive disorder, epidemiological studies indicate a female/male ratio of 0.9:1 to 3.4:1.⁹⁰

Several studies have shown beneficial effects of treatment with antiandrogens in both women and men with obsessive-compulsive disorder.⁹⁰

The male to female ratio in Tourette's disorder and chronic tic disorders is approximately 5:1 (ranging from 2:1 to 10:1 in various studies).⁸⁹

Among well-functioning individuals with autism or Asperger's syndrome, there are at least ten times more males than females.¹¹⁶

K7 Opioidergic system (F)

Hysterical spectrum disorders are more common in women.

Histrionic personality disorder is diagnosed more often in women than in men. ^{5:427}

K8 Noradrenergic system (M)

The prevalence of conduct disorder is 4–10%, with a three-fold higher prevalence among boys than girls. ¹¹³

The M/F ratio for adolescent dominance disorder (conduct disorder) is approximately 1:1, while for childhood dominance disorder, males predominate. ¹¹⁴

Given that for the vast majority of people, gender is congruent with sex, this comparison can be considered gender-identical. This comparison clearly shows the connection between masculine and feminine traits and individual Categories, which, on average, provides us with the essence of femininity and masculinity, which can be defined by using the twelve Categories alone, without the need to refer to other psychological dimensions, which is usually attempted.

Interestingly, in the astrology that has survived to date, this division is different; there, the Categories (zodiac signs) alternate between masculine and feminine, and K8 is feminine. If this isn't a simplification by those who passed down the knowledge, then astrology doesn't apply to humanity as we know it today. Could it be describing some Atlantean people, where matriarchy would have prevailed?

K12 Histaminergic system (F)

The central histaminergic neuron system exhibits sex differences. Central histaminergic activity is higher in women than in men. This difference may partially explain why women are more prone to anorexia. The density of H1 receptors is higher in women.

Low estradiol levels reduce H1 receptor levels in the brain. Women have a greater suppressive effect of histidine on food intake. ¹²²

Depression

The Oxford Dictionary defines depression as a state of "low spirits or vitality" ^{1:153}. Regardless of the specific characteristics of different types of depression, generally we are dealing with reduced activity of brain systems. At the same time, we can observe the existence of many types of depression under this single term and the involvement of different neurotransmitters in different cases, with the most common being a strong reduction in the activity of one of the following neurotransmitter systems:

- noradrenergic. ^{2:45}
- cholinergic ^{7, 18, 19, 1:162}
- glutamatergic ^{11, 13, 14, 15, 16, 17},
- serotonergic ^{8, 2:65-162},

- dopaminergic ^{6, 5:286}
- GABAergic ^{8, 9, 10, 11, 12}

This often represents a deficiency of the neurotransmitters corresponding to these systems. Some studies also contain seemingly contradictory information in the context of the theory of the existence of one depression, showing increased activity in a specific system, but without reference to the other systems. It is not surprising that in a given disorder, there may be an increase in the activity of one neurotransmitter system while another is decreased; moreover, this is a common occurrence.

Theories of depression

Of the numerous theories of depression, the most important ones are worth mentioning:

Catecholamine hypothesis

This theory, developed in the mid-1960s, postulates a decreased activity of catecholamines, such as noradrenaline, in the central nervous system. An increase in their activity would explain mania. ^{3:247}

Adrenergic-cholinergic balance hypothesis

This theory postulates an imbalance between the cholinergic and noradrenergic systems. A relative increase in cholinergic activity relative to the noradrenergic system would cause depression. Conversely, a decrease relative to the noradrenergic system would cause mania. Cholinomimetic substances (e.g., precursors, cholinergic agonists, cholinesterase inhibitors) are beneficial in mania. ^{3:250}

Dopamine hypothesis

- Decreased dopamine levels would cause depression. For example:
- Some patients with depression have reduced levels of the dopamine metabolite homovanillic acid in the cerebrospinal fluid;
 - An increased incidence of depression occurs in Parkinson's disease, and in patients receiving dopamine-depleting antagonists;
 - There is an antidepressant effect of substances that enhance dopaminergic transmission. ^{3:250}

Serotonin hypothesis

Decreased serotonin levels would be associated with depression. This hypothesis is supported by the antidepressant effectiveness of selective serotonin reuptake inhibitors (SSRIs), such as Prozac. ¹¹⁰

Schizophrenias

In schizophrenia, excluding schizophrenia with religious-mystical symptoms, we are dealing with three neurotransmitters: glutamine, dopamine, and serotonin.

Glutamine is the primary neurotransmitter. Overactivity of the glutamatergic system is a key factor in the development of symptoms characteristic of schizophrenia, i.e., productive symptoms related to the strangeness of the patient's perceived world.

Dopamine is associated with paranoid symptoms, with relating perceived sensations to one's own self. When this system is overactive, delusions of reference, grandiosity, or persecution occur. When activity of this system is at a normal level, we have schizophrenia without paranoia. However, when it is reduced, either due to the normal course of a specific form of the illness or due to the use of neuroleptics, we are dealing with the coexistence of depressive symptoms and a lack of will.

Serotonin is primarily associated with the most common forms of schizophrenia, associated with disruptions to the developmental clock, discussed in later chapters of this book. Occurring in early development period, the reduction in serotonergic system activity impacts lifelong deficits in empathy, understanding of human behavior, and difficulties in social interactions. Normal functioning of this system occurs in schizophrenias that are not chronic. However, hyperactivity of this system occurs in forms of schizophrenia associated with severe anxiety. This may also result from a disruption in the developmental clock phase.

In short, forms of schizophrenia unrelated to religious-mystical experiences can be described as combinations of abnormal activity in three neurotransmission systems:

glutamine +, serotonin +/0/–, dopamine +/0/–

We can attempt to assign the corresponding changes in the activity of the individual systems to the forms of schizophrenia distinguished by psychiatrists. This is presented in Table 6.5.

Disease entity	Glutamine	Serotonin	Dopamine
(no entity ?)	+	+	+
Hebephrenic schizophrenia	+	+	0
Catatonic schizophrenia (?)	+	+	–
Paranoid schizophrenic episode	+	0	+
Simple schizophrenia episode	+	0	0
Schizophrenic episode with depression	+	0	–
Paranoid schizophrenia	+	–	+
Simple or undifferentiated schizophrenia	+	–	0
Schizophrenia with negative symptoms	+	–	–

Table 6.5 Assignment of disease entities to specific deviations from the "norm" of neurotransmitter system activity during the course of the disorder. + - system overactivity (e.g.,

under the influence of the current phase of the developmental clock), 0 - activity at or slightly above the natural level, - - system activity deficit.

Deviations of neurotransmission system activity from the "norm" represent greater or lesser activity relative to that of an average person, a "commoner," consistent with average social expectations. Primarily, this is a person who is dominated by Category 4 during childhood and Category 5 during adolescence, which are the two periods that leave the strongest mark on brain development.

Schizophrenia obviously evolves with changes in the activity of neurotransmitter systems in accordance with the developmental clock and other factors influencing their activity. Consequently, the terms for individual disease entities in this case refer to a specific period of life, which will be discussed in more detail in Chapter 10 on schizophrenia.

Classification of schizophrenia

Many authors argue that schizophrenia is not a coherent entity, and that the definition adopted at the turn of the 20th century and persisting in diagnostic systems, does not meet the requirements necessary for conducting research, such as genetics, or for effective treatment of patients. Some authors, recognizing the shortcomings of this definition, have attempted to divide it in various ways, generally into two subunits. However, these divisions do not correspond conceptually, as far as I have been able to locate their descriptions, to the division I introduced related to the two psychotic categories, K3 and K9. The problem exists nonetheless. Schizophrenia is not properly defined. The division related to Categories 3 and 9 requires testing on actual patients. Unfortunately, publications almost always present average patients, filtered into specific diagnostic groups based on secondary characteristics, at least in this case.

When considering schizophrenia, I consider it a functional disorder in individuals who exhibit a highlighted Category associated with schizophrenia (K3, K9). However, it is important to be aware that genetic or physical damage can influence the functioning of the neurotransmission system in a way analogous to the Categories impact. Therefore, a certain percentage of organic disorders, i.e., those caused genetically, by tissue degeneration resulting from a somatic disease, or by mechanical damage, should always be expected among functional disorders. Below, I cite the opinions of several authors regarding their doubts about the validity of the current definition of schizophrenia.

According to information provided by Grzegorz Zalewski:

In 1887, E. Kraepelin, contrary to the opinions of contemporary professionals, combined at least three disease entities into one and called it *dementia praecox* (comprising hebephrenia, catatonia, and *dementia paranoides*). Based on this concept, E. Bleuler introduced the widely accepted term "schizophrenia" in 1911. According to Kraepelin and Bleuler, the syndrome of schizophrenia consists of the following basic symptoms: autism, ambivalence, affective disorders, and thought disorders.^{45:28-31}

During the initial phase of hospitalization, the behavior of most patients was neither autistic nor stuporous; on the contrary, these individuals often actively protested against being placed in solitary confinement and deprived of public rights and freedom, behaving loudly and provocatively, often persecuting passive and apathetic patients. Only prolonged isolation from society led almost all insane individuals to standardize

their "illness symptoms" into the syndrome of passive *dementia praecox*. People actively but irrationally coping with a severe mental crisis eventually stopped struggling, accepting their powerlessness in the face of the hospital's power. They resembled the longest-staying residents and only then became typical cases of *dementia praecox*.^{45:28-31}

Potential schizophrenics in the first phase of crisis and characteristic rebellion are usually more diverse and active in their natural environment than those described by Kraepelin and Bleuler. Psychotherapy for them is possible.^{45:32}

The cases and symptoms described by Kraepelin and Bleuler are currently absent or very rare. This suggests that there is a fundamental difference between the cases described in the past and those described today. J. S. Strauss and W. T. Carpenter believe that the difference arose because "schizophrenia" changed its course to a milder one for unknown reasons. This may have been due to the use of modern medications and the creation of more humane hospital conditions for patients. However, an interesting alternative hypothesis is that Kraepelin and Bleuler worked with a slightly different group of patients than those we now call schizophrenic.^{45:41}

The theory of two or more schizophrenics is not new. Even Sullivan (1954), drawing on his own psychotherapeutic experiences, suggested that "schizophrenia simplex" (a clinical syndrome limited only to negative symptoms), as an organic illness properly called *dementia praecox*, should be separated from the psychologically conditioned "core" schizophrenia.^{46:96}

Negative and positive features

The literature on schizophrenia increasingly includes references to positive and negative features of schizophrenia. Trying to define them can be problematic. Various authors have made inconsistent and individual divisions of features. These features are crucial for diagnosis. Below, I present information from various authors:

Positive - DA↑, negative - DA↓

C. Winograd-Gurvich et al.⁹⁴ cite the following negative symptoms: apathy (lack of feelings, emotions, interest, or engagement), flat affect (almost complete lack of emotional expression), and isolation. Lack of will (inability to initiate and sustain goal-oriented activity), psychomotor retardation (generalized slowing of movement and speech), and anhedonia (inability to experience joy).⁹⁴ One can easily see that all of these symptoms correspond to reduced dopamine levels.

The authors, however, attribute them to reduced availability of dopamine, serotonin, and noradrenaline. With this definition of negative symptoms, they easily identify them outside of schizophrenia in patients with melancholic depression, Parkinson's disease, Alzheimer's disease, and frontotemporal dementia. Furthermore, citing the dopamine theory of schizophrenia, they suggest that schizophrenia's positive symptoms are associated with an excess of dopamine in subcortical areas, while negative symptoms are associated with a deficit of dopamine in the cortex.⁹⁴ In this way, they are likely attempting to reconcile the obvious fact that in many cases of schizophrenia, positive symptoms coexist with negative ones, and dopamine levels cannot be simultaneously high and low.

Positive - DA↑, negative - ?

In Crow's (1985) hypothesis of two types of schizophrenia, Type I is characterized by a predominance of positive symptoms (and is associated with an overactive dopamine system, in his opinion). Type II is associated with cell loss in brain structures and is dominated by negative symptoms.^{46:97}

T. J. Crow's (1980) distinction between Type I and Type II schizophrenia is entirely consistent with A. Ettenberg's research findings. Type I was defined as effectively treated with neuroleptics, having predominantly positive symptoms, and etiologically determined by hyperactive central dopaminergic pathways. Type II, on the other hand, is unrelated to the brain's dopamine system, has predominantly negative symptoms that are not reducible by neuroleptics—dopamine antagonists, and is etiologically determined by morphological brain abnormalities.^{45:108}

Positive - ?, negative - DA↓

Much data suggests that a relative lack of dopaminergic function in the frontal lobes of the cerebral cortex leads to the development of negative symptoms of schizophrenia.^{45:65}

The problem of negative emotions also affects healthy people. P. E. Meehl (1975) believes that among mentally healthy people, a small group of chronically sad individuals can be distinguished, who were born with a less active or less effective dopaminergic reinforcement system.^{45:108}

Currently used scales for assessing the occurrence of negative symptoms (PANSS, NSA-16, SANS) include mainly features related to low dopamine levels, but also communication difficulties and attention disorders.⁹⁵

And so far, it has been so-so, but:

Positive - DA↑, Glu↑, negative - DA↓, 5-HT↓

Hanz-Peter Volz et al.⁴⁷ write: “By positive symptoms we mean hallucinations [Glu↑ or DA↑], delusions [Glu↑ or DA↑], bizarre behavior [Glu↑], and some formal thought disorders, such as incoherence. Negative symptoms include flattened affect [DA↓], alogia (poor speech/talking) [5-HT↓], abulia (lack of desire, motivation) [DA↓], apathy [DA↓], anhedonia [DA↓], and degradation of social skills [5-HT↓], as well as attention deficits.”^{47:5}

H. Moller⁹⁵ goes even further, by including into the negative symptoms the psychological side effects of psychotropic medications.

Thus, with the increasing number of these medications, we can find anything!

Therefore, the scope of positive and corresponding negative features is not clear. We don't know whether the delusions and hallucinations here refer to glutamatergic effects associated with pure schizophrenia, or with strange sensations, spatial distortion, fantastic images, or perhaps dopaminergic paranoid effects related to references self-other. It is also unclear whether the negative effects relate to an underdeveloped serotonergic system causing a lack of empathy and the inability to engage in social interactions (understood as negative from the perspective of others), or whether they relate to an excessively reduced functioning of the dopaminergic system linked to the reward and motivation system and perceived by the patient as an unpleasant and depressive state.

It seems obvious that the positive or negative symptoms of schizophrenia, and not those of paranoia, should be considered those related to schizophrenia itself and related to the glutamatergic system, rather than the paranoid dopaminergic effects, which are clearly defined in the literature. However, a more specific term (referring to the glutamatergic system) would be "productive features of schizophrenia." The term "negative features" should be treated with caution, bearing in mind that three neurotransmitters can participate in schizophrenia. Therefore, we will primarily be dealing with symptoms related to reduced dopaminergic activity and a lack of executive functions associated with an underdeveloped serotonergic system. Let drug side effects remain side effects...

The role of free radicals

When introducing the topic of free radicals, I don't think of them in the same way as they have been propagated for years, as molecules that wreak havoc, but rather as the body's use of them for high-energy processes, for which there is essentially no alternative. Therefore, I consider them normal molecules capable of transmitting information to hard-to-reach areas. Nevertheless, when there are too many of them or when they escape the pathway they are transported along, organic destruction must be expected. Described below, nitric oxide and the superoxide radical are universal neurotransmitters, similar to γ -aminobutyric acid (GABA), not directly associated with specific categories. However, both radicals likely participate in long-term memory processes and are intensively used by the highly complex glutamatergic system, which is sometimes implicated in schizophrenic disorders. The observed changes in the levels of these radicals in psychotic disorders should be considered more in terms of information channel overload than their destructive capacity. If we want to have a general picture of what happens in mental disorders, the aforementioned radicals cannot be ignored.

One of the considered theories of the causes of schizophrenia supported by experimental evidence is the free radical theory, which posits that the observed excessive production of free radicals may contribute to the pathophysiology of patients with schizophrenia.^{99,96} However, various authors report contradictory results.

This theory is interesting because it addresses not only the balance of processes related to emotionality and neuronal transmission, but also perhaps issues related to the mechanisms that realize the existence of consciousness, i.e., the experience of conscious sensations, and the mechanisms of long-term memory. According to my postulated nuclear theory of consciousness, which is largely consistent with Huping Hu and Maoxin Wu's¹⁰⁰ theory, consciousness and long-term memory utilize the spin field of atomic nuclei (presumably shared), which are so isolated from processes involving the electronic orbitals of chemical molecules that the information contained in atomic nuclei can be stored for months and years, despite the intense physical processes taking place at the level of electronic orbitals. Radical reactions can facilitate the exchange of information between the atomic nucleus and the level of electronic orbitals. According to my hypothesis, nitric oxide and the superoxide radical are involved, while according to Huping Hu and Maoxin Wu,¹⁰⁰ nitric oxide and singlet oxygen are involved.

In studies on schizophrenia, particular attention is paid to nitric oxide and its production by the neuronal nitric oxide synthase (nNOS), which occurs only in the brain. The involvement of the superoxide radical in the pathogenesis of schizophrenia has also been suggested. The uncontrolled phenomena of schizophrenia seem to be related to long-term memory processing of

a previously unknown origin, as opposed to processing involving neural connections. In this situation, one would expect an increased intensity of interaction with the atomic nucleus, and therefore an increased concentration of at least one of the aforementioned radicals. Let's take a look at what we find in publications.

Nitric oxide (NO) is one of the most important signaling molecules implicated in many cellular events in the nervous, cardiovascular, and immune systems of animals.¹⁰¹ It crosses the synapse and activates its receptor, soluble guanylate cyclase, by binding to it. Stimulation of this enzyme leads to increased synthesis of the second messenger, cGMP, which further activates cGMP-dependent kinases in target cells.¹⁰¹

Nitric oxide plays an important role in learning and memory function. Given the well-known cognitive problems of schizophrenics (especially memory consolidation), reduced nitric oxide levels can have serious consequences for patients with schizophrenia.¹⁰¹

Some neuroleptics increase nitric oxide levels in the brain, and antidepressants and antiepileptic drugs also have a similar effect.¹⁰¹

Attempts to treat schizophrenia with the guanylate cyclase inhibitor, methylene blue (which acts downstream of nitric oxide) have yielded limited results.¹⁰¹ This fact supports the hypothesis of the nuclear theory of consciousness.

Although nitric oxide appears to play a key role in schizophrenia, reduced nitric oxide levels are not unique to schizophrenia; they occur, for example, in Alzheimer's disease.¹⁰¹

Nitric oxide has a strong influence on glutamatergic neurotransmission. Neuronal nitric oxide synthase (nNOS) binds to one of this system's receptors, the N-methyl-aspartate (NMDA) receptor, and strongly increases nitric oxide production upon activation of this receptor. Thus, the level of endogenously produced nitric oxide in the NMDA synapse region reflects the activity of glutamatergic neurotransmission.¹⁰¹

Among many glutamatergic receptors, the NMDA receptor is the most implicated in schizophrenia. The receptor's hypofunction induced by its antagonists affects other neurotransmitter systems in the brain, including the GABAergic system, which may then show a reduced level of activity because it is under the control of NMDA receptors.⁹⁸

In schizophrenia, a generally reduced level of nitric oxide is observed, although there are also conflicting reports.^{101, 104} Reduced activity of the NMDA receptor has also been observed,¹⁰¹ nNOS101, and the receptor associated with nNOS protein CAPON.¹⁰³ The CAPON protein plays a role in facilitating the formation of the NMDA receptor - nNOS complex.¹⁰³

The CAPON protein acts as an adaptor protein, connecting nNOS either to the direct target of nitric oxide activation through S-nitrosylation or to synapsin, leading to the localization of nNOS in the presynaptic region.¹⁰³ Functional CAPON protein enables the action of antipsychotic drugs; if this protein is damaged, antipsychotic drugs are ineffective.¹⁰³

Based on their studies of nitrate levels, E. Suzuki et al.¹⁰⁴ suggest that NO synthesis is reduced in schizophrenia with deficit syndrome (negative symptoms), i.e., restricted affect, reduced emotional range, poverty of speech, restricted interests, reduced sense of purpose, and reduced need for social contact. These symptoms are externally similar to those seen in depression.¹⁰⁴

Due to measurement difficulties (e.g., the need to use postmortem examinations), the results are often contradictory. It should be expected that the correlation between glutamatergic system activity and nitric oxide levels, as demonstrated in the above examples, will be more significant than the absolute values. As I have noted, many authors attempt to design and interpret experiments (without considering any possibility of another alternative) to fit the results with the

popular theory of glutamatergic deficit in schizophrenia. However, my analyses indicate that high activity of this system is essential for the diagnosis of schizophrenia, and some publications confirm this. In this situation, the reported results indicating reduced nitric oxide levels in schizophrenia may be precisely contradictory. Regardless of the consistency of the results regarding the direction of change, there is no doubt that changes in the concentration of this radical are observed in schizophrenia.

Our knowledge on the superoxide radical in schizophrenia is also limited and largely indirect, but virtually all data indicate an increased concentration of this radical. In schizophrenics not treated with neuroleptics, a decreased level of superoxide dismutase [responsible for removing excess of this radical] is observed during the first episode of schizophrenia.⁹⁹ Furthermore, high levels of lipid peroxidation products are observed in schizophrenics in plasma, red blood cells, and cerebrospinal fluid.⁹⁹ The use of antioxidants such as vitamins or *Ginkgo biloba* extract, or the use of polyunsaturated fatty acids, has been shown to improve some psychopathological symptoms of schizophrenia.⁹⁹

Several studies have demonstrated in schizophrenia the effect of neuroleptics on the levels of antioxidant enzymes, e.g., superoxide dismutase and catalase. High levels of superoxide dismutase were generally obtained, although the data obtained are not entirely consistent.⁹⁹ However, one needs to be aware that the data depend on the previous course of treatment, the phase of schizophrenia, and the brain region where the postmortem examination was performed (or blood tests were performed).

L. Othmen et al.⁹⁶ studied the activity of superoxide dismutase and catalase in the blood of patients with schizophrenia (treated with neuroleptics) and their relatives, with an average age of 32 years. The activity of these enzymes was comparable between patients and their relatives and was reduced compared to the control group by approximately 1.4-fold for superoxide dismutase and 1.3-fold for catalase.⁹⁶

Some authors associate schizophrenia with mitochondrial dysfunction.⁹⁸ [And consequently, with increased superoxide radical production.] The dipeptide N-acetyl-aspartyl-glutamate (NAAG), a member of the glutamatergic neurotransmitter group, has been associated with schizophrenia. This system is also considered to be linked to mitochondria. Reduced mitochondrial activity leads to decreased activity of this system.⁹⁸ Other authors associate mitochondrial dysfunction with the effects of dopamine, specifically inhibition of oxidation complex I.⁹⁷

There is a paradox related to the rapidity of the effects induced by neuroleptics. While blocking dopaminergic transmission by neuroleptics occurs within a few hours, an antipsychotic response occurs only after 2 to 3 weeks.³⁰ The situation is similar with the glutamatergic system.

Beside the involvement of free radicals, this also suggests that it is not the activity of neural connections that is responsible for psychotic phenomena, but rather that they can influence thinking functions after several weeks, perhaps by changing the methylation of completely different genes. This psychotic (and other) thinking does not appear to follow known connections, but rather it is located in a dimension different from neurotransmission systems. It is also important to emphasize that the essence of long-term memory remains beyond the reach of modern research methods. Similarly, synthetic, creative thinking cannot be explained by the computational procedures of logical systems – which are usually considered to be neuronal connections.

Bibliography

1. Brian E. Leonard; Fundamentals of psychopharmacology; John Wiley and Sons Ltd., Chichester 2003.
2. Stephen M. Stahl; Podstawy psychofarmakologii depresji i choroby afektywnej dwubiegunowej; Alfa-Medica Press, Bielsko-Biała 2003.
3. Philip G. Janicak, John M. Davis, Sheldon H. Preskorn, Frank J. Ayd, Jr; Principles and practice of psychopharmacotherapy; Williams and Wilkins a Waverly Company, Baltimore 1997.
4. praca zbior. pod red. Robert M. Stelmac; On the psychobiology of personality: essays in honor of Marvin Zuckerman; Elsevier Ltd. 2004.
5. Martin E. P. Seligman, Elaine F. Walker, David L. Rosenhan; Psychopatologia; Zysk i S-ka Wydawnictwo, Poznań 2003.
6. N. Brunello, H. Akiskal, P. Boyer, G. L. Gessa, R. H. Howland, S. Z. Langer, J. Mendlewicz, M. Paes de Souza, G. F. Placidi, G. Racagni, S. Wessely; Dysthymia: clinical picture, extent of overlap with chronic fatigue syndrome, neuropharmacological considerations, and new therapeutic vistas; Journal of Affective Disorders, (1999) **52**: 275-290.
7. H. Araki, K. Suemaru, Y. Gomita; Neuronal nicotinic receptor and psychiatric disorders: functional and behavioral effects of nicotine; Jpn. J. Pharmacol. (2002) **88**: 133-138.
8. L. E. Schechter, R. H. Ring, C. E. Beyer, Z. A. Hughes, X. Khawaja, J. E. Malberg, S. Rosenzweig-Lipson; NeuroRx: The Journal of the American Society for Experimental NeuroTherapeutics (2005) **2**: 590-611.
9. P. V. Choudary, M. Moinar, S. J. Evans, H. Tomita, J. Z. Li, M. P. Vawter, R. M. Myers, W. E. Bunney, Jr., H. Akil, S. J. Watson, E. G. Jones; Altered cortical glutamatergic and GABAergic signal transmission with glial involvement in depression; PNAS (2005) **102**(43): 15653-15658.
10. Z. Bhagwagar, M. Wylezinska, P. Jezzard, J. Evans, F. Ashworth, A. Sule, P. M. Matthews, P. J. Cowen; Reduction in occipital cortex gamma-aminobutyric acid concentrations in medication-free recovered unipolar depressed and bipolar subjects; Biol. Psychiatry (2007) **61**(6): 806-812.
11. G. Hasler, J. W. van der Veen, T. Tumonis, N. Meyers, J. Shen, W. C. Drevets; Reduced prefrontal glutamate/glutamine and gamma-aminobutyric acid levels in major depression determined using proton magnetic resonance spectroscopy; Arch. Gen. Psychiatry (2007) **64**(2): 193-200.
12. G. Sanacora, R. Gueorguieva, C. N. Epperson, Y. T. Wu, M. Appel, D. L. Rothman, J. H. Krystal, G. F. Mason; Subtype-specific alterations of gamma-aminobutyric acid and glutamate in patients with major depression; Arch. Gen. Psychiatry (2004) **61**(7): 705-713.
13. M. A. Frye, G. E. Tsai, T. Huggins, J. T. Coyle, R. M. Post; Low cerebrospinal fluid glutamate and glycine in refractory affective disorder; Biol. Psychiatry (2007) **61**(2): 162-166.
14. D. P. Auer, B. Putz, E. Kraft, B. Lipinski, J. Schill, F. Holsboer; Reduced glutamate in the anterior cingulate cortex in depression: an in vivo proton magnetic resonance spectroscopy study; Biol. Psychiatry (2000) **47**(4): 305-313.
15. B. Pfeiderer, N. Michael, A. Erfurth, P. Ohrmann, U. Hohmann, M. Wolgast, M. Fiebich, V. Arolt, W. Heindel; Effective electroconvulsive therapy reverses glutamate/glutamine deficit in the left anterior cingulum of unipolar depressed patients; Psychiatry Res. (2003) **122**(3): 185-192.

16. A. Yildiz-Yesiloglu, D. P. Ankerst; Review of 1H magnetic resonance spectroscopy findings in major depressive disorder: a meta-analysis; *Psychiatry Res.* (2006) **147**(1): 1-25.
17. D. Bleakman, A. Alt, J. M. Witkin; AMPA receptors in the therapeutic management of depression; *CNS Neurol. Disord. Drug Targets* (2007) **6**(2): 117-126.
18. H. Araki, K. Suemaru, Y. Gomita; Neuronal nicotinic receptor and psychiatric disorders: functional and bahavioral effects of nicotine; *Jpn. J. Pharmacol.* (2002) **88**(2): 133-138.
19. S. M. Ferguson, J. D. Brodtkin, G. K. Lloyd, F. Menzaghi; Antidepressant-like effects of the subtype-selective nicotinic acetylcholine receptor agonist, SIB-1508Y, in the learned helplessness rat model of depression; *Psychopharmacology (Berl.)* (2000) **152**(3) 295-303.
20. Jean-Pierre Olie, Jean-Paul Macher, Jorge Alberto Costa e Silva; Neuroplastyczność: patofizjologia depresji w nowym ujęciu; Wydawnictwo Medyczne Via Medica, Gdańsk 2004.
21. E. V. Winkle; The toxic mind: the biology of mental illness and violence; *Medical Hypotheses* (2000) **54**(1): 146-156.
22. A. Williams, D. Katz, A. Ali, Ch. Girard, J. Goodman, I Bell; Do essential fatty acids have a role in treatment of depression?; *Journal of Affective Disorders* (2006) **93**: 117-123.
23. R. P. Sharma; Schizophrenia, epigenetics and ligand-activated nuclear receptors: a framework for chromatin therapeutics. *Schizophrenia Research* (2005) **72**: 79-90.
24. E. Dong, R. C. Agis-Balboa, M. V. Simonini, D. R. Grayson, E. Costa, A. Guidotti; Reelin and glutamic acid decarboxylase 67 promoter remodeling in an epigenetic methionine-induced mouse model of schizophrenia; *PNAS* (2005) **102**(35): 12578-12583.
25. J. S. Noh, R. P. Sharma, M. Veldic, A. A. Salvacion, X. Jia, Y. Chen, E. Costa; DNA methyltransferase 1 regulates reelin mRNA expression in mouse primary cortical cultures; *PNAS* (2005) **102**(5): 1749-1754.
26. K. Iwamoto, M. Bundo, K. Yamada, H. Takao, Y. Iwayama-Shigeno, T. Yoshikawa, T. Kato; DNA methylation status of *SOX10* correlates with its downregulation and oligodendrocyte dysfunction in schizophrenia; *The Journal of Neuroscience* (2005) **25**(22): 5376-5381.
27. N. Ben-Jonathan, R. Hnasko; Dopamine as a prolactin (PRL) inhibitor; *Endocrine Reviews* (2001) **22**(6): 724-763
28. A. Gogos, M. Van den Buuse; Estrogen and progesterone prevent disruption of prepulse inhibition by the serotonin-1A receptor agonist 8-hydroxy-2-dipropylaminotetralin; *The Journal of Pharmacology and Experimental Therapeutics* (2004) **309**: 267-274.
29. M. Sajatovic, J. H. Jenkins, M. E. Strauss, Z. A. Butt, E. Carpenter; Gender identity and implications for recovery among men and women with schizophrenia; *Psychiatric Services* (2005) **56** (1): 96-99.
30. S. Kapur, R. Mizrahi, M. Li; From dopamine to salience to psychosis-linking biology, pharmacology and phenomenology of psychosis; *Schizophrenia Research* (2005) **79**: 59-68.
31. L. A. Rybaczyk, M. J. Bashaw, D. R. Pathak, S. M. Moody, R. G. Gilders, D. L. Holzschu; An overlooked connection: serotonergic mediation of estrogen-related physiology and pathology; *BMC Women's Health* (2005) **5**: 1-10.
32. H. Joffe, L. S. Cohen; A decade of serotonin research: regulation of affect and eating behavior. Estrogen, serotonin, and mood disturbance: where is the therapeutic bridge?; *Biol. Psychiatry* (1998) **44**: 798-811.
33. H. U. Rehman, E. A. Masson; Neuroendocrinology of female aging; *Gender Medicine* (2005) **2**(1): 41-52.

34. P. De Deurwaerdere, S. Navailles, K. A. Berg, W. P. Clarke, U. Spampinato; Constitutive activity of the serotonin_{2C} receptor inhibits *in vivo* dopamine release in the rat striatum and nucleus accumbens; *The Journal of Neuroscience* (2004) **24** (13): 3235-3241.
35. D. R. Rubinow, P. J. Schmidt, C. A. Roca; Estrogen-serotonin interactions: implications for affective regulation; *Biol. Psychiatry* (1998) **44**: 839-850.
36. L. G. Sobrinho; Prolactin, psychological stress and environment in humans: adaptation and maladaptation; *Pituitary* (2003) **6**: 35-39.
37. D. R. Grattan, X. J. Pi, Z. B. Andrews, R. A. Augustine, I. C. Kokay, M. R. Summerfield, B. Todd, S. J. Bunn; Prolactin receptors in the brain during pregnancy and lactation: implications for behavior; *Hormones and Behavior* (2002) **40**: 115-124.
38. J. F. Leckman, A. E. Herman; Maternal behavior and developmental psychopathology; *Biol Psychiatry* (2002) **51**: 27-43.
39. P. E. Mann, R. S. Bridges; Prolactin receptor gene expression in the forebrain of pregnant and lactating rats; *Molecular Brain Research* (2002) **105**: 136-145.
40. Z. Amin, T. Canli, C. N. Epperson; Effect of estrogen-serotonin interactions on mood and cognition; *Behavioral and Cognitive Neuroscience Reviews* (2005) **4**(1): 43-58.
41. J. M. Dominguez, E. M. Hull; Dopamine, the medial preoptic area, and male sexual behavior; *Physiology and Behavior* (2005) **86**:356-368.
42. E. M. Hull, J. W. Muschamp, S. Sato; Dopamine and serotonin: influences on male sexual behavior; *Physiology and Behavior* (2004) **83**:291-307.
43. A. Cologer-Clifford, N. G. Simon, M. L. Richter, S. A. Smoluk, S. Lu; Androgens and estrogens modulate 5-HT_{1A} and 5-HT_{1B} agonist effects on aggression; *Physiology and Behavior* (1999) **65**:823-828.
44. A. S. Clark, L. P. Henderson; Behavioral and physiological responses to anabolic-androgenic steroids; *Neuroscience and Biobehavioral Reviews* (2003) **27**: 413-436.
45. Grzegorz Zalewski; *Kontrowersje wokół schizofrenii*; Trans Humana Wydawnictwo Uniwersyteckie, Białystok 1997.
46. Urjo O. Alanen; *Schizofrenia: Jej przyczyny i leczenie dostosowane do potrzeb*; Instytut Psychiatrii i Neurologii, Warszawa 2000.
47. Hanz-Peter Volz, Frank-Gerald Pajonk; *Schizofrenia: Diagnostyka i leczenie*; Wydawnictwo Medyczne Urban i Partner Wrocław 2004.
48. K. K. Noguchi, B. Nemmers, N. B. Farber; Age has similar influence on the susceptibility to NMDA antagonist-induced neurodegeneration in most brain regions; *Developmental Brain Research* (2005) **158**: 82-91.
49. M. Shimabukuro, Y. Jinno, C. Fuke, Y. Okazaki; Haloperidol treatment induces tissue- and sex- specific changes in DNA methylation: a control study using rats; *Behavioral and Brain Functions* (2006) **2**: 37.
50. L. Iversen; Cannabis and the brain; *Brain* (2003) **126**:1252-1270.
51. G. Tanda, S. R. Goldberg; Cannabinoids: reward, dependence, and underlying neurochemical mechanisms - a review of recent preclinical data; *Psychopharmacology* (2003) **169**: 115-134.
52. R. Melamed; Harm reduction - the cannabis paradox; *Harm Reduction Journal* (2005) **2**: 17.
53. B. Favrat, A. Menetrey, M. Augsburg, L. E. Rothuizen, M. Appenzeller, T. Buclin, M. Pin, P. Mangin, C. Giroud; Two cases of „cannabis acute psychosis” following the administration of oral cannabis; *BMC Psychiatry* (2005) **5**: 17.

54. N. De Marchi, L. De Petrocellis, P. Orlando, F. Daniele, F. Fezza, V. Di Marzo; Endocannabinoid signalling in the blood of patients with schizophrenia; *Lipids in Health and Disease* (2003) **2**: 5
55. S. R. Laviolette, A. A. Grace; The roles of cannabinoid and dopamine receptor systems in neural emotional learning circuits: implications for schizophrenia and addiction; *Cell. Moll. Life Sci.* (2006) **63**: 1597-1613.
56. C. Matson Cannon, M. R. Bseikri; Is dopamine required for natural reward?; *Physiology and Behavior* (2004) **81**: 741-748.
57. A. Dray, S. J. Read; Future targets to control osteoarthritis pain; *Arthritis Research and Therapy* (2007) **9**: 212.
58. J. J. McDougall; Arthritis and pain: neurogenic origin of joint pain; *Arthritis Research and Therapy* (2006) **8**: 220.
59. G. Serra, W. Fratta; A possible role for the endocannabinoid system in the neurobiology of depression; *Clinical Practice and Epidemiology in Mental Health* (2007) **3**: 25.
60. T. J. O'Connell, C. B. Bou-Matar; Long term marijuana users seeking medical cannabis in California (2001-2007): demographics, social characteristics, patterns of cannabis and other drug use of 4117 applicants; *Harm Reduction Journal* (2007) **4**: 16.
61. S. L. Andersen, C. P. Navalta; Altering the course of neurodevelopment: a framework for understanding the enduring effects of psychotropic drugs; *International Journal Developmental Neuroscience* (2004) **22**: 423-440.
62. O. Malkesman, Y. Braw, R. Maayan, A. Weizman, D. H. Overstreet, M. Shabat-Simon, Y. Kesner, D. Touati-Werner, G. Yadid, A. Weller; Two different putative genetic animal models of childhood depression; *Biol. Psychiatry* (2006) **59**: 17-23.
63. F. Crews, J. He, C. Hodge; Adolescent cortical development: A critical period of vulnerability for addiction; *Pharmacology, Biochemistry and Behavior* (2007) **86**: 189-199.
64. L. Charles Murrin, J. D. Sanders, D. B. Bylund; Comparison of maturation of the androgenic and serotonin neurotransmitter systems in the brain: Implications for differential drug effects on juveniles and adults; *Biochemical Pharmacology* (2007) **73**: 1225-1236.
65. E. Merlot, D. Couret, W. Otten; Prenatal stress, fetal imprinting and immunity; *Brain, Behavior and Immunity* (2008) **22**: 42-51.
66. S. Connel, C. Karikari, C. F. Hohmann; Sex-specific development of cortical monoamine levels in mouse; *Developmental Brain Research* (2004) **151**: 187-191.
67. B. Ramos, J. F. Lopez-Tellez, J. Vela, D. Baglietto-Vargas, J. C. del Rio, D. Ruano, A. Gutierrez, J. Vitorica; Expression of $\alpha 5$ GABA_A receptor subunit in developing rat hippocampus; *Developmental Brain Research* (2004) **151**: 87-98.
68. J. F. Lopez-Tellez, J. Vela, J. C. del Rio, B. Ramos, D. Baglietto-Vargas, C. Santa-Maria, D. Ruano, A. Gutierrez, J. Vitorica; Postnatal development of the $\alpha 1$ containing GABA_A receptor subunit in rat hippocampus; *Developmental Brain Research* (2004) **148**: 129-141.
69. M. S. Bianchi, V. A. Lux-Lantos, B. Bettler, C. Libertun; Expression of gamma-aminobutyric acid B receptor subunits in hypothalamus of male and female developing rats; *Developmental Brain Research* (2005) **160**: 124-129.
70. B. M. Kivell, D. J. Day, F. J. McDonald, J. H. Miller; Developmental expression of μ and δ opioid receptors in the rat brainstem: evidence for a postnatal switch in μ isoform expression; *Developmental Brain Research* (2004) **148**: 185-196.

71. N. L. Dumont, S. L. Andersen, A. P. Thompson, M. H. Teicher; Transient dopamine synthesis modulation in prefrontal cortex: in vitro studies; *Developmental Brain Research* (2004) **150**: 163-166.
72. L. Nguyen, J. M. Rigo, V. Rocher, S. Belachew, B. Malgrange, B. Rogister, P. Leprince, G. Moonen; Neurotransmitters as early signals for central nervous system development; *Cell Tissue Res* (2001) **305**: 187-202.
73. S. Z. Meng, Y. Ozawa, M. Itoh, S. Takashima; Developmental and age-related changes of dopamine transporter, and dopamine D1 and D2 receptors in human basal ganglia; *Brain Research* (1999) **843**: 136-144.
74. Hieronim Bartel; *Embriologia: podręcznik dla studentów*; Wydawnictwo Lekarskie PZWL Warszawa 2002.
75. P. M. Rodier, J. L. Ingram, B. Tisdale, V. J. Croog; Linking etiologies in humans and animal models: studies of autism; *Reproductive Toxicology* (1997) **11** (2/3): 417-422.
76. K. S. Lam, M. G. Aman, L. Eugene-Arnold; Neurochemical correlates of autistic disorder: a review of the literature; *Research in Developmental Disabilities* (2006) **27**: 254-289.
77. A. K. Frew, P. D. Drummond; Negative affect, pain and sex: The role of endogenous opioids; *Pain* (2007) **132**: S77-S85.
78. H. L. Fields; Understanding how opioids contribute to reward and analgesia; *Regional Anesthesia and Pain Medicine* (2007) **32**(3): 242-246.
79. M. F. Barbano, M. Cador; Opioids for hedonic experience and dopamine to get ready for it; *Psychopharmacology* (2007) **191**: 497-506.
80. E. Somer, R. Avni; Dissociative phenomena among recovering heroin users and their relationship to duration of abstinence; *Journal of Social Work Practice in the Addictions* (2003) **3**(1): 25-37.
81. I. Liberzon, S. F. Taylor, K. Luan-Phan, J. C. Britton, L. M. Fig, J. A. Bueller, R. A. Koeppe, J. K. Zubieta; Altered central μ -opioid receptor binding after psychological trauma; *Biol. Psychiatry* (2007) **61**: 1030-1038.
82. V. C. Campbell, R. E. Taylor, Y. Tizabi; Antinociceptive effects of alcohol and nicotine: involvement of the opioid system; *Brain Research* (2006) **1097**: 71-77.
83. D. Cota, M. H. Tschop, T. L. Horvath, A. S. Levine; Cannabinoids, opioids and eating behavior: The molecular face of hedonism?; *Brain Research Reviews* (2006) **51**: 85-107.
84. J. K. Neubert, H. L. Rossi, J. Pogar, A. C. Jenkins, R. M. Caudle; Effects of mu- and kappa-2 opioid receptor agonists on pain and rearing behaviors; *Behavioral and Brain Functions* (2007) **3**: 49.
85. E. Lucas-Meunier, P. Fossier, G. Baux, M. Amar; Cholinergic modulation of the cortical neuronal network; *Eur. J. Physiol.* (2003) **446**: 17-29.
86. A. S. Potter, P. A. Newhouse, D. J. Bucci; Central nicotinic cholinergic systems: A role in the cognitive dysfunction in Attention-Deficit/Hyperactivity Disorder?; *Behavioral Brain Research* (2006) **175**: 201-211.
87. M. Beane, R. T. Marrocco; Norepinephrine and acetylcholine mediation of the components of reflexive attention: implications for attention deficit disorders; *Progress in Neurobiology* (2004) **74**: 167-181.
88. D. McFadden, J. G. Westhafer, E. G. Pasanen, C. L. Carlson, D. M. Tucker; Physiological evidence of hypermasculinization in boys with the inattentive type of attention-deficit/hyperactivity disorder (ADHD); *Clinical Neuroscience Research* (2005) **5**: 233-245.

89. L. Rampello, A. Alvano, G. Battaglia, V. Bruno, R. Raffaele, F. Nicoletti; Tic disorders: from pathophysiology to treatment; *J. Neurol.* (2006) **253**: 1-15.
90. J. Zohar, R Gross-Isseroff, H. Hermesh, A. Weizman; Is there sexual dimorphism in obsessive-compulsive disorder?; *Neuroscience and Biobehavioral Reviews* (1999) **23**: 845-849.
91. M. T. Mercadante, M. C. Rosario-Campos, L. C. Quarantini, F. P. Sato; The neurobiological bases of obsessive-compulsive disorder and Tourette syndrome; *J. Pediatr. (Rio J.)* (2004) **80**(2 suppl.): S35-S44.
92. M. Sajatovic, J. H. Jenkins, M. E. Strauss, Z. A. Butt, E. Carpenter; Gender identity and implications for recovery among men and women with schizophrenia; *Psychiatric Services* (2005) **56** (1): 96-99.
93. Grzegorz Zalewski; *Kontrowersje wokół schizofrenii*; Trans Humana Wydawnictwo Uniwersyteckie, Białystok 1997.
94. C. Winograd-Gurvich, P. B. Fitzgerald, N. Georgiou-Karistianis, J. L. Bradshaw, O. B. White; Negative symptoms: A review of schizophrenia, melancholic depression and Parkinson's disease; *Brain Research Bulletin* (2006) **70**: 312-321.
95. H. J. Moller; Clinical evaluation of negative symptoms in schizophrenia; *European Psychiatry* (2007) **22**: 380-386.
96. L. B. Othmen, A. Mechri, C. Fendri, M. Bost, G. Chazot, L. Gaha, A. Kerkeni; Altered antioxidant defense system in clinically stable patients with schizophrenia and their unaffected siblings; *Progress in Neuro-Psychopharmacology and Biological Psychiatry* (2008) **32**: 155-159.
97. H. Brenner-Lavie, E. Klein, R. Zuk, H. Gazawi, P. Ljubuncic, D. Ben-Shachar; Dopamine modulates mitochondrial function in viable SH-SY5Y cells possibly via its interaction with complex I: Relevance to dopamine pathology in schizophrenia; *Biochimica and Biophysica Acta* (2008) **1777**: 173-185.
98. S-J. Tsai; Central N-acetyl aspartylglutamate deficit: a possible pathogenesis of schizophrenia; *Med. Sci. Monit.* (2005) **11** (9): HY39- HY45.
99. X. Y. Zhang, Y. L. Tan, L. Y. Cao, G. Y. Wu, Q. Xu, Y. Shen, D. F. Zhou; Antioxidant enzymes and lipid peroxidation in different forms of schizophrenia treated with typical and atypical antipsychotics; *Schizophrenia Research* (2006) **81**: 291-300.
100. H. Hu, M. Wu; Spin-mediated consciousness theory: possible roles of neural membrane nuclear spin ensembles and paramagnetic oxygen; *Medical Hypotheses* (2004) **63**: 633-646.
101. H. G. Bernstein, B. Bogerts, G. Keilhoff; The many faces of nitric oxide in schizophrenia. A review; *Schizophrenia Research* (2005) **78**: 69-86.
102. E. Suzuki, T. Nakaki, F. Shintani, S. Kanba, H. Miyaoka; Antipsychotic, antidepressant, anxiolytic, and anticonvulsant drugs induce type II nitric oxide synthase mRNA in rat brain; *Neuroscience Letters* (2002) **333**: 217-219.
103. B. Xu, N. Wratten, E. I. Charych, S. Buyske, B. L. Firestein, L. M. Brzustowicz; Increased expression in dorsolateral prefrontal cortex of CAPON in schizophrenia and bipolar disorder; *PLoS Medicine* (2005) **2** (10): 999-1007.
104. E. Suzuki, T. Nakaki, M. Nakamura, H. Miyaoka; Plasma nitrate levels in deficit versus non-deficit forms of schizophrenia; *J. Psychiatry Neurosci.* (2003) **28** (4): 288-292.
105. J. J. McGrath, F. P. Feron, T. H. Burne, A. Mackay-Sim, D. W. Eyles; The neurodevelopmental hypothesis of schizophrenia: a review of recent developments; *Annals of Medicine* (2003) **35**: 86-93.

106. R. Schmidt-Kastner, J. van Os, H. W. Steinbusch, C. Schmitz; Gene regulation by hypoxia and the neurodevelopmental origin of schizophrenia; *Schizophrenia Research* (2006) **84**: 253-271.
107. A. Longstaff; *Neurobiologia: krótkie wykłady*; Wydawnictwo Naukowe PWN, Warszawa 2005.
108. E. M. Tsapakis, M. J. Travis; Glutamate and psychiatric disorders; *Advances in Psychiatric treatment* (2002) **8**:189-197.
109. S. R. Platt; The role of glutamate in central nervous system health and disease - a review; *The Veterinary Journal* (2007) **173**: 278-286.
110. J. A. Gordon, R. Hen; The serotonergic system and anxiety; *NeuroMolecular Medicine* (2004) **5**: 27-39.
111. N. K. Popova; The role of brain serotonin in the expression of genetically determined defensive behavior; *Russian Journal of Genetics* (2004) **40**(6): 720-778.
112. Judith J. Wurtman, Susan Suffes; *Serotonina: przełom w dietetyce*; Wydawnictwo Amber, Warszawa 1997.
113. B. F. Pennington, S. Ozonoff; Executive functions and developmental psychopathology; *J. Child. Psychol. Psychiat.* (1996) **37**(1): 51- 87.
114. B. B. Lahey, S. H. Goodman, I. D. Waldman, H. Bird, G. Canino, P. Jensen, D. Regier, P. J. Leaf, R. Gordon, B. Applegate; Relation of age of onset to type and severity of child and adolescent conduct problems; *Journal of Abnormal Child Psychology* (1999) **27**(4): 247-260.
115. J. M. Halperin, J. H. Newcorn, S. T. Schwartz, V. Sharma, L. J. Siever, V. H. Koda, S. Gabriel; Age-related changes in the association between serotonergic function and aggression in boys with ADHD; *Biol. Psychiatry* (1997) **41**: 682-689.
116. S. Baron-Cohen; The extreme male brain theory of autism; *Trends in Cognitive Sciences* (2002) **6**(6): 248-254.
117. M. Shimabukuro, T. Sasaki, A. Imamura, T. Tsujita, C. Fuke, T. Umekage, M. Tochigi, K. Hiramatsu, T. Miyazaki, T. Oda, J. Sugimoto, Y. Jinno, Y. Okazaki; Global hypomethylation of peripheral leukocyte DNA in male patients with schizophrenia: A potential link between epigenetics and schizophrenia; *Journal of Psychiatric Research* (2007) **41**: 1042-1046.
118. T. Kubota; Epigenetics in congenital diseases and pervasive developmental disorders; *Environ. Health Prev. Med.* (2008) **13**: 3-7.
119. L. F. Fontenelle, M. V. Mendlowicz, C. Marques, M. Versiani; Early- and late-onset obsessive-compulsive disorder in adult patients: an exploratory clinical and therapeutic study; *Journal of Psychiatric Research* (2003) **37**: 127-133.
120. M. B. Passani, L. Bacciottini, P. F. Mannaioni, P. Blandina; Central histaminergic system and cognition; *Neuroscience and Biobehavioral Reviews* (2000) **24**: 107-113.
121. A. Sarvari, E. Farkas, A. Kadar, G. Zseli, T. Fuzesi, R. M. Lechan, C. Fekete; Thyrotropin-releasing hormone-containing axons innervate histaminergic neurons in the tuberomammillary nucleus; *Brain Research* (2012) **1488**: 72-80.
122. M. Yoshizawa, M. Tashiro, S. Fukudo, K. Yanai, A. Utsumi, M. Kano, M. Karahasi, Y. Endo, J. Morisita, Y. Sato, M. Adachi, M. Itoh, M. Hongo; Increased brain histamine H1 receptor binding in patients with anorexia nervosa; *Biol. Psychiatry* (2009) **65**: 329-335.
123. M. Tanida, A. Nijjima, J. Shen, T. Nakamura, K. Nagai; Olfactory stimulation with scent of essential oil of grapefruit affects autonomic neurotransmission and blood pressure; *Brain Research* (2005) **1058**: 44-55.

124. J. Shen, A. Nijjima, M. Tanida, Y. Horii, K. Maeda, K. Nagai; Olfactory stimulation with scent of grapefruit oil affects autonomic nerves, lipolysis and appetite in rats; *Neuroscience Letters* (2005) 380: 289-294.
125. M. Tanida, A. Nijjima, J. Shen, T. Nakamura, K. Nagai; Olfactory stimulation with scent of lavender oil affects autonomic neurotransmission and blood pressure in rats; *Neuroscience Letters* (2006) 398: 155-160.
126. L. Alleva, E. Tirelli, C. Brabant; Therapeutic potential of histaminergic compounds in the treatment of addiction and drug-related cognitive disorders; *Behavioural Brain Research* (2013) 237: 357-368.
127. S. Nuutinen, K. Karlstedt, T. Aitta-aho, E. R. Korpi, P. Panula; Histamine and H3 receptor-dependent mechanisms regulate ethanol stimulation and conditioned place preference in mice; *Psychopharmacology* (2010) 208: 75-86.
128. C. R. Chen, W. M. Qu, M. H. Qiu, X. H. Xu, M. H. Yao, Y. Urade, Z. L. Huang; Modafinil exerts a dose-dependent antiepileptic effect mediated by adrenergic α_1 and histaminergic H₁ receptors in mice; *Neuropharmacology* (2007) 53: 534-541.
129. T. K. Kukko-Lukjanov, M. Lintunen, N. Jalava, H. B. Lauren, F. R. Lopez-Picon, K. A. Michelsen, P. Panula, I. E. Holopainen; *Epilepsy Research* (2010) 90: 8-15.
130. C. L. Jin, L. X. Jang, X. H. Wu, Q. Li, M. P. Ding, Y. Y. Fan, W. P. Zhang, J. H. Luo, Z. Chen; Effects of carnosine on amygdaloid-kindled seizures in sprague-dawley rats; *Neuroscience* (2005) 135: 939-947.
131. T. K. Kukko-Lukjanov, M. Gronman; M. Lintunen, H. B. Lauren, K. A. Michelsen, P. Panula, I. E. Holopainen; *Epilepsy Research* (2012) 100: 80-92.
132. J. S. Lin, C. Anaclet, O. A. Sergeeva, H. L. Haas; The waking brain: an update; *Cell. Mol. Life Sci.* (2011) 68: 2499-2512.
133. R. P. A. Gaykema, L. E. Goehler; Lipopolysaccharide challenge-induced suppression of Fos in hypothalamic orexin neurons: Their potential role in sickness behavior; *Brain, Behavior and immunity* (2009) 23: 926-930.
134. M. B. Passani, P. Giannoni, C. Bucherelli, E. Baldi, P. Blandina; Histamine in the brain: Beyond sleep and memory; *Biochemical Pharmacology* (2007) 73: 1113-1122.
135. P. Panula, M. Sundvik, K. Karlstedt; Developmental roles of brain histamine; *Trends in Neurosciences* (2014) 37(3): 159-165.
136. N. Doreulee, Y. Yanovsky, I. Flaggmeyer, D. R. Stevens, H. L. Haas, R. E. Brown; Histamine H₃ receptors depress synaptic transmission in the corticostriatal pathway; *Neuropharmacology* (2001) 40: 106-113.
137. H. Yokoyama; The role of central histaminergic neuron system as an anticonvulsive mechanism in developing brain; *Brain and Development* (2001) 23: 542-547.
138. P. Panula, M. Lintunen, K. Karlstedt; Histamine in brain development and tumors; *Seminars in Cancer Biology* (2000) 10: 11-14.
139. R. P. A. Gaykema, S. M. Park, C. R. McKibbin, L. E. Goehler; Lipopolysaccharide suppresses activation of the tuberomammillary histaminergic system concomitant with behavior: A novel target of immune-sensory pathways; *Neuroscience* (2008) 152: 273-287.
140. Y. Iwamura, Y. Fujii, C. Kamei; The effects of certain H₁-antagonists on visual evoked potential in rats; *Brain Research Bulletin* (2003) 61: 393-398.

[...]

Chapter 14: Paradigms and a full psychological description of the human person

The phenomena and relationships described in this book fall outside the bounds of currently functioning paradigms — the fundamental theorems upon which individual fields of knowledge are built. This means that many of them are outdated, failing to meet the demands of the current era, in which we must confront the global crises of human civilization, predicted many years ago and now beginning to manifest themselves glaringly. Examples include: the deepening poverty zone, serious mental health problem increase, restrictions on the use of natural resources, biosphere impoverishment, environmental toxicity, and global financial manipulation. Many of these problems stem from a failure to recognize the essence of the human person, including oneself, in the service of the mad capitalist pursuit of money power, often attractive by deviant charm devoided of deeper goals.

In this book, I approach humanity from the perspective of new paradigms that emerge from a radical reanalysis of existing experimental data, as well as from the perspective of old paradigms, relegated to oblivion for political reasons, or simply due to the promotion of their own flawed "self" by individuals whose sole purpose in life was to climb the power hierarchy.

It is therefore time, in this final chapter, to address, or at least list, those paradigms that obscure our image of humanity, as well as those that, on the contrary, may contribute to explaining many previously insoluble problems related to the functioning of the psyche.

This chapter therefore lists paradigms, or at least theorems and applied principles, that clearly hinder the development of science and social life, and which, as logic dictates, should be rejected or the opposite assumption adopted instead. The following section is devoted to less obvious paradigms that should be adopted for the further development of related fields presented in this book.

A model of the mechanism of the developmental clock is also proposed. A comprehensive description of human character calls for consideration of four external sources of torsion field influences, creating, as it were, separate layers of personality:

- the developmental clock described here,
- the ethnic influences of the Earth,
- the influence of the Earth's slowly rotating core, and
- astrological influences.

These phenomena will be described in subsequent volumes: "Systematic Anthropology," "The Succession of Epochs in History," and "Corrections to Astrology."

Distortions in science and other fields of human activity

Looking at various areas of life from the outside, one can notice enormous distortions in the values and paradigms on which they are based, compared to what one might reasonably expect in these fields. The development of the social sciences, in particular, and not coincidentally, has been experiencing a severe crisis for many years and can be said to be regressing rather than advancing, and this is most evident when compared to the development of technology. To help you understand the problem, here are some of the more easily discernible approaches leading to various crises in Poland and worldwide, encompassing the entire spectrum of sciences and fields of human endeavor:

Exact sciences

For several decades, there has been limited freedom to choose scientific topics that can be pursued with public funds, resulting from the accepted and cultivated "scientific"/"non-scientific" divide. It must be borne in mind that most research in experimental fields requires expensive equipment and materials. Furthermore:

- "Linear" science is preferred (the method of small steps, results can be predicted to some extent before the research begins, research is carried out according to a long-term plan, and the focus is on collecting numerical data).
- The value of scientific work is assessed by the number of scientific publications produced, and only to a small extent by their significance for progress (funding follows such assessment).
- Results with low reproducibility, subject to significant fluctuation, and those that are not directly measurable are considered worthless – the paradigm of visibility.
- Students of physics, the flagship science, learn from unchanged reissues of textbooks from the 1950s and 1960s, while in electronics or molecular biology "five years is an era".

Social sciences and humanities

Social sciences and humanities are plagued by numerous false paradigms, such as failure to recognize a person's individuality, subordination to politics, elimination of the concepts of patriotism and spiritual life, and contempt for the latter. Reliance is placed on the authority of individuals who lack the freedom to create or are financially dependent on the political establishment. The term "utopia" has been given a pejorative connotation.

Social science paradigms:

- Religion is nonsense.
- Spirits do not exist, which is clearly understood as the absence of intelligence independent of the biochemical processes of a specific person's brain.
- There is an average person.
- Each person is capable of understanding another person.
- It is doable to create one ethics and morality, one philosophy, one art, one system, etc. for the entire world.
- Astrology is nonsense.
- A person's character is determined solely by genetic inheritance and education. A person is born as a blank slate (*tabula rasa*), which teachers and educators can fill in as they please.
- The material world is the basis for shaping consciousness.
- Social behavior has nothing to do with individual behavior.
- National characteristics are essentially nonexistent.
- Science develops evolutionarily.
- Freedom cannot be denied!

- Democracy cannot be denied!

Medicine is about saving life, not health. It separates psychology and ignores alternative methods. Pharmaceutical and insurance companies politically influence the shape of medicine.

Law. Ethics and morality are removed from lawmaking, subordinating law to politics. Removing The judges' ability to think is suppressed, hence talking about their authority is meaningless. The absurd detail of regulations does not keep pace with civilizational development.

Politics. Globalism, racism (the starvation of Africa, for example, through financial manipulation – loans with interest rates many times higher than the amount borrowed) are rampant. Political correctness aims at fostering servility to the powers that be.

Economy is subordinated to politics. Financial profit is paramount, with production and people being of little importance. Supranational corporations expand. Financial capital is speculated with, the economy depends on banks. The majority of national income goes to the owners of non-productive and non-creative corporations engaged solely in financial transactions. Trade margins are many times higher than the cost of producing a given product. The "wisdom" of the free market is a false concept, as is the assumption that private enterprises will always function better than state-owned ones.

Education produces narrow specialists, lacks training in thinking and rote learning, while educational, moral, and ethical goals are missing. The level of education progressively goes down, fostering a passive attitude to life devoid of spirituality but filled with consumer values and selfishness, the promotion of base desires, and the human being as labor. No teaching of child-rearing skills or the skills of a mature social life. Adults lack the ability to speak up in a larger group – a fundamental element for the functioning of the democracy so promoted. Lack of rational training in scientific research – teachers receive the same education as scientists. Students are selected based on their memory skills, thus leading to them "parroting" what others have done.

Television, newspapers, magazines and internet falsify information, promote primitivism including advertising that the users have to pay for.

Visual arts are generally low quality. do not represent values and convey content, instead of presenting one's "self" through creating one's own style.

Music focuses on listener passivity, removes singing as a reproducible element, and massively introduces negative emotions.

Film presents violence, aggression, sex, and destruction of morality. The realities pictured are much worse than the everyday reality we encounter. Films escape into fiction and lack edifying themes.

Sports are passive entertainment. The vast majority of people participating in sports are merely fans, and usually TV fans at that. Sporting events are organized for profit. The athlete is an object. while an average young boy can't climb a tree.

Catholic religion focuses on revealed faith, depreciates meditation and spiritual contact, and trivializes social and political issues. It expresses support for hypocritical official science, while lacking a philosophical system. It also stifles the development of alternative fields.

Alternative fields tolerate naiveté. Popular work is low-level. Earning and making a living from alternative fields necessitates a recourse to lies.

Thus, we face a complete distortion of the goals that science and many other areas of human endeavor should serve, and the universality of this phenomenon can only be realized when we make such a comparison. Therefore, there is an enormous amount of work to be done.

The meaning of scientific research

In the 20th century, before science gained its inherent reliability, it had already lost it. While efforts were made to refine reliability in detail and in the experimental approach, the very assumptions of science, its paradigms, largely do not serve science, nor do they contribute to human satisfaction in understanding the world. Particularly troubling is the omission of areas that are, for some reason, inconvenient, and, it should be added, of vast areas that determine the essence of humanity.

In turn, failing to acknowledge results that contradict the theory adopted by those conducting the experiments renders their results worthless in the broader context. Thus, we are dealing with a science wandering in the fog, slowly progressing, but taking numerous steps backward, while the progress could be many times faster.

For 19 years, I observed the careers of my colleagues at the Faculty of Biology at the University of Gdańsk, and later at the newly established Faculty of Biotechnology. In many cases, I was able to observe differences occurring in the three twelve-year periods of their developmental clocks: K6, K7, and K8. I also had some insight thanks to the natal charts I had prepared for many of them, and they had confirmed their consistent traits. The question arises: are scientists' actions influenced by the emotional effects of the developmental clock? One would think we would encounter here the primacy of intellect over emotions, rational behavior in life, and the unique satisfaction of making scientific discoveries dominating their actions. Nothing of the sort!

There are three clear, strongly marked phases:

- K6 (21-33 years) - a diligent pursuit of scientific results, nothing too tedious nor boring, and the expected goal is a doctorate and perhaps achievement in science;
- K7 (ages 34-45) – pretending to be doing academic work, collecting points, traveling, and contributing to publications;
- K8 (ages 46-57) – a predatory power struggle, at least in the department, now let others who report to me work for me, manipulation, strutting, nastiness, and the destruction of competitors.

And science? What science! Academic careers, titles, honors, membership in scientific organizations—what more do you need? Finally, and most importantly, belonging to a higher caste of people with academic degrees, expecting respect and admiration. Admiration by lowly individuals who either truly admire because they don't know, or despise because they despise everything they associate with school (which they didn't like). And they are usually the ones who are closer to a sober assessment.

And what next? Perhaps some of those I treated as experimental subjects will see the light in the next phase of K9 (46-57 years old) and their mental horizons will broaden as this phase suggests. For now, here's my advice on how to test a professor's intellect: Ask him about politics... Most will wriggle around like a squirrel to avoid revealing their ignorance. And later, just ask the same question to the doorman...

I don't have any comparisons of this issue in other centers, but we can expect the general pattern to be the same.

New paradigms

Considering the facts presented in this book, it's impossible to stick to many of the fundamental paradigms on which behaviorism and psychoanalysis, among others, were based, and which still dominate psychology, psychiatry, and the social sciences. We need to revisit what was considered absurd or even completely overlooked, such as:

- The anisotropy of fields in the space around us, affecting living organisms and, moreover, varying over time.

- The real physical existence of sensations that fill the space of consciousness.

- The existence of a non-electromagnetic field associated with the psyche, subject to previously unknown physical laws.

- The connection of this field with the torsion field postulated by E. Cartan in the 19th century, associated with the rotation of space, and later demonstrated with a fundamental property of matter – spin.

- The existence of planetary fractals, ensuring the balance and diversity of organic life on Earth.

- The individual imprint of each person, which largely determines their life path and the resistance of their life values to persuasion and indoctrination.

- The actual existence of natural values, represented by the Categories, around which debate has raged for over two millennia.

- The connection between the content of psychological experiences and the neurophysical basis of mental disorders.

Many of these issues are essentially a new field, describing aspects of the area connecting the mind and the physical body, and related to a centuries-old philosophical question, the only one known at the time: the mind-body problem. This very question of the existence of psychophysical dualism was the starting point for my reflections many, many years ago, which ultimately led to the writing of this book.

A draft model of the developmental clock mechanism

Research on autism and other neurodevelopmental disorders allows us to construct a certain picture of the functioning of the human psyche at the edge of psychophysical dualism. First, we must adopt certain basic assumptions, then draw broader and broader conclusions regarding the functioning of an area of the human psyche closer to consciousness than the neurochemical one, typically considered, and directly related to the Categories and the developmental clock.

Below are the basic theses resulting from my reanalysis of the facts—the nuclear theory of the functioning of the developmental clock:

1. The atomic nucleus receives the Category field from the outside.
2. The atomic nucleus can be forced to remember information about the Category field at a given moment—remembering birth characteristics.
3. Once birth characteristics are imprinted on the nucleus, it provides information about the intensity of the Category field from the astrological and ethnic natal situation, as well as the intensity of the Category's influence resulting from astrological transits and changes in the Earth's Category field.
4. The atomic nucleus communicates with the electronic level of chemical molecules via free radical reactions.
5. Information about the intensity of Category activity, read via free radicals, is transformed through changes in DNA methylation into the expression of morphogenetic, neurotrophic, and other genes. These are epigenetic changes.
6. Susceptibility to neurodevelopmental (chronic) mental disorders is the result of a shift in the starting phase of the developmental clock, or more precisely, the replacement of the standard developmental option with one of the alternative developmental options.
7. The starting phase of the developmental clock is likely encoded in genes.
8. The cyclical change in the phase of the developmental clock is controlled by cosmic influences related to the annual rotation of the Earth, and perhaps directly by phenomena occurring within the Sun.
9. One can imagine two versions of how the developmental clock works:
 - a) Timekeeping occurs at the molecular level, for example, analogously to the circadian clock in cyanobacteria, where this clock involves the phosphorylation of successive subunits of a hexagonal "turbine" composed of Kai A, B, and C proteins, analogous to FOF1ATPase. The signal for the next phase shift would be cosmic cycles.
 - b) Timekeeping occurs in the atomic nucleus, where the output signal is the difference between the current Category field and the imprinted Category field at day 20 after fertilization (in astrology, these are transits, but astrologers have greatly simplified them), plus a correction for the clock's starting phase. (This correction is a nightmare that keeps me awake at night. How can it be implemented?...)
10. Moods are processed without the involvement of gene expression. For example, the current geoastronomical hourly situation. Similarly, the control of the brain's electrical processes in accordance with the changing Categories, which is reflected in EEG waveforms. (Certain literature data, however, indicates the possibility of gene expression keeping up with hourly changes.)
11. The aforementioned transits, although often short-lived, cause easily observable somatic changes, which is why I classify them as epigenetic changes.

12. Imprinting appears to be accomplished by the superoxide radical (change and production properties), while reading is accomplished by nitric oxide (receptive properties).

13. Where are the individual elements of the Categories?

- Feelings – in the Category field – do not leave the field of consciousness.
- Physical quantities associated with the Categories – in the Category field.
- Associated motor and physiological functions – largely dependent on the type of receptor; for example, mice have slightly fewer receptors than humans, and each is specialized – and therefore genetically linked.
- Archetypes associated with a specific Category (e.g., the idea of the existence of God), ideal faces or other shapes for a specific Category or ethnic group (partially overlapping with Platonic ideals) – do not appear to be neurochemically determined or derived from individual experience. Research (in the journal *Nature*, 1990s) has shown that the ideal face in a specific ethnic or even national group is close to a computer-averaged face from the entire population. Given that the Category field does not have to be one-dimensional, it seems that this information is contained within the field. Whether this will be a persistent Category field or a slowly changing field of the collective unconscious remains to be determined. Physical realization often comes close to the ideal contained within the field in terms of shape, color, and texture. If ideal faces were in the field, they could also be present corresponding to the Value Categories, etc.

14. The same clock counts psychological changes, language development, and likely some physical changes in the body. Developmental data indicate this. ^{5, 6:106} With a broken clock, the embryo dies.

15. The developmental clock fractal — the synchronous change in the categories of twelve-year, annual, and monthly periods (1/12 year) — results from the existence of an analogous planetary fractal, which also exists at the level of elementary particles. It likely originates from the proton.

In this book's discussion of the developmental clock, I naturally assumed one solar year as the basic unit of time associated with the duodecimal fractal. However, upon deeper examination, it lacks a logical foundation when attempting to place this fractal somewhere in space. However, there is a duodecimal fractal associated with the Sun (presumably its solid core), which generates a field with a period that differs from the solar year by less than 5% and is likely responsible for certain cycles of living organisms, such as the 24-minute cycle of NADH oxidases enabling cyclical cell growth, the endocrine menstrual cycle, and the 11.5-year cycle of tree pulp growth. Despite theoretical difficulties, periods associated with the hypothetical fractal related to the solar year do exist: 1/12 year – one zodiacal sign in the annual cycle in European astrology, and 1 year – one sign of the 12-year cycle in Chinese astrology. Defining which fractal is decisive in the developmental clock will require more precise data than I currently possess. I will write about planetary fractals in other books in the Determinism series.

Phenomena occurring around the 20th day after conception

It is worth once again explaining what happens around the 20th day after fertilization, when the developmental clock begins to tick.

Around the 18th day of development, the embryonic ectoderm, consisting of a single layer of cells extending over the notochord, thickens and forms a still single-layered neural plate (lamina neuralis). Around day 20, the neural plate deepens to form the neural groove (sulcus neuralis).

Around day 20-21, the groove closes into the neural tube (tubus neuralis). The anterior neural foramen closes on day 26, and the posterior neural foramen closes on day 28.^{2:101-109} This is a modest representation of the future brain and nervous system. But already between days 20 and 24, crucial processes for the entire future life, determining the functioning of the future psyche, begin to unfold – the developmental clock, based on the Categories, begins to tick.

Simultaneously, around day 20 of development, intraembryonic and extraembryonic blood vessels and the primitive heart form. On day 21, the cardiac tube fuses with the embryonic vessels, the ventral stalk, chorion, and yolk sac, and circulation begins.^{2:99-100} This means, roughly speaking, that the level of tissue oxygenation, and therefore the level of free radicals, increases, likely resulting in an oxygen shock, which may be the main trigger for the clock to begin.

Thus, similar to the moment after the first breath following birth, where there is an oxygen shock triggering many processes, including the switch from the placental circulation to a closed internal circulation, here too there appears to be an oxygen shock triggering new processes, including the observed rapid development of the embryo's structure. Another time when high levels of oxygen radicals occur is the first day after fertilization of the egg, when the zona pellucida seals.^{3, 2:78} This leaves some room for advancement for those who advocate for the idea of full humanity from the moment of conception...

Furthermore, around the 20th day of development, the paraxial mesoderm begins to undergo metameric division, forming spherical blocks of epithelial cells called somites. The first pair of somites forms at the cephalic end of the notochord (in the future occipital region), and from there, subsequent somites form caudally. Between days 20 and 30, approximately 38 somites are formed. Based on the number of somites, the period of development (age) of the embryo can be determined.^{2:101-107} Three somites of the clock — presumably the clock of physical development — are produced daily, but that's a separate "fable" linking the Categories to somatic diseases.

A mentally healthy person

The paradigm defining mental health, that is, the general norm associated with the standard phase of the developmental clock that prevailed in the twentieth century, may not necessarily be valid in the significantly changed social relations due to technological advancements, which we can expect to occur over the next few decades. Therefore, when trying to discuss mental health, we must bear in mind the twelve basic personality types, based on developmental options.

We could already make films about what such societies might look like. Moreover, we already have many examples, albeit less intense ones – ethnic groups in which a specific Category accumulates, where the culture is dominated by the characteristics of that Category, and people with traits that would seem strange to us are the subject of general respect. In no other society would they develop as well or find as much happiness as in their ethnic group, which has inhabited a given area for centuries. I will address this topic in my book *Systematic Anthropology*.

Among various disorders, including schizophrenia, patients experience a feeling from childhood that they don't know their role in life, in the situations they are given the opportunity to participate in. The dominant values are those of individuals with a standard developmental option, where the most important are: concern for survival (K4), the need to raise children (K4), and acquiring a mate (K5), traits that have been necessary for humans for millennia to preserve

the species in a hostile natural environment. However, we have twelve Categories that may acquire their proper meaning in conditions of overpopulation and the absence of the need to struggle for existence, while individuals at other stages of the developmental clock dominate culture.

In a study reporting on the development of children born by women with schizophrenia and placed immediately after birth in adoptive or foster homes, Leonard Heston and Duane Denney observed that children who did not develop schizophrenia were more "spontaneous," "had more colorful lives," "chose creative professions," and "pursued more elaborate hobbies..." than normal children. Karlsson's (1991) studies of schizophrenia in families in Iceland led him to conclude that "gene carriers" of schizophrenia often possess "extraordinary abilities" and display "superior associative thinking." Fascinated by these findings, Karlsson concluded that society's social and scientific progress may even be dependent on "individuals with a schizophrenic structure." He also noted that a disproportionate number of the most creative people in the fields of philosophy, physics, music, literature, mathematics, and the fine arts often suffered from mental disorders.^{4:460}

The biographies provided in the previous chapter clearly demonstrate that what we commonly refer to as susceptibility to a specific mental disorder is not an illness, but rather a different psychophysical constitution, which, in addition to often predisposing us to such a condition, has also produced many individuals whose exceptional abilities have greatly influenced the shape of today's civilization.

In this book, not by accident the issue of schizophrenia occupies a significant, disproportionate place, compared to other mental disorders. I did so because of the importance of the problem, which constitutes the most challenging conundrum in contemporary psychiatry. Other problems seem easier to solve, although another problem looms on the horizon: disturbances in the formation of the mental space of perceiving the environment and oneself, in which the Categories participate.

What's next? - a full psychological description of humans

For centuries, the psychological description of humans has suffered from a lack of clarity. There are many schools of thought, many approaches. And indeed, the deeper we delve into the psychological picture of humans, the more complex it appears. Just as the living human cell with its 30,000 genes is unimaginably complex, so too the human psyche cannot be simplified to the level of trivial solutions. This book addresses a range of issues regarding Categories in the human psyche, concerning only one layer, as it were. However, there are many more influences of Categories in the human psyche, and they will be described in subsequent volumes in the Determinism series.

Therefore, to comprehensively describe human character, it is necessary to consider the influences described in the first four volumes of this series, which create, as it were, separate layers of personality. These are the following volumes: "Psychopathology According to Categories," "Systematic Anthropology," "The Succession of Epochs in History" (planned), and "Corrections to Astrology" (planned). All these influences, at some point in their essence, are based, as we can now conclude, on planetary torsion fields. More precisely, on twelve-phase torsion fields naturally associated with large masses. However, likely only with large masses in the solid phase, such as the Earth's crust, the Earth's core, the Sun's solid core (which is increasingly discussed), as well as the large, solid masses of individual planets. A particular

challenge here, perhaps beyond current capabilities, is considering the interference of various planetary fields. This topic is addressed, for better or worse, by astrology, inherited in a mutilated form from the sages of previous millennia, and now requiring a radically new perspective.

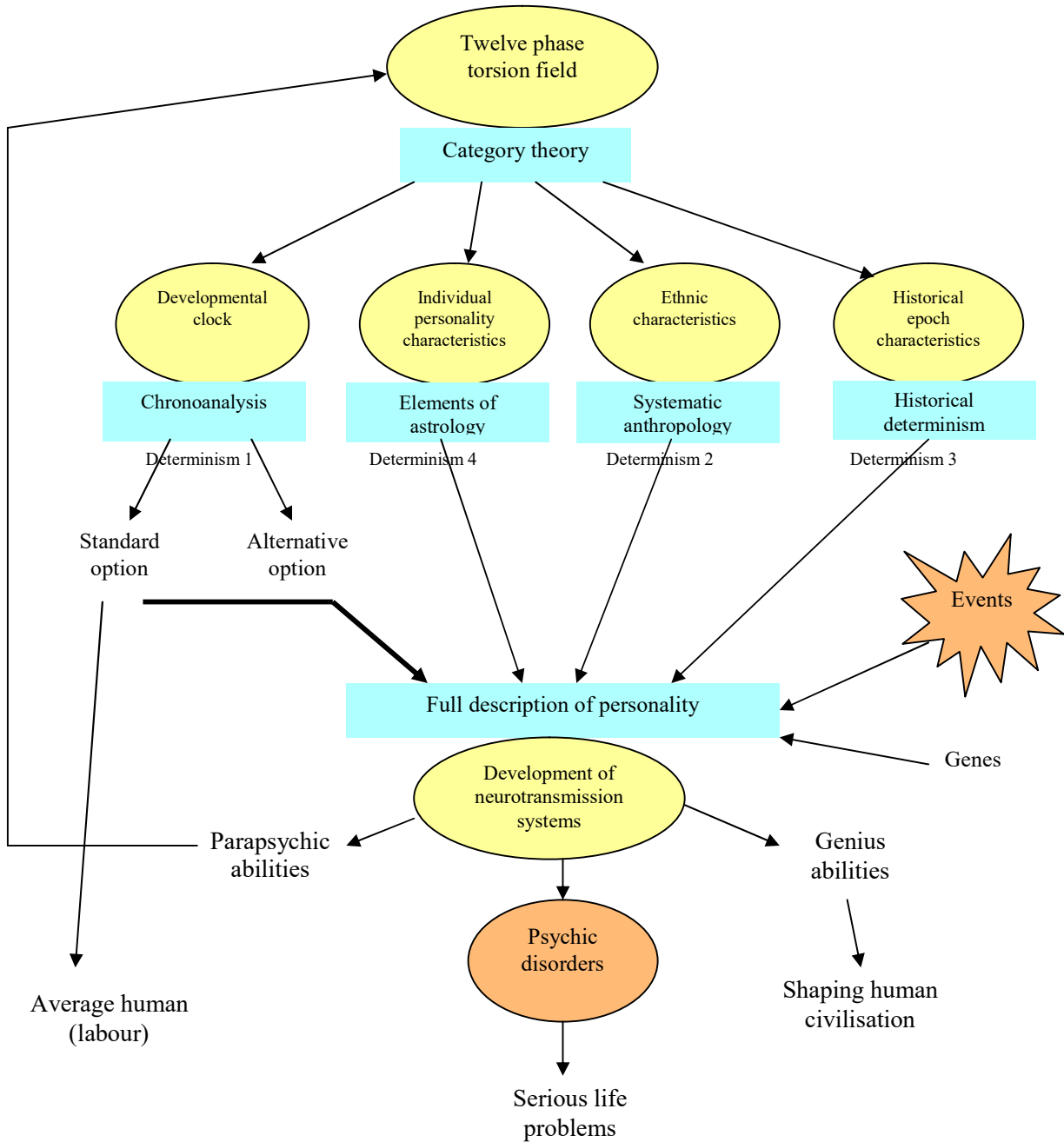


Figure 15.1 Planetary torsion fields

Thus, this first volume of the series examines the issue of the developmental clock, whose precisely defined periods indicate a connection with our planet's orbit around the Sun, although it

is difficult to determine how these influences are generated. The next volume will explore the dependence on the effects of a field related to the Earth's crust, which creates a specific fractal that influences the ethnic characteristics of people born and living at specific latitudes and longitudes, as well as the far-reaching consequences of this influence. The next volume will examine the influence of a field related to the Earth's core, responsible for the existence of historical eras, as well as the phenomenon of fashions and their non-simultaneity in various regions of the world. The fourth volume will attempt to identify valuable logical elements of astrology and reject those that do not fit the torsion field fractal model, particularly those that fundamentally lack causal or synchronic meaning.

Only the combined information from these four volumes will provide us with real insight into the functioning of the human psyche, based on which a seemingly trivial description of human character can be made, yet in a highly unambiguous manner and at a correspondingly higher level than is currently practiced.

A schematic summary of the individual influences on human character traits that should be considered is shown in Figure 15.1.

The features of the planetary torsion field, revealed through the human psyche and certain physical phenomena, also lead to the discovery of new properties of the matter that surrounds us. However, this will be discussed in other planned works.

So, I invite you to read the next installments of this "fairy tale" soon, about how much we are determined by "strange creatures" and "enchanted territories"...

Additional information will appear on the website: <http://www.torsionfield.eu/>

Bibliography

1. J. Wang; Recent cyanobacterial Kai protein structures suggest a rotary clock; *Structure* (2005) **13**(5): 735-741.
2. Hieronim Bartel; *Embriologia: podręcznik dla studentów*; Wydawnictwo lekarskie PZWL, Warszawa 2002.
3. M. A. Bedaiwy, T. Falcone, M. S. Mohamed, A. A. N. Aleem, R. K. Sharma, S. E. Worley, J. Thornton, A. Agarwal; Differential growth of human embryos in vitro: role of reactive oxygen species; *Fertility and Sterility* (2004) **82**(3): 593-600.
4. Martin E. P. Seligman, Elaine F. Walker, David L. Rosenhan; *Psychopatologia*; Zysk i S-ka Wydawnictwo, Poznań 2003.
5. M. Philippart; Rett and Angelman's syndromes: Models of arrested development; *Pediatric Neurology* (2001) **25**(4): 288-294.
6. Katarzyna Markiewicz; *Możliwości komunikacyjne dzieci autystycznych*; Wydawnictwo Uniwersytetu Marii Curie-Skłodowskiej, Lublin 2004.

Glossary

Adolescence - The period between childhood and adulthood. In this book, the most typical period is from 9.3 to 21.3 years.

Agonist - A factor that facilitates the transmission of a neural signal.

Amnesia - Dissociative disorders involving the loss of memory for events during a specific period or the memory of one's own identity. Amnesia can be general, retrograde, posttraumatic, anterograde, or selective.

Analgesia - A state of pain relief.

Anhedonia - Absence or loss of pleasure.

Antagonist - A factor that impedes the transmission of a neural signal.

Anxiolytic - Anti-anxiety medication.

Archetype - A concept introduced by Carl Gustav Jung. It is a primary image and behavioral pattern, encompassing the mental sphere and carrying a significant emotional charge, whose source is established in the psyche, repeated through the experiences of many generations. It is a reflection of instinctive reactions to specific situations. Along with impulsive behavior patterns (instincts), archetypes are said to constitute the structural components of the collective unconscious, its fundamental content.

According to Jung, the collective unconscious contains many diverse archetypes, such as: the archetype of birth, rebirth, death, power, unity, the archetype of the hero, the child, God, the demon, the animal, the archetype of water (a maternal symbol; addiction), the tree (a symbol of personality), the unconscious, fire (burnout, purification), etc., but their number is limited. The structure of each archetype is bipolar – it has its constructive and destructive sides.

Behavioral - A concept relating to observed behavior.

Category (new term) - The concept of Category was introduced into philosophy by Aristotle, and the person to seriously engage with it was likely Immanuel Kant. Related closely to mental operations, and encompasses 12 units, each of which has its own content related to emotionality, values, goals, needs, abilities, modes of action, mental operations, etc., in this book the Category concept is broader than Kant's. To distinguish it from the common term for dividing things into groups, Category is capitalized in this book.

Category frustration (new concept) - A prolonged situation in which the fundamental values associated with the dominant Category at a given time cannot be realized.

Category field (new term) - It corresponds to the twelve-phase torsion field, considered from the perspective of its effects on humans, particularly psychological aspects, ignoring the field's physical characteristics.

Chronoanalysis (new term) - The process of detecting a shift in the starting phase of the developmental clock in a patient and predicting the associated health consequences, particularly in the psychological and psychiatric sphere.

Chronopathology (new term) - The occurrence of a shift in the starting phase of the developmental clock, resulting in a functional mental or physical (somatic) disorder.

Chronotherapy - A term used to refer to the use of medications or treatments depending on the time of day, as well as to regulate a disrupted circadian clock, for example, due to traveling to different time zones. In this book, it refers to the application of therapy appropriate to the current phase of the developmental clock.

Correlation - Denotes the interrelationship of random variables. The tendency for an increase in one variable characteristic to be accompanied by an increase or decrease in another. Often used to refer to a correlation coefficient, the values of which range from -1 to +1.

Delusions - False beliefs that resist all argumentation and persist despite evidence that is normally sufficient to refute them.

Developmental clock (new term) - A precise biological clock, not yet defined in its molecular form, synchronized by the influence of planetary torsion fields, as evidenced by reanalysis of experimental data. It has a broad spectrum of influence on the mental and physical functioning of humans and higher animals. Its effects are confirmed by the results of hundreds of research studies by various authors. Characteristic periods of the developmental clock are: 12 years, 1 year, 1/12 year, and 1/144 year – these correspond to the duodecimal fractal associated with the Earth's annual orbit around the Sun.

Developmental clock layers (new concept) - A theoretical separation, convenient for interpretation purposes, of the cycles of the developmental clock lasting 144 years, 12 years, and 1 year. In reality, these cycles form a single duodecimal fractal. An analogy to the layers of the developmental clock is the occurrence of hours, minutes, and seconds in the commonly accepted measurement of time.

Developmental clock phase - The current countdown state of the developmental clock, expressed by the Categories representing the individual layers of the clock.

Developmental clock start phase (new term) - A precise developmental clock, using the cyclical change of the Category field (torsion field) phases, begins in humans approximately 20 days after fertilization. The Categories from which synchronized clock cycles begin are programmed and inherited—this is the clock's starting phase.

Developmental option (new term) - This is a type of human personality development associated with a specific starting phase of the developmental clock.

Duodecimal fractal (new term) - A characteristic fractal occurring in nature associated with twelve-phase torsion fields, possessing at least six levels of similarity and exactly 12 phases with different properties. Each phase of the field is divided into 12 equal parts – twelve phases, each of these twelve phases into another twelve, and so on. This book features a one-dimensional twelve-phase fractal of the developmental clock, which is somehow related to planetary torsion fields. The volume "Systematic Anthropology" will describe such a fractal in two-dimensional form. The duodecimal fractal bears analogies to the "law of octaves" described by esoteric sources.

Empathy - The ability to perceive the mental states of other beings (emotional empathy), the ability to adopt their way of thinking, and to see reality from their perspective (cognitive empathy).

Enzyme inhibition - Inhibition or complete blocking of enzyme activity.

Epigenetics - As used in this book, the regulation of gene expression through the permanent binding of chemical molecules or proteins to DNA. The most typical example is the attachment of a methyl group to a nucleotide. In this case, in addition to the long-term stability of the binding, mechanisms also occur to replicate the presence of this methyl group on daughter DNA strands during replication. This allows epigenetic information to be inherited during somatic cell divisions.

Executive functions - Defined sets of brain processes whose role is to guide thinking and behavior in accordance with internally developed goals and plans. They are usually referred to abilities acquired in childhood during normal development. Therefore, they are largely related to Category 4.

Endogenous opioids - Neurotransmitters found in the body similar to opioid substances obtained from plants (exogenous opioids).

Free radicals (or radicals for short) - Molecules with an unpaired electron, making them highly reactive and high in energy. Superoxide radicals and nitric oxide are particularly important for the proper functioning of higher organisms.

Fractal - A mathematical concept, particularly a geometric one, relating to the creation of complex, regular patterns in which the same element of the pattern repeats itself multiple times, forming the same pattern but in a correspondingly larger scale. In a similar manner, subsequent levels of similarity are created, with increasingly larger scales. Many fractals exhibit "infinite self-similarity." This means that any small fragment, when appropriately enlarged, resembles the entire set or a significant portion of it.

Fractals observed in nature have a limited number of levels of similarity. Examples include snowflakes, frost flowers on windowpanes, the leaves of certain ferns with multiple branches, and the fruit of green cauliflower (*Brassica oleracea*). Fractal-like structures, more dominated by randomness, include some clouds and river basins.

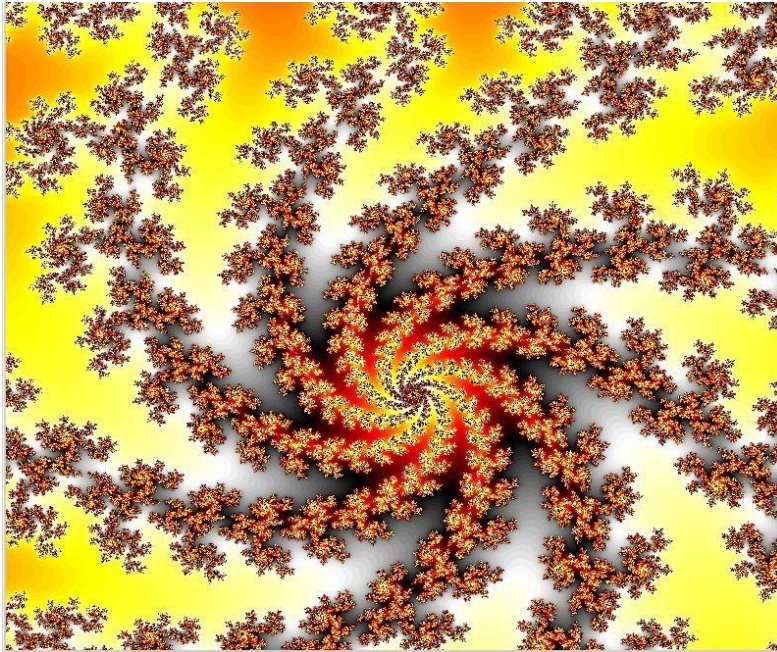


Figure 1. Example of a mathematical fractal with multiple levels of similarity ¹

Gene deletion - The removal of a sufficiently large fragment of a gene that the resulting protein will no longer represent its basic original properties or will be absent altogether.

Gene expression - The set of processes by which, based on the genetic information contained in DNA, RNA is created, followed by a mature protein, ready to perform its functions in the cell.

Gene methylation - The enzymatic process of attaching methyl groups to DNA nucleotides to transmit epigenetic information regarding gene expression levels.

Genetic polymorphism - The occurrence of differences in the DNA of a population. However, rare changes are not defined as polymorphism. The criterion for inclusion in this category is that the change in question must occur more frequently than 1% (in other words, too frequently to be considered a spontaneous mutation). Polymorphism can be divided into single-nucleotide polymorphisms and polymorphisms of mini- and microsatellite sequences. Polymorphisms can refer to coding or non-coding sequences, which can consequently lead to differences in the structure and function of the protein encoded by the gene or the level of expression of the gene.

Glial cells - A group of several types of non-neuronal cells of the nervous system, the number of which is at least 10 times greater than the number of neurons in the brain. They have a significant impact on brain function, including neurotransmission. Their name, derived from the word "glue," comes from a period when they were thought to merely provide mechanical support for neurons. Currently, their functions related to information exchange with neurons are being investigated. However, their functions related to the production of neurotransmitters, the nourishment of neurons, the formation of myelin, and the destruction of pathogens and unnecessary neurons have long been known.

Hallucinations - Perception in the absence of an identifiable stimulus.

Illusions - Illusions involve distortions of perception, such as the belief in the presence of a person sitting in a chair when objectively only a jacket is hanging there (on the chair). This is in contrast to hallucinations, which involve the perception of something that is not actually present in the location indicated by the experimenter.

Imprinting - The occurrence of a sensitive period at a precisely defined moment in individual development, during which externally incoming information leaves its mark, essentially for life. This concept is used primarily in psychology and genetics.

Knockout gene - A gene in a laboratory animal into which a foreign sequence is introduced by recombinant means, leading to the deletion or inactivation of the gene. This operation is performed at the embryonic stage, and then a line of animals is bred. The term "knockout animal" is used accordingly.

Knockout mouse - A mouse whose specific gene has been inactivated using gene knockout techniques.

Morphogenetic genes - Genes responsible for the process of morphogenesis, i.e., the transformation of embryonic cells and the formation of tissues and organs.

Myelin - An electrically insulating, multilayered phospholipid layer surrounding the axons of many neurons. It is formed from glial cells. Myelin prevents the transmission of nerve impulses to other cells and increases the speed of their transmission.

Neurotrophic factors - Specific proteins responsible for directing the formation of neural structures.

Neurogenesis - The process of directed formation of neural structures, including the proliferation of nerve cells, neurite and dendrite outgrowth, and the formation of new synapses (synaptogenesis).

Neuroleptics (antipsychotics) - Drugs used to treat mental disorders, primarily schizophrenia and other psychoses associated with delusions and hallucinations.

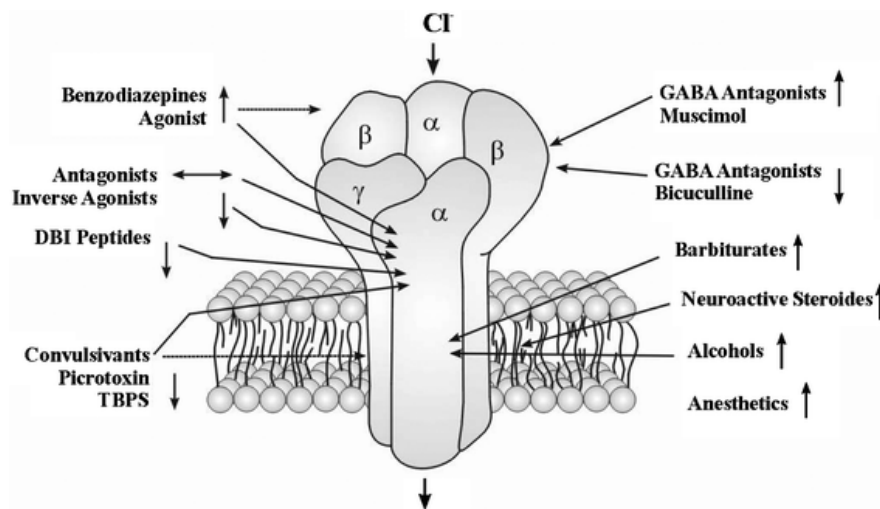
Neurons - Nerve cells consisting of a cell body and neurites, which form extensions, including dendrites and axons. These extensions interact with other neurons through synapses.

Neuroreceptor - A protein located in the neuronal cell membrane that changes conformation upon binding a neurotransmitter. This conformational change stimulates other proteins in the cell or opens a membrane channel through which specific ions can flow, altering the cell's membrane potential.

A specific group of autoreceptors should be distinguished here. These receptors, located in the cell membrane of the signaling cell, are linked indirectly to the neurotransmitter release

mechanism, limiting the amount of neurotransmitter released once they detect it in the synaptic space. Therefore, when located in the presynaptic membrane, they inhibit signal transmission. However, these same receptors can also occur in the postsynaptic membrane, i.e., in the membrane of the cell receiving the signal, and be responsible for intensifying the transmitted signal.

A human nerve cell associated with a specific neurotransmitter typically contains several types of signal-transmitting receptors and one type of autoreceptor, which can also transmit the signal. Each of these receptors has a specific specialization that determines the behavioral effects of stimulating cells associated with a given neurotransmitter. For example, in dopamine-related cells, a different receptor transmits a reward signal and a different signal for psychomotor drive.



Example neuroreceptor. A GABAergic receptor forming a chloride channel, with orientationally marked sites where individual chemicals interacting with this receptor bind to it. 2

Neurotransmission - The phenomenon of nerve signal transmission, usually involving a specific neurotransmission system (and therefore associated with a single neurotransmitter).

Neurotransmission system - Pathways transmitting neural signals generally utilize a single specific neurotransmitter. All pathways associated with a specific neurotransmitter are referred to as the neurotransmission system for that neurotransmitter.

Neurotransmitters - Chemical substances that transmit nerve signals from one nerve cell to another through synapses. Examples of neurotransmitters include norepinephrine, acetylcholine, dopamine, serotonin, and glutamic acid.

Oxygen shock (oxidative stress) - A situation in which the amount of oxygen in the body increases relatively suddenly, and consequently, the number of free oxygen radicals. The body needs a certain amount of time, measured in tens of minutes, before enzymes are produced that reduce the level of these radicals to optimal levels.

Paradigms - The fundamental assumptions upon which a given field of knowledge is based. They enable the construction of a reliable structure for a given field, but also limit it almost absolutely to the effects that logically result solely from these assumptions. In the development of science, paradigms necessarily require change from time to time.

Planetary torsion fields (new term) - As the analysis presented in the next five installments of the "Determinism" series shows, planets are surrounded by a field that, in many respects, corresponds to the torsion field described by physicists [→ torsion fields]. This field creates a characteristic two-dimensional twelve-phase fractal. The functioning of higher organisms is closely dependent on the influence of these fields.

(Planetary) torsion field phase (new term) - A specific property of the field where a jumpy transition from one field subtype to another occurs in time or space. The number of these subtypes is limited to 12. Individual subtypes are defined as phases.

Prenatal period - The period of life from conception to birth, and the postnatal period, correspondingly, from birth to death.

Prognosis - Predictions of the further development of the disorder.

Psychophysical dualism - A philosophical view that there are two types of material substance in the world: one associated with the body and the other, more ephemeral, associated with the contents of the mind. This is one of the solutions to the psychophysical dilemma, popularized in modern times by Descartes.

Psychosis - A mental state characterized by a profound disturbance in the understanding of reality, thoughts, and emotions.

Psychostimulants - Chemical substances that increase psychomotor activity, e.g., amphetamine, cocaine, ephedrine.

Reanalysis - A reconsideration of experimental data scattered throughout the world's scientific literature from the perspective of new paradigms.

Receptor agonist - A chemical that binds to an additional site on a neural receptor and causes it to become more sensitive to a neurotransmitter. This makes the neural pathway more active.

Receptor antagonist - A chemical substance that binds strongly to the primary binding site of a neurotransmitter on a receptor, preventing its binding and preventing the transmission of nerve signals.

Receptor inhibition - Inhibition or complete blocking of receptor activity

Receptor level - A term generally corresponding to concentration. Concentration, however, applies to solutions, while receptors are located in cell membranes and generally organized structures for which the term concentration is not adequate.

Remission - A temporary cessation or inhibition of disease symptoms.

Reuptake (reabsorption) - One of the methods of deactivating a neurotransmitter during neural transmission, involving its reabsorption in the synaptic cleft by the presynaptic neuron, which reduces the amount of neurotransmitter reaching the receptors of the postsynaptic neuron.

Somatic - Pertaining to the body.

Synapse - A narrow gap between two nerve cells where communication between the two occurs. From synaptic vesicles containing a specific neurotransmitter, located near the membrane of one cell, this neurotransmitter is released into the synaptic space and migrates spontaneously to specific receptors for that neurotransmitter located in the membrane of the other cell (Figure 3). Because this space is open, the neurotransmitter can also migrate to further brain regions, exerting a diffuse effect on distant receptors.

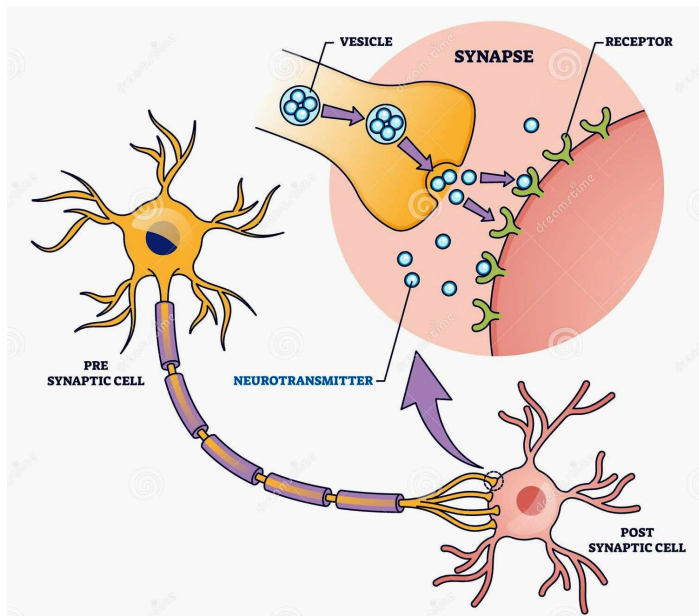


Figure 3. Neuronal connection - synapse³

Teratogen - A factor from the external environment that disrupts the development of an embryo or fetus. It can cause congenital defects in children. Teratogens include radioactive radiation, chemicals, and infections.

Tetrad - A set of four elements; in this book, it refers to the existence of three specific groups containing four categories each.

The Earth's twelve-phase torsion field (new term) - A characteristic field surrounding the Earth, forming a two-dimensional (on a sphere) duodecimal fractal. (→ planetary torsion fields).

Torsion field - An elementary field associated with spin, a fundamental property of matter. This is a long-range field dependent on the mass of a body and has nothing to do with electromagnetic fields. Given the multiple theoretical and research approaches, generally one refers to torsion fields. The most well-known interpretation is that of Cartan and Ricci.

A torsion field is a spin field; it does not transfer energy, but only information – in the sense that it can influence, for example, the direction of a particle's momentum (which does not require a change in energy, as occurs in diffraction, for example), particularly by affecting its spin. These fields can, among other things, influence metallurgical processes, cause biological changes in living organisms, and are sometimes associated with the subjective content of consciousness.

The existence of such fields was predicted by Heaviside as early as 1880. Serious theoretical work was presented by E. Cartan in 1913. In 1918, Lense and Thirring derived this field from general relativity, taking into account relativistic effects. However, the greatest contributions have been made in the last twenty years. One of the leading contemporary theorists working on these fields is Gennady Shipov.

We can find a wealth of information about this modern field of knowledge online, patiently bypassing worthless texts and searching under the terms: torsion fields (English, 7,660 websites, via Google), торсионные поля (Russian, 64,700 pages), pola torsyjne (Polish, 272 pages) . It's best to avoid Polish websites to avoid being appalled by the Poles' parochial, middle-school level of knowledge. Information about torsion fields also appears under the terms: axion field, spin field, spinor field, gravitomagnetic field. Much valuable information can be found at:

<http://www.spinfields.hut2.ru/ALMANACH/Almanach.htm>

<http://www.shipov.com/science.html>

Transcription promoter - A site on DNA within a specific gene to which a specific protein (a transcription factor) binds, regulating the level of gene expression.

Transgenic mouse - A mouse with foreign genes inserted into its genome.

Undefined terms (new term) - Terms that pose significant definitional challenges due to varying individual approaches from the perspective of values assigned to different Categories.

Xenobiotic - A chemical substance found in the body that is neither produced by the body nor normally ingested with food. This definition includes substances foreign to the body, including most poisons and drugs.

Image Sources:

1. <http://flickr.com/photos/22784481@N05/2357175805/>

2. http://www.rsc.org/delivery/_ArticleLinking/DisplayHTMLArticleforfree.cfm?JournalCode=C&Year=2006&ManuscriptID=b517771p&Iss=10

3. <https://www.dreamstime.com/neurotransmitter-process-synapse-vesicle-receptors-outline-diagram-neurotransmitter-process-synapse-vesicle-image272846778>