Institute of Practical Psychophysics

QUANTUM-CORRELATIONAL INTERACTIONS IN PSYCHOPHYSICAL SYSTEMS

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This booklet contains an unusual representation of the quantum correlational, i.e. hidden informational interactions. It has a reference to particular engineering solutions and experimental results. The booklet may be of interest to the specialists involved in the research of the energy informational exchanges between complex objects, as well as to medical workers, psychologists, para psychologists, and bioenergetics physicians.

Preface

The book offered to the reader deals with the information phenomenon. What does that mean? The last years history saw a plenty of facts indicating that Nature is aware of the means of information exchange far more economical as than those that can be fitted into the frames of the up-to-date scientific concepts.

There is hardly a field of knowledge that could avoid considering the information phenomenon that concerns practically every aspect of life, without prejudice to itself. Some scientists are studying this problem trying to understand the nature of such phenomena as clairvoyance, telepathy and bioenergetic effect on a human being, so far considered to be inexplicable in terms of the rational science. However, some techniques to control these processes were mastered long ago by the mystic teachings widespread chiefly in the East. Alongside with some scientific facts available, this gives grounds to admit the existence of some other uncomprehended reserves of information exchange, an obscure quantum-correlational interaction inherent to the objects of both organic and inorganic nature. This could be the reason why some exact scientists arrive at the conclusion that information is one of the most important properties of the matter around us and can even trace a relationship between quantum mechanics and the mystic oriental teachings.

The author's opinion of this problem has resulted from the efforts to correlate certain sometimes paradoxical findings of the research on information interactions between both technical objects and people, obtained by means of the metatron device, with scientific notions. These efforts helped conduct the research according to the elaborately devised scheme and also revealed some new relationship patterns that bring about new ideas. So the scientific understanding of the problem still remains discussional in many respects. This, however, diminish neither the reliability of the presented data nor the effectiveness of practical guidelines.

The novelty of the problem prompted the authors to touch upon very diverse aspects of the subject – from methodology to technology. The three introductory sections of the book set forth a notion of the quantum-correlational information interaction and provide a description of the method and research techniques of this interaction. Section 4 deals with some practical applications of the proposed method opening up new opportunities for the information interaction research.

Introduction

The potentials of the information processing methods based on classical concepts and widely practiced in many fields are still far from arriving at one's finger-tips. However, there is some evidence that their theoretical foundation is not universal since it is unable to explain all the facts of mutual influence of natural processes and subs. This gives reason to suggest a hidden information interaction inherent in natural processes but not so far used consciously. Many authors address the subject of a natural though extramental 'communication channel'. In particular the neutrino fluxes are considered as able to act as a physical information carrier. Another hypothesis assumes a possibility of information transfer by an electromagnetic field without energy transfer involved. This is the problem this book deals with.

The quantum-correlational relationship is considered possible on account of the vector potential of A field affecting the particle quantum phases irrespective of B magnetic vector. Far back in 1956 the physicists Aaronov and Bohm suggested verifying the effect in the absence of the field in its classical interpretation , i.e.. where 'B' vector equals zero. The experimental verification of the effect was interpreted as a triumph of quantum mechanics, so today the foundational possibility of quantum-correlational interaction is no longer disputed. Nowadays the notion of what is usually called a biofield is related to this fundamental discovery. However, so far the prevailing opinion was that this information could not be recorded by means of the existent technology. The authors are hopeful that the materials they present herein will help reconsider this opinion.

Let as trace briefly the chronology of the problem. It is not for the first year that the idea of going beyond the frames of classical information concept has become pertinent. Thus, for example, over twenty-five years ago it was noted, that "… many scientists, including D. Bohm, are trying to explain the mechanisms of the human 'self' by means of wave or 'psi' functions which contain all information on the quantum-mechanical objects. Back in 1980 professor S.P. Nesterov first surmised that the quantum nature of the micro particles impacts the information processes in biological subs."

Somewhat later some articles were published in the US on psychophysical research in which the nature of biological information processes was hypothetically linked with the quantum properties of the field. Some ten years ago it was suggested to use the methods of electronic 'psi' holography in order to draw out information processes on the level of longitudinal waves of the 'A' field vector potential. Even a brief account of the publications displays a public growing interest to the information phenomenon problem.

What could be a hindrance to understanding and use of quantum properties of the carrier in the information interactions? The thing is that the established notions of information interactions, widespread mostly with reference to the low-frequency signals, may not consider special features of the information carriers known to quantum physics. Interfacing a number of basic notions of signals and algorithms of their processing in some interbranch field of these disciplines, with these special features may be fruitful. This kind of specific field can be called 'information psychophysics'. The conducted experiments showed that the existing dissociation between these fields of knowledge often led to an irretrievable loss of information resulting in its deficiency very difficult or impossible to make up in terms of classical science. Going beyond the frames of classical notions in solving information problems appears possible subject we assume that the observable characteristics depend on an interaction between the charges and the field which in principle cannot be observed directly and yet, in turn, can act as a transfer agent of the so called hidden information. Based on this assumption it is quite logical to proceed from the principle of superposition underlying the theory of entropy logic, i.e. "composition (and actually any combination of wave functions)(probability amplitudes but not squared wave function probabilities) vitally differentiates the theory of nonlinear logic from any classical static theory (including the well-known information theories) in which the theorem of probability addition is correct for independent events. By virtue of this peculiarity the theory of entropy logic reflects the dependence of diffraction and interference pictures of micro particles on change in their quantum phase. This very feature is responsible for a discrete set of quantum states of electrons in the atom. The fact was reflected in Fermi-Dirac statistics with reference to information processing in particular in its system method."

There are various devices in which the flux of free charges is controlled by a field. Among them the metatron (a non-linear quantum converter of analog signals) stands out due at least to one essential distinguishing feature – the design of a trigger sensor which allows detecting spatial distribution of micro particles with a changing entropy potential. That was also leveraged in Edward Creek's experiment, with a different sensor design though. The difference between these solutions coming from the subtleties of the research on quantum-correlational interaction is in general of minor importance. A definitely new and at the same time essential quality is what makes both of these solutions have in common, i.e., the possibility of spatial differentiation of the structure of a free particle flux with changing entropy potential which is associated with a possibility of releasing hidden information. Interestingly that both of the compared solutions were found out independently and actually concurrently in different countries.

It should be noted that it is hardly possible so far to judge definitely which design features of the metatron can be considered as secondary ones. This device is still an enigma, sort of a 'black box' in many respects. Not just because the 'surgical intervention' in its operation for its study on the by-the-element basis appears to be difficult from the design point of view. This study should also be very cautious because you can not leave out the fact, that according to the indeterminacy principle, an act of observing might interfere with the wave qualities of particles which are of vital importance to hidden information transfer.

Section 1 sets out generally accepted notions that certain limitations are admissible and yet not quite noticeable in classical approaches, yet at the same time it interferes with the understanding of quantum-correlational information exchange. The possibility of a broader interpretation of these notions is deal with within the framework of the entropy logic theory .

Section 2 deals with a phenomenological model of the hidden information isolation. Within the framework of the model, a possibility of converting the quantum-correlational attributes of the initial signal as the dependence of the output energy value of the metatron. Based on the model, one of the experiments is analyzed on which example it was possible to make a quantitative estimate of the share of the quantum-correlational component in information change.

Section 3 deals with some special features of hidden information isolation from the signal by means of the metatron.

Section 4 sets out some possibilities of using metatron-based telemetric equipment to assess the wave impact (both technogenic and biological) on human being which is uncontrollable by the existing methods.

SECTION 1

APPROACH TO THE INFORMATION PHENOMENON STUDY

1.1. Acknowledgement of information phenomenon

"We know there is something we don't know".

The peculiarity of information transfer (as apposed to energy transfer) is known to consist in the use of a number of the attributes non-dependent on the common level of the transferred energy and at the same time giving the signal an additional information nuance. The following features can be referred to the known information attributes, for example, distribution of the oscillation energy of the information carrier by frequency and, if a field acts as the carrier, in spatial coordinates as well. These attributes related to natural properties of information carriers increase the variety of information interactions and reduce the level of energy exchange that accompanies them. The mentioned peculiarity inherent to some extent to all information systems reached a phenomenal level in biological systems. When considering the so-called 'quasi-equilibrium states' associated with 'living, thinking and all the other organic processes', N. Wiener arrived at the conclusion that a 'relatively weak energy exchange between the system and the environment, but a relatively better information communication' are typical for them. The above can be primarily referred to the brain. It is known that the "brain is able to perform complicated tasks faster than high-speed computers, let alone problems that only the brain can solve. All that is despite of the fact that neurons can switch a million times slower than modern transistors and as many times slower than electromagnetic signals do pulses propagate in the nerve filaments."

The fact that the information phenomenon of biological systems has not been given a comprehensive explanation yet, within the framework of known notions, can be regarded as an indirect evidence that some still unknown information reserves of matter can be realized in animate nature. The research work that has been done by both home and foreign scientists over the last few years speaks in favor of this supposition. In other words, more and more obviously stand out indications of a problem situation characterized by the 'formula': "we know that there is something we don't know."

A natural question here is based on what assumptions admitted by laws of nature is it possible to go beyond the frames of known facts about information transfer and processing? Quite often handling this kind of a problem situation is difficult because when examining new suppositions we use the criteria of existence determined not so much by objective laws but rather by their comprehension within the framework of established concepts, which do not offer an explanation for the new facts. So a vicious circle is formed and in order to break it one needs to choose criteria which must conform to the accepted laws and yet be free from established stereotyped notions. The difficulty in overcoming the latter of these notions lies in the fact that their correctness has been confirmed by long-time practice and therefore is not to be doubted, and the fact that the prevalent practice does not make use of all the opportunities provided by Nature, is acknowledged with reluctance. For example, the following concepts of information processing signals and processes have been formed.

1.2. In a vicious circle of classical concepts

Commonly a signal means "… a physical process that carries information" and also "… a value that in a way expresses the state of a physical system." The signal is regarded " as a result of some measurements made about the physical system in the course of its study." According to the information-energy theory, "information transfer and hence measurements are impossible unless there is an energy exchange between the measuring device and the object to be measured." And at length, "the rules by which information is translated are called a translation algorithm (for example, any mathematical formula can be an algorithm)."

In connection with these and similar definition we would like to dwell on the following points. The definitions of the signal concept impose no limitations on the properties of the physical value that characterizes it. However, from some other cited definitions and accepted rules of signal processing it follows that this value is experimentally measurable and can be expressed by a material number despite of the known existence of both complex and experimentally immeasurable physical values which will be shown below.

Thus, one subconsciously identifies its somewhat limited understanding (stereotype) with a strict and more general definition of a signal resulting from historically restricted experience. It is associated with a more limited idea of a measuring process according to which the response of the instrument measuring a physical value is considered to be equivalent to the energy transmitted to the instrument by the information carrier (object of measurement). Accordingly, the above mentioned attributes of the signal are also regarded as energy distribution in different coordinates although it is known that any motion (including that of the most common natural information carriers, which are charges and field) is more completely characterized by energy-pulse, and the law of conservation of energy is regarded as a scalar component of the more general law of conservation of energy-pulse. Holography has already overcome the energy hurdle which resulted in a sharp increase in information with this type of recording (as opposed to the energy mode of producing images, which is photography). However, the information technologies that have mastered the low-frequency band do not consider the wave nature of charges and field which is expressed in the fundamental four-dimensional form of Maxwell's equations. Speaking figuratively, the information concepts have frozen on a photography level in this range. It's a possibility that access to non-energy components of low-frequency signals will allow rendering some qualities of a hologram to the information obtained.

The supposition about the signal having a complex and experimentally immeasurable parameters makes the assertion that an algorithm is identical to any mathematical formula sound less conclusive. At least it seems reasonable to differentiate between two classes of algorithms (and models) – functional and analytical. The first class includes algorithms and models that in a real-life environment can be substituted for the processes they describe while the second class includes the ones that are not fit for this kind of substitution. The point in this distinction can be explained by means of a very simple example. The well known mathematical model of light decomposition can be used as an analytical algorithm to calculate, say, prism parameters. However, it cannot be used as a basis for creating a functional algorithm substituting for a real prism, because while determining the initial data required for the algorithm the wave structure of light underlying the model would be inevitably leveled down. The prism itself can be regarded as a functional physical model of a drop of water.

1.3. Assumped formal similarity of quantum-correlational information

Let us assume that quantum-correlational information transfer is formally similar to such a characteristic as quantity of motion (pulse) which is not perceivable on the energy level. The assumption will help recognizing accessibility of perception by a derivative form in order to describe the peculiarities of the processes under study by means of a phenomenological model. Confining ourselves to a formal similarity, we will not define specifically the physical nature of the carrier. Let us conventionally designate it by a symbol frequently used to define a charge. Then the energy information about any object existing in real space-time will be completely determined through function of time derivative defined in the coordinates of this space:

$$\frac{dQ}{dt} = \Phi(x, y, z, t)$$

In this context, the perceivable information parameter is represented by a scalar, if Q is an electric charge, then the information parameter is a field density, voltage or some other energy characteristic. With any physical carrier the energy information parameter is an experimentally measurable material value.

Proceeding from the accepted assumption, one can get more comprehensive information about the state of the very same object:

$$\overline{\nabla}_{\mu} Q = \Phi(x, y, z, t) .$$

In this case the information parameter is represented by a four-dimensional vector, or 4-vector. If Q is an electric charge, then the three-dimensional spatial component of this vector is similar to current density known from electrodynamics and the energy component (derivative in time) is similar to the electric current intensity.

The quantum-correlational information parameters are experimentally immeasurable complex values. The same form of the second members reflects limiting case for both variants and means that the field of the function description is not regarded as a characterizing attribute of the phenomenon. Each of the two types of information parameters can be perceived as a function of both space and time. For instance, in a conventional electromagnetic field whose modulation law has been determined as a function of time, the energy component is always measured, and the quantum-correlational one is latently present but still not measured. This equally applies to the electric parameters of a distributed object which are regarded as functions of spatial coordinates (for example, extended circuits and boundary-value problems).

It is the first member of the above-given expressions that brings into focus the most essential, in the authors' opinion, distinction between the two alternative concepts of the information exchange. The first one is generally acknowledged and has been successfully applied in many fields. The second one opens up new quality opportunities but yet reflects the views shared by a limited number of researchers. It has been backed up by indirect evidence alone which is in part represented in this book.

Let us see how far acceptable the admitted assumption can be, considering some known properties of the information propagation medium. It is certainly most vulnerable w.r.t. dense medium and electric circuit in particular. In that medium it is easy to keep track of energy distribution in frequency but not in spatial coordinates where the energy distribution is negligible, especially in cross section.

In principle, classical electrodynamics admits differentiation of current in the electric circuit in spatial coordinates, i.e. with current density vector taken into account.

It is related to current strength 'J' by the relation:

$$i = \int_S \bar{J} \cdot \bar{n} \cdot ds,$$

where: S – is the surface the current runs through;
ds – is a surface element;
n – is a unit normal vector to 'ds'.

The scalar product of vectors in the expression under the integral sign does not reflect information on their directions as single-valued. Therefore the attribute space of 'i' parameter can be regarded as a degenerate space of 'J' attributes. The phenomenological dependence does not draw out the physical nature of 'J' space. The only thing known about the current in a disordered medium is that its nature is associated with the interaction between the charges and the magnetic field on an animalcular level.

The idea that 'J' density vector is of no practical importance to the electric circuit is based on the following considerations. The consideration of a wave nature of the signal for which the propagation medium could be regarded as a sort of waveguide shows that the wavelength-waveguide geometric dimension ratio reaches ten or more orders in the frequency band of electromagnetic signals. The signal oscillation period, which is charge relaxation time ratio in the conducting medium, is characterized by about the same orders. Though these considerations do not rule out the existence of 'J' parameter as objective reality, they at least reduce to zero the practical importance of its differences from 'i' parameter during information transfer.

Nevertheless, it is known that the complete description of the charge system's state can be given by a complex value of probability amplitude (wave function) accepted by quantum mechanics and entered into the expression for a field density vector. In prof. U.N. Demkov's opinion, the additional degrees of freedom of the signal can most likely be related to those electromagnetic radiation properties that are reflected in concepts of a quantum phase rather than those of 'J' field density. In this connection the signal should be considered as a complex time function. This kind of interpretation of hidden information raises a question about the possibility to maintain the quantum phase in a disordered medium. The currently known bounds for its maintenance are insignificant. Only the results of the recent experimental research done with interference phenomena taken into account, proved that the quantum phase continued at the distances that exceeded the electron free path length in the medium by many orders. These results are undoubtedly important because they showed that as a matter of fact it appeared possible to overcome the animalcular 'barrier' in a disordered medium which had long been considered to be insurmountable because of limited technical feasibilities available for research into internal fields. However, the subject brought up here, actually raises a question about the possibility to maintain the quantum phase within the macroscopic bounds. Moreover, it necessitates finding out the possibility to use it for information transfer.

This appraisal seamed to help formulating a concept that only carrier energy could spread over distances practically significant for information transfer in a disordered medium, while the spatial component of the carrier motion, characterized by a pulse dies down near the excitation source or inevitably dissipates. This kind of appraisal reasons against the supposition that quantum-correlational information can possibly be transferred in the electric circuit. If these reasons are to be considered as an objective criterion for the presence of hidden information in the electromagnetic signal, then the assumption presented in the formula above should be recognized as contradictory to laws of nature. As like as not, however, that the accepted appraisal has resulted from the as-yet-unsubdued or possibly unsuspected general methodological narrowness of the existing approaches to measurements. If this is the case, then which of them should be revised or verified?

There are numerous instances showing how the idea of what is really important and what is, not changes depending on the level of development of methods and means of perception and thus confirming the main notions of dialectics about the profound infiniteness of matter and transition from quantity to quality and vice versa. An example of this can be the above-mentioned expansion by many orders of the bounds of quantum phase maintenance in the medium, providing the interference phenomena are taken into account. Let us consider how far objective the established concepts are as criteria of existence.

1.4. Unobtainable signal parameters

It should be taken into consideration that $\bar{J}$ field, like any other internal fields in the media, is experimentally immeasurable. This is accounted for by the fact that the macroscopic nature of existing methods of field measurement runs counter to the animalcular nature of interaction between charges and the field in a medium. According to E. Parcell, "it is not possible to give an explanation for an animalcular process in progress based on macroscopic measurements alone." So, despite the fact that many important characteristics and properties of internal fields (including those reflecting their quantum nature) are found by means of macroscopic measurements, the values themselves measured this way are actually not homeomorphous to the states of the internal field. Consequently, a property of internal fields comes to light which, at first sight, seems paradoxical. It consists in a contradiction between the possibility of defining internal fields macroscopically by classical electrodynamics equations and infeasibility of using macroscopic methods of measurement to identify their states as single-valued.

However, the observed 'paradox' is in conformity with the existing measurements of 'J' vector which characterizes quantity of motion of charges and the field (a spatial component of energy-pulse) in classical electrodynamics, which would mean a violation of the above-mentioned rule of information-energy theory under which the response of a measuring instrument should be equivalent to the energy passed to it by the information carrier (scalar component of energy-pulse). Besides, the possibility of measuring a complex value (probability amplitude) would also contradict to the rule of quantum mechanics saying that only an actual value (probability) equal to the squared complex amplitude and unequivocally reflecting its change can be measured. Actually that means that no technical improvements (including utmost miniaturization of sensors) can bring about a qualitative change in this rule, if you should stick to the accepted macroscopic methodology of measurement. The inevitable loss of information about the state of the internal field can not be replenished by means of calculations since the boundary-value problems do not have a common analytical solution and can be solved by approximate numerical methods only. The observed limitations apparently helped to formulate a concept of an electric signal in the circuit as a real-valued (scalar) function of space and time coordinates.

Yet it would be illogical to assume that the difficulty in perceiving objectively existing changes in internal fields by means of some known techniques could be a sufficient argument to deny any role of these fields in information processes. Revealing the role of these fields is not excluded if the quantum-correlational interaction is meant to be used on an animalcular level. Let us assume the conditions of indirect check-up as a criterion of existence of 'immeasurable' information parameter $\bar{V}$□ $\bar{Q}$, which establishes a fact of reception of the information unobservable by the existing energy methods. Let us assign the symbol $\bar{Q}$ to this information parameter for brevity sake.

1.5. Isolation of hidden information without algorithms

Considering the fact that the $\bar{Q}$ parameter is a complex value, it appears appropriate giving up attempts (at least up to current conceptual level) to describe the $\bar{Q}$ space in an overt way, i.e. as a set of material values and also discriminate between the process of measurement and that of signal processing. Processing of experimentally immeasurable values is conceptually feasible as a unified inseparable process. The impossibility of algorithmic processing of the $\bar{Q}$ space is accounted for not by lack of mathematical description, but by the infeasibility to measure initial data which are complex values. (Mind the above-cited example of light decomposition).

This quality makes the difference between the isolation of hidden information and the processing of energy signals represented by material values. To process them with a functional algorithm it is sufficient for the information to be stored in the signal with the latter being limited in spectrum. According to

Kotelnikov's theorem, it will allow quantizing the signal and single out a span of time sufficient for the required calculations. With the improvement of the technology the volume and velocity of calculations increase and the scope of controlled processes expands. However, as a consequence from the above, this way of improving signal processing does not solve the problem of quantum-correlational information reception. Although a rational combination of both directions to present the final result in a user-friendly form is not precluded. The supposition of the impossibility to reduce information transformation in the $\bar{Q}$ space to algorithmic procedures is quite often perceived as contradictory to the materialistic thesis on cognoscibility of natural phenomena. It should be stressed that this irreducibility concerns functional algorithms, i.e. transformations in a real information process. The apparent limitations do not by any means apply to analytical models and algorithms in which the process of cognition is realized. Let us take a very simple example to explain this. By means of up-to-date methods of analysis complicate objects can be more comprehensively perceived through models than naturally. A car model is an example of this. The only drawback of such a model is that you cannot drive in it anywhere. Using the terms accepted here, one can say that the algorithmic model of a car can be analytical but not functional. This is generally acknowledged as the real state of things. In any case, such a traditional way of cognition as physical modeling should not be ruled out. Closing the issue concerning philosophical doubts it can be noted that the quantum-correlational approach to the retrieval of information is limited as compared to the conventional ones only as regards those, if you will, exclusive advantages that make it possible to quantize them according to the theory of quantum-entropy logic.

Admitting the existence of information interactions beyond the bounds of perception (at least of the kind that is accessible within the frames of up-to-date measurement methodology) we actually refer the space of description of the $\bar{Q}$ information parameter to things in themselves. The progress of quantum entropy logic has practically demonstrated that the assumption on the existence of such a 'thing in itself' as probability amplitude (wave function) proved to be productive. Understanding the nature of quantum-correlational information would help perceiving the role of things in themselves in real information processes.

1.6. How to find a way from the 'vicious circle' without breaking basic prohibition

With all the above-stated points considered let us consider the metatron as a functional physical model of a natural process of information isolation (by analogy with a prism 'modeling' decomposition of light in a drop of water). Techniques of information processing not associated with an obvious concept of the $\bar{Q}$ attribute space should be used in this kind of model. In this connection the idea of a black box specifically implemented in the structure of the metatron appears to be attractive. As compared to rigid algorithmic procedures this idea seems advantageous thanks to the possibility to implement a flexible structure of signal processing that has qualities more intrinsic to natural information systems (remember that metatron was conceived as a model of the brain). This principle also allows realizing adaptive decision rules, which are discriminant functions in a non-evident attribute space. However, the observed advantages cannot be fully made use of within the framework of the existing (macroscopic) concepts of the attribute space.

As regards the discriminant function, it is known that its optimization in the signal attributes space allows obtaining values of an output function parameter (a functional), which grouping will best reflect the information transferred by the signal. For using this quality of the discriminant function in the unobservable $\bar{Q}$ space it is very essential that the optimization be performed as per indirect attributes.

As a prototype for the unobservable discriminant function in the space of complex values, the Aaronov-Bohm's experimental design can be used. On the basis of this experiment R. Feinman illustrates the definition of the uncertainty principle different from Heisenberg's and actually equivalent to it: "it is not possible to design an instrument by means of which one could determine through which aperture the electron is likely to pass without changing its motion so much as to destroy the interference pattern." According to the theory of quantum entropy logic, the interference pattern is the result of superposition of probability amplitudes in which the directly unobservable information about their change is encoded. Indirect access to this information is made available by increasing the entropy potential of the detector as in the case of the experiment described by T. Van Howen and E. Creek. The value of the entropy potential at the detector output will be functional reflecting information on the change in the space of complex values. Thus, without breaking the basic ban one can obtain an indirect access to hidden information.

The presented version of the quantum-correlational function is subject to the rule that can be formulated this way: what is done is measuring the result of superposition instead of superposing the results of the measurements. The observance of this rule quite often gives advantages as compared to the reverse order of action and conventional techniques of measurement. Also, it is known that the directional reception by a frame antenna is far more efficient than processing of measurement results using several isotropic antennas. The difference is that in conventional measurements it is a matter of quantitative advantages and in the presented case it is a matter of receiving information in a qualitatively different attribute space. The fact that information about the state of the attribute space is reflected on a more limited integral characteristic of the functional is not always essential (especially when the final solution is more important than intermediate values). This limitation should apparently be recognized as an inevitable compensation for the possibility of at least indirect control of hidden information. It is quite justified with such information-related tasks performed by the metatron as image recognition, classification and diagnosis.

1.7. Exit by means of 'intermediary'

The realization of the discriminant function in the space of hidden information is possible if an information intermediary in the form of a beam of slow elementary particles is involved in the process of signal transformation. The mapping of the $\bar{Q}$ space over the characteristics of the free electrons of the beam allows obtaining a discriminant function in the $\bar{Q}$ space by means of a nonlinear bipolar conversion on the detector. The functional formed with this generation taken into account will be presented in the following form:

$$I \square \varphi \square \bar{Q} \square\square$$

Assuming that the suggested mechanism of the discriminant function makes it possible to obtain information about the ' $\bar{Q}$ ' space without ruining the interference picture, we have reasons to expect the attributes of experimentally immeasurable hidden information to manifest themselves in the change of Functional I. The following section of this book will deal with the conditions of isolation of hidden information by means of nonlinear conversion in the ' $\bar{Q}$ ' vector space.

Let us consider two particular consequences of the formula given above.

The first one is determined by the degeneration of $\bar{Q}$ which leads to a conventional form of signal transformation. Indeed, the direction of motion of all $\bar{Q}$ charges coincides, and of all $\bar{Q}$ components only one is left i=dQ/dt. The functional gets simplified: $I_{\square}\square\varphi_{\square}\square i\square$, and the states of the beam and detector current are determined by 'i' scalar value (the "0" index marks characteristics of the degenerate transformation).

In the metatron the degenerate transformation $I_{\square}\square\varphi_{\square}\square i\square$ has the form of a multi-extreme nonlinear function. The discriminant functions of this kind in the attribute space of the 'i' scalar parameter are classified as hyper planes which are known to have the minimum resolution. According to the experiment findings, the degeneration occurs only with certain limitations imposed on the control mode and without the limitations the efficiency is in multiple excess of the efficiency of the degenerate transformation. The degeneration into a form of nonlinear transformation of the scalar values shows that the information interaction in the $\bar{Q}$ space represents a general form of signal transformation as compared to the known one and meets the correspondence principle.

The second consequence allows to draw out a very important peculiarity of the process under consideration, which is the possibility to reflect $\bar{Q}$ changes in the 'I' functional, not reflected in 'i' changes. This allowed to draw out a possibility to receive information signals by conductive circuits, which can be regarded as proof of substantiality of the quantum-correlational interaction.

1.8. "Form factor" beyond the energy threshold?

Is hidden information transfer possible outside the internal fields? Let us recall the Aaronov/Bohm's experiment which showed the vital role of $\bar{A}$ field vector potential for quantum-correlational transfer of information. The direct connection between $\bar{A}$ and the wave nature of charges is leveraged in the 4-dimensional differential representation of Maxwell's classical electrodynamics:

$$\overline{Q}^{2}\,\overline{A_{\square}}\;\square\;\overline{J_{\square}}\,|\,\varepsilon_0,\;\overline{\nabla_{\square}J_{\square}}\;\square\;0$$

It is known that the "equation for the photon wave function is similar to Schredinger's equation for the electron. The photon equation just coincides with

Maxwell's equations for the electromagnetic field, and the wave function coincides with the $\bar{A}$ vector potential.

At the same time the scalar characteristics of current, that are directly observable in the circuit, are determined not by integral rather than differential dependence on the field intensity which follows from Maxwell's fundamental equations as a particular consequence. Thus, it can not be closed out that a portion of the information contained in the external field will remain hidden from the observer or, speaking figuratively, "locked" inside the conductor for the reason stated above.

This scalar threshold set in the circuits of measuring instruments maps out a form factor, quite essential in the conditions of a long-range action. Overcoming this threshold by means of the suggested method can be expected to more fully control information content of the signals in the long-range action conditions.

The recent years saw an increasing interest in the torsion fields (TF) related to spatial orientation of the elementary charge spins. Based on the TF concept scientists study such phenomena as long-range action, anomalous manifestations of the form factor and memory in different media and the effect of TF on the hardware and subjects of animate nature. The essence of TF grows out of the frames of macro concepts of energy-information exchange. It is not to be ruled out that the approach to detecting hidden information dealt with in this context can be effective for the research on TF sources.

1.9. A few words about the tactics of phenomenon detection

The inevitability of the phenomenological approach to the research of new phenomena predetermines the tactics of the experiment which should not be aimed at the quantitative comparison of the result to some theory-based calculations but rather try to find out whether the phenomenon exists or not.

A probability assessment of the results can give an answer to this question. The assessment is based on such an arrangement of the experiment that as far as possible excludes the probability of random combinations of evidence which could be interpreted as a proof of the phenomenon's existence. With reference to information experiments, as a criterion for the phenomenon existence one can adopt the difference between incoming information distribution and normal distribution which, as a rule, characterizes natural processes not determined by conscious organization. These conditions are assumed in the arrangement of the experiments described in this book, aiming to draw out dependence of the state of a human being on the information interactions and fields.

1.10. Conclusions

Based on the above it is assumed that the information interaction is most fully characterized by vector parameters rather than scalar (energy) parameters. The part of information that cannot be traced in the changing scalar parameters is regarded as quantum-correlational (hidden) information. This assumption is not contradictive to the known laws and conforms to T. Van Howen's theory of entropy logic.

SECTION 2

INFORMATION WEIGHT
OF HIDDEN INFORMATION COMPONENT

"...the greater part of most important physical phenomena is not known to us for we pass through them too fast to be able to record them."

2.1. A boundary problem example

To avoid N. Wiener's, "passing through a physical phenomenon too 'fast'" we will consider the neighborhood of every step in exploring such an important phenomenon as signal. Let us assume that the most comprehensive representation of information reserves leveraged in a signal by nature can be obtained by applying mathematical physics apparatus to the differential characteristic of the Q signal that we picked up for the above-stated reasons.

Despite of the fact that the impact of the so-called form factor on the information transfer is determined not so much by what the transferred information is about, i.e. the format in its strict sense (a two – or three-dimensional image) or a one-dimensional time function, it is more appropriate to study the $\bar{Q}$ space properties in the context of transfer of information on the shape or form or the image. Considering the accepted assumption about the conservation of initial information, it will allow to describe and standardize the state of the unknown $\bar{Q}$ attribute space in terms and parameters of a two-dimensional readily formalizable image.

There is no doubt that quantitative assessments obtained as a result of this analysis can be fully referred to the discussed scheme above only. Summarizing the results of the phenomenon calculation as a whole only their qualitative aspect can be referred to. However, considering that it should be borne in mind that, no general solution to the boundary problem, meeting any boundary conditions, exists, as is generally known. So even the qualitative concept of the processes conditioned by the phenomenon nature is interesting since it allows to at least roughly assess the information reserve of the hidden parameter and draw out the conditions of its presentation in the energy signal.

2.2. Form factor in a signal differential model

The quantitative comparison between the reserves of information parameters '$\bar{Q}$' and 'i' can be more spectacular and accurate, if instead of taking an exotic example of a field effect on a human being, we take a technically feasible though non-reproducible accurately mechanism of signal formation at image scanning which is apparently similar to the widespread techniques in television and facsimile communication. Scanning as a way to describe the phenomenon was not chosen accidentally. It is just the introduction of scanning paths that allows to relate the coordinates of space and time in a manner allowing to analyze the model with the essential characteristics of the phenomenon in the signal remaining intact, with the results expressed in a comparatively accessible and intelligible form. Particular limitations concomitant to concrete schemes are of no vital importance.

Let us assume that the image is represented by distribution of field energy (ϑ light flux) over the sensor's surface:

$$\vartheta = \vartheta(x, y)$$

where 'x' and 'y' are coordinates on the image surface. The information on the image is converted to electric current which scalar characteristic ('i' current strength) is well-known to be proportionate to the value of 'ϑ' light flux:

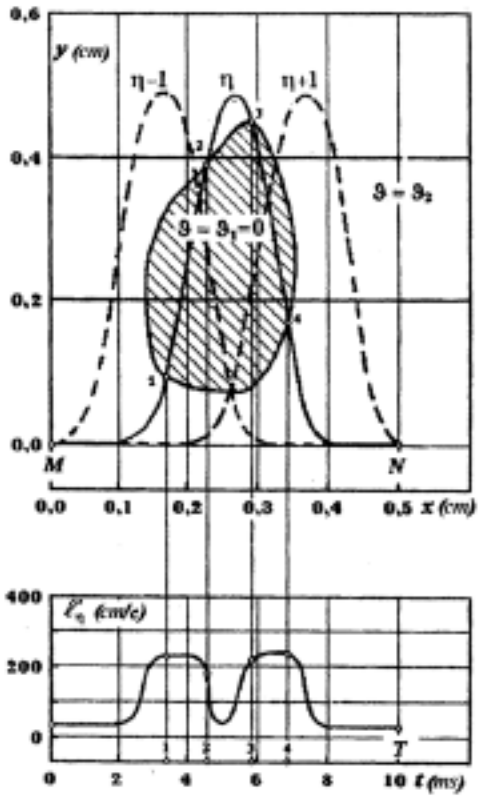
$$i = k\vartheta.$$

The order of scanning the image surface is assigned by a set of paths:

$$y = Y\eta(x),$$

where x=X(t). Fig.2.1.

The image $\vartheta = \vartheta$ (x,y) illustrating the scanning paths and l'_η (t) function determining the dependence on time of the scanning rate module over the η-th trajectory.



Each path has its own ordinal number η. All the paths have a common initial (M) and final (N) points and have the properties of continuity of derivatives and reciprocally simple representation in their projections on X-axis and 't' time in the $0\leq t\leq T$ interval. At the M point t=0, and at the N point t=0 (Fig.2.1). The difference between the paths is an extreme point shift along X-axis for a constant value. The function is linear from 0 to T.

It is a common opinion that scanning along the path forms these functions: $\vartheta(t)$ and hence i(t). The latter, with the grid of paths fixed in x,y coordinates, transmits information about the distribution, i. e. about the image, with a preset resolution.

The scalar information parameters are represented in this scheme by 'ϑ ' and 'i' values which characterize the light flux energy on the surface of the sensor and the electric current strength in its output circuit respectively. By analogy, let us present them as derivatives with respect to time: ϑ =dG/dt and i=dQ/dt, where G reflects a hypnotic informational state of the field. Assuming the similarly of quantum-correlational information parameters in the field and in a dense medium we will apply a four-dimensional gradient to 'G' and 'Q':

$$\nabla_{\mu} Q = k \nabla_{\mu} G \ .$$

Let us present this formula in the form:

$$(\overline{D} - \partial Q / \partial t) = k(\overline{H} - \partial G / \partial t),$$

,

where $\overline{H} = \nabla G$ and $\overline{D} = \nabla Q$ are spatial components of the information parameter in a field and in a medium.

Let us define an increment in information of the image at the interval of the η-th path of scanning scalarly multiplying it by the unit tangent vector to this path:

$$\nabla_{\mu} Q \cdot \overline{\tau}_{\mu\eta} = k \nabla_{\mu} G \cdot \overline{\tau}_{\mu\eta},$$

where $\cdot\overline{\tau}_{\mu\eta} = \overline{\tau}_{\eta} - \overline{\tau}_{o\eta}$, and $\overline{\tau}_{\eta}$ and $\overline{\tau}_{o\eta}$ – spatial and time components of the $\overline{\tau}_{\mu\eta}$ unit vector.

The scalar product of the vectors in the first member equals to:

$$\nabla_{\mu} Q \cdot \overline{\tau}_{\mu\eta} = \frac{dQ}{dl_{\eta}} - \frac{\partial Q}{\partial t} \frac{dt}{dl_{\eta}} ;$$

$$\frac{dQ}{dl_{\eta}} = \frac{\partial Q}{\partial x} \frac{dx}{dl_{\eta}} + \frac{\partial Q}{\partial y} \frac{dy}{dl_{\eta}} ,$$

where $\overline{\tau}_{\mu\eta}$ is travel length along the η-th path.

Considering the similar dependence in the second member we will arrive at description of the signal with spatial components of the information parameters taken into account:

$$\frac{dQ}{dl_\eta} l'_\eta - i = k\left(\frac{dG}{dl_\eta} - \vartheta\right),$$

where derivatives with respect to time are marked with strokes (').

However, $\frac{dQ}{dl_\eta} = \overline{D} \cdot \bar{\tau}_\eta$, а $\frac{dG}{dl_\eta} = \overline{H} \cdot \bar{\tau}_\eta$, hence it can be presented in the form:

$$\overline{D} \cdot \bar{l}'_\eta - i = k(\overline{H} \cdot \bar{l}'_\eta - \vartheta).$$

This formula is different because of these values:

$$\overline{H} \cdot \bar{l}_\eta' = \frac{dG}{dl_\eta} l'_\eta \text{ и } \overline{D} \cdot \bar{l}_\eta' = \frac{dQ}{dl_\eta} l'_\eta.$$

We will call these values spatial (quantum-correlational) components of the signal. As opposed to them we will call 'ϑ ' and 'i'' values secondary (energy) components of the signal.

Let us define the effect of the signal and its component on the η-th path as functionals:

$$L_D = \int_0^T \overline{D} \cdot \bar{l}'_\eta \, dt = \int \overline{D} \cdot d\bar{l}_\eta.$$

According to the theory of quantum entropy logic, the L_d functional only depends on the spatial path configuration and does not depend on the time of scanning along this path (whereas the L_d functional represents a time dependence). This allows to consider the Ld functional as a model of the form factor in the suggested scheme of signal formation. This dependence is similar to R. Feinman's integral determining the effect of vector ($\overline{A}$) and scalar (φ) field potential on the quantum-mechanical phase of the particle:

$$d\theta = \frac{q}{\hbar}\left(\int_l \overline{A} \cdot d\bar{l} - \int \varphi dt\right),$$

where dθ is a change in the quantum-mechanical phase of the particle;

'q' is the particle charge;

θ is Planck's constant.

Proceeding from the analogy, it is still early to draw far-reaching conclusions, yet this similarity is definitely a 'thought-provoking information'.

Let us define variables in the expressions. The derivative with time from the route along the path is:

$$l'_\eta = x'\sqrt{1+(\frac{dy_\eta}{dx})^2} \ ,$$

where the (dy_η / dx) derivative is defined by the form of the path, and the x' derivative is defined by the dependence of 'x' on the time 't'. By means of these dependencies we will express values represented by functions of spatial coordinates through functions of time. The light flux as a function of motion along the η-th path will be defined by the expression:

$$\vartheta = \frac{dG}{dt} = \vartheta(x, y) = f(l_\eta(t));$$

$$H = \frac{dG}{dl_\eta} = f(l_\eta(t))\frac{dt}{dl_\eta} = \frac{\vartheta}{l_\eta} .$$

With this considered we will arrive at:

$$D = kH = k\frac{\vartheta}{l_\eta} = k\frac{i}{kl_\eta} = \frac{i}{l_\eta} .$$

It is plain to see that the spatial and time components of the signal are identical just like their functionals measured in the path:

$$\overline{D} \cdot \bar{l}'_\eta = i, L_D = L_\tau .$$

These identities confirm the conclusion hypothesized by the theory of quantum entropy logic-obtaining information additionally to that presented by the 'i' scalar parameter is impossible without taking into consideration the change in the vector information parameter in the medium of signal propagation. This conclusion, though very obvious, is very important not by itself but rather as a means to check the consilience of the model and subsequent not so much obvious conclusions drawn from it.

2.3. Conditions for isolating of the hidden information

Let us consider the conditions for isolation of the hidden information containing in the signal spatial component. Since the above-stated functional identity (L_d=L_i) indicates that the hidden information (or form factor) has not been revealed, it is reasonable to accept non-identity of the functionals to be measured as a criterion for its detection. We will enter an operator responsible for the D vector conversion separately from the second vector multiplied by it scalarly in the product:

$L_D \equiv L_i$

where $\bar{D}_{var}$ is a non-linearly converted vector parameter.

According to the quantum entropy logic theory, the conversion of the type described above is not applicable to experimentally measurable values as the spatial component (the left factor) does not relate to them (like the single-valued $\bar{J}$ field density vector in the expression for 'i' current strength). We can, however, accept as a model, conversion of the spatial component represented by physically isolated information 'intermediary' - a beam of particles in the metatron. (Assuming an unlimited propagation of quantum-correlational information we can suggest that the information is perceived by a beam of free electrons as well). The 'I' functional at the metatron output is defined as a scalar product of two vector factors. The left factor characterizes the vector parameter of the signal, while the right one describes the path form representing fixed boundary conditions in this example. This analogy allows using the signal to draw out qualitative peculiarities of information isolation in the metatron.

Let us assume that the conversion of the spatial component can, on technical grounds, be concomitant with the conversion of the scalar component: $I_0 = \varphi_0(i)$.

With this formula considered, we will define the functionals of the converted signal and its components:

$$V_D = \int_0^T I_D dt = \int_M^N \bar{D}_{var} \cdot d\bar{l}_\eta \; ;$$

$$V_i = \int_0^T I_0 dt = \int_0^T \varphi_0(i) \cdot dt \; ;$$

$$V = V_D - V_i \, .$$

In order to draw out the effect of the spatial component conversion, let us compare Vd with L_d=L_i. To make the comparison more convenient we will replace the 't' integration variable by the 'x' spatial coordinate in the expression determining 'L_i'. Assuming that the accepted assumption x'=const does not distort the qualitative representation very much and omitting the proportionality factor, immaterial here, we will write it down this way:

$$L_D \equiv L_i = \int_M^N i dx.$$

According to the quantum entropy logic theory, the subintegral functions determining changes in information parameters are integrated, in the first case, by the path and in the second one by the projection of the path on the x-axis. Thus, modeling of the conversion of the spatial component with the operator (F) has been done, with the conversion detecting the differences $(V_D \neq L_D \equiv L_i)$ related to the form of the image in real space (x,y) but not dependent on time 't'. That means that the V_D functional reveals information about the second image coordinate in the i(t) signal via the F operator, although the V_D functional itself certainly remains a one-dimensional value, just like the 'L' functional. In what way can two-dimensional information manifest itself in the one-dimensional value of the V_D functional? We will attempt to answer this question in the next paragraph, but to begin with, we will show how to use the obtained regularities to assess the reserve of hidden information with the image in Fig. 2.1 by way of example. The change in information (scalar and vector) parameters of the signal for this image are shown together with the 'F' operator in Fig. 2.2. The presented parameters were determined in the following conditions:

1) the quantity of the light flux distributed over the surface of the image takes on just two values: ϑ_1=0 and ϑ_2=const (other ϑ-dependent values are marked with the indexes "1" and "2");

2) the vectors are represented by modules (The last condition allows to simplify the graphic representation of the arrangement of hidden information isolation in the discussed example).

Let us define the i (t) and D(t) function (Fig. 2.2, graphs 'a' and 'b'). We will pick up an F operator as a limiting (relay) function D_{var}=F(D) (graph 'c') under condition that D_{var}=0, and D_{var}=0,2. The result of the D value conversion via the F operator is presented in graph 'd'. The measurement of the image dimensions in Fig. 2.1 shows that it covers about 34% of the path in the x, y plane, and its projection on x-axis covers only 16% of the path projection. The total pulse duration, reflecting the response of i(t) and D_{var2}(t) functions to the image (graphs 'a' and 'd'), also takes up 16% of the scanning period on x-axis (or t). However, a portion of the path taken by the D_{var2}(l) function amounts to 34% (graph 'e') which just shows the peculiarity of the conversion. It can be easily found out that the integration by the *D(l)* function path without the F operator involved will take us back to the "energy" proportion - 16% which is in conformity with the earlier obtained $L_D=L_i$ identity.

The equivalent increment in information due to the conversion of the quantum-correlational component can be evaluated by the relation: $V_D/L_i=34/16=2.13$ or in decibels: $20lg(V_D/L_i)=6.6$ db.

This, certainly, is just an illustration of the rule used to assess the reserve of hidden information but by no means a comprehensive evaluation of this reserve even for the examined mechanism of signal formation.

2.4. Results of the experiment and calculations compared

Let us imagine a mental experiment for the sake of simplicity. We will compare signals from two different images whose intersections with the path differ in two dimensions (x,y) but coincide in the projection on x-axis. Under these conditions the Li functionals and i(t) signals from different images will coincide and so will the Vi functionals with any known version of signal processing. The V_D functionals of the same signals are supposed to be different from one another though.

It does not certainly appear possible to put up a real experiment in which what is supposed, to coincide will do with an absolute accuracy and the expected difference would be caused by a reason consistent with the theory. Inevitable are some accidental reasons left out of account in the model which could interfere with the experiment. However, measurement errors of a more or less stationary kind could be useful building up a level of background against which the measure of coincidence or difference could be objectively evaluated. This background allows to deviate in the real experiment from the condition regulation accepted above just for obviousness of the mental representation.

Compactness of grouping functional values for two classes of images (A and B) was determined in the real experiment against the background of measurement errors. This characteristic, generally called a resolution (or signal-to-noise ratio) was determined by output indications for three versions of signal conversion: the metatron and two analytical models – a non-energy (spatial) one and an energy (scalar) one. A common relationship shown here with symbols accepted for a quantum-correlational model was used as an absolute evaluation (R) for all the versions:

$$R(V_D) = \left| \frac{mV_D(A) - mV_D(Б)}{\delta V_D(A) + \delta V_D(Б)} \right|$$

where A and B indicate a class, and m and δ indicate mathematical expectation and root-mean-square deviation of functional values in the class respectively (Fig. 2.2).

However, the absolute evaluation of the resolution is only applicable to the comparison of different versions with the same level of interference, which is not always convenient to keep to in the experiment. That is why the comparison used the index of resolution increase in the examined version of conversion with reference to the characteristics of the S(Li) input signal:

$$\Re(V_D,L_i) = S(V_D)/S(L_i)$$

In order to more carefully consider the information on the multidimensional image the evaluation was made on the basis of Euclidean seven-dimensional metrics (η=1.7). The evaluation results are presented in this table:

	V, L_i	V_D, L_i	V_i, L_i
$R(L_i)$	0.32	0.14	0.14
$R(V)$	2.48	1.18	0.63
$R(V,L_i)$	7.75	8.73	4.63
$R(V,L_i)$, *db*	18.0	18.8	13.3

The corresponding characteristics are provided in Fig. 2.3-2.5.

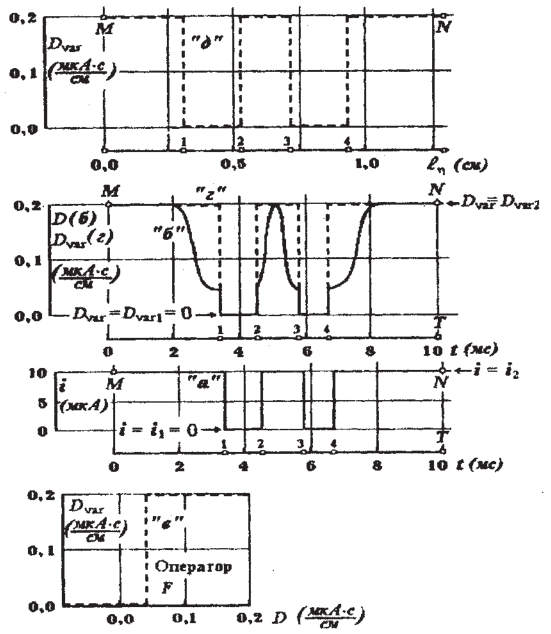


Fig. 2.2. Characteristics of transformation of the spatial signal component assumed for applying the calculation

2.5. Analysis of the results

It should be noted that the likeness between the metatron and the spatial component model is characterized not just by close similarity of the '$\Re$' values. There are some other indications that make them look different from the processing of the scalar component of the signal by the model of the φ_0 degenerate operator. It is plain to see that the noise level distribution by η does not look much distorted in the characteristics of the metatron and the model of the spatial component (as compared to the third characteristics). This result is consistent with the hypothesis that additional information is released from the signal due to the hidden reserve of the spatial component that gives a supplementary degree of freedom.

As a result, the informational symptoms grow as regards the background of noise without actually changing it. The experiments rerun with different kinds of a nonlinear operator (φ_0) for signal conversion in the metatron showed that its choice predetermines not only the form of the V(η) relationship typifying the image but also the steadily recurrent effect of noise suppression with high values of $\Re$.

Modeling of the nonlinear operator (φ_0) outside the metatron, on the contrary, realizes the conversion of just superposition of the signal and noise which manifests itself in conspicuous distortion of the latter interrelated with the distortion of the signal attributes (Fig. 2.4). With this interrelation it is certainly possible to minimize the impact of the noise on the R(V_i) value and actually it was done for the presented characteristic by picking up the optimum operator (φ_0). This minimization is however extremely unstable and critical to the slightest deviations from both the form (φ_0) and the pattern of the noise or signal. Considering the above-mentioned stability of the reiteration of the information effect in the metatron irrespective of the form (φ_0) one can think that the presented characteristics of the metatron does not depend on its optimization by the R(V_i) criterion and is largely determined by the information phenomenon effect.

However the operator (φ_0) stays in action in the metatron all the time and to some extent affects the final result. The technology for obtaining a 'pure' F operator to convert the spatial component is not yet known. However, some modes of operation of the metatron are already known to allow realization of the (φ_0) operator in it with certain limitations without the pronounced effect of the F operator. For the stated reasons the result of signal processing by the metatron presented here is regarded as an indivisible superposition of action by virtue of which both of its parts – the result of the conversion of the spatial component of the signal V_D and also result of the nonlinear conversion of the scalar component V_i - were computer-modeled. The experiment showed that the most essential part of the superposition of action is conversion of not a scalar but rather a spatial component of the signal which mechanism is in outline described by the suggested model.

Emphasizing the cognitive importance of this section we will specify the role of the noise in the example under consideration - it helps carry out a certain scale of quantitative evaluation of the information reserve of the phenomenon. This is also a technique which should not be perceived as a challenge to fight noise exactly this way. In general, the subject of implementation of specific technical solutions that allows to use the information phenomenon (and most likely any other phenomenon) has its specific pattern which was not dealt with in this section.

Of all the experimental data accumulated in the course of study of the hidden information phenomenon the example cited herein was chosen not just because its results appear to be most impressive. It has been considered for the following reasons.

Firstly, through a technical example we get an opportunity to comprehend the mechanism of the information phenomenon which is conventionally called a form factor and to which great importance has been attached in connection with the problem of extrasensory perception.

Secondly, there are not many examples of the phenomenon manifestations whose effect could be precalculated. This example gives this kind of opportunity due to the formalizability of the spatial attributes of the signal source. The phenomenon nature is not associated with the potentialities of its formalization. So qualitative conclusions from the presented analysis can be expected to assist a comprehension of the regularities evident in other examples as well.

2.6. Conclusions

Analysis of the process of image recognition with the quantum-correlational signal component taken into account showed a number of common peculiarities of information exchange that follow from the supposition:

1) the quantum-correlational component of the signal defines the signal source properties not expressed in the energy component, i. e. it carries additional information;

2) additional hidden information can be represented as a change in the scalar value nondependent on the course of time;

3) the isolation of hidden information is feasible subject to conversion of vector parameters of the signal which is not accessible on the basis of the existing energy techniques of information isolation during processing of low-frequency electronic signals.

The experiments on image discrimination conducted with the help of metatron revealed the following:

1) the qualitative and quantitative results of the experiments are consistent with the analysis conclusions and the use of the metatron in the course of image analysis leads to an increase in discrimination resolution by 4-8 times on the overage and in resolution in individual attributes of the object by 100 times (40db) (refer to the functional connection R(Vi) on h in Fig. 2.3) which indicates the predominant importance of the quantum-correlational component in the experiment;

2) quantum-correlational information is transferred in both electromagnetic field (between the surfaces of the light signal source and the sensor) and a dense medium (in the circuits of propagation of the output signal of the sensor), therefore

the properties of quantum-correlational information expressed as a dependence underlying the analysis do not depend on the nature of a propagation medium.

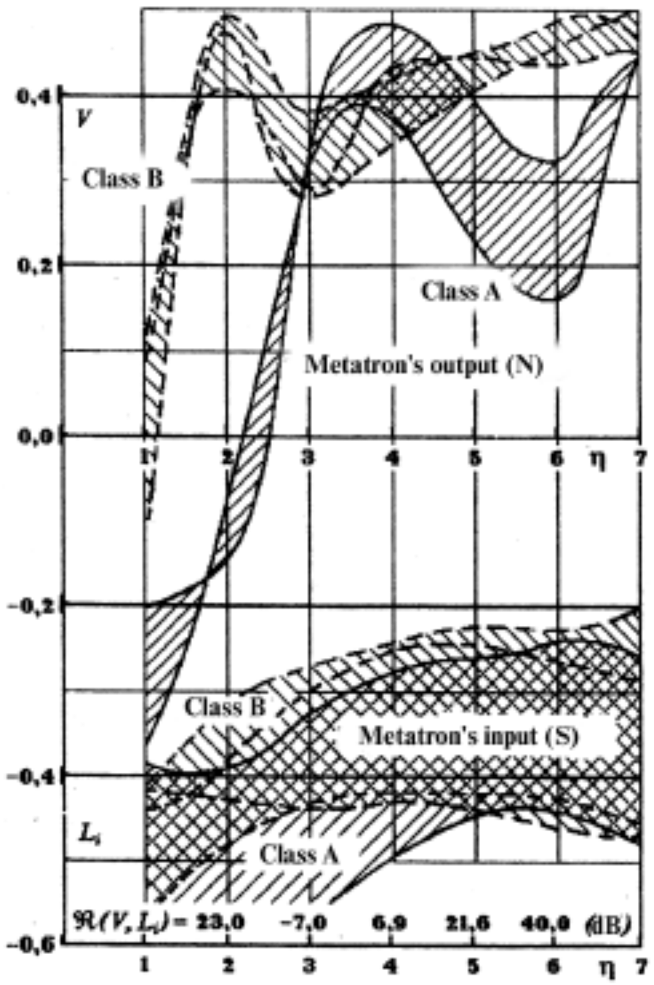


Fig. 2.3. Comparison of experimental data on recognition of two classes of images (A and B) at the input (S) and at the output (N) of the metatron

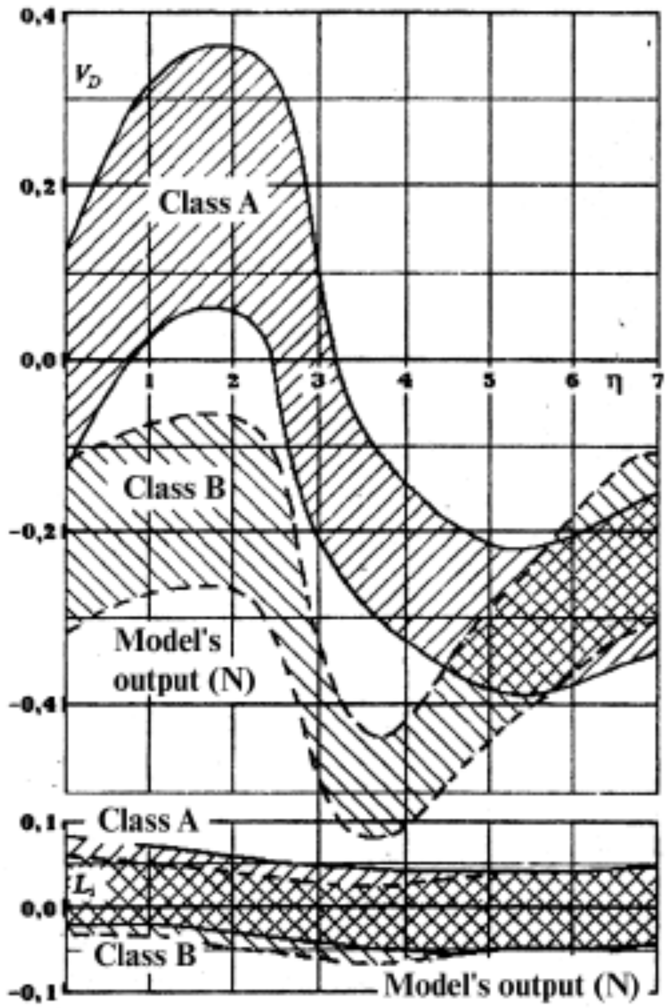


Fig. 2.4. Results of modelling the recognition process, reflecting the impact of the F operator on the spatial component of the signal (S is input and N is output of the model)

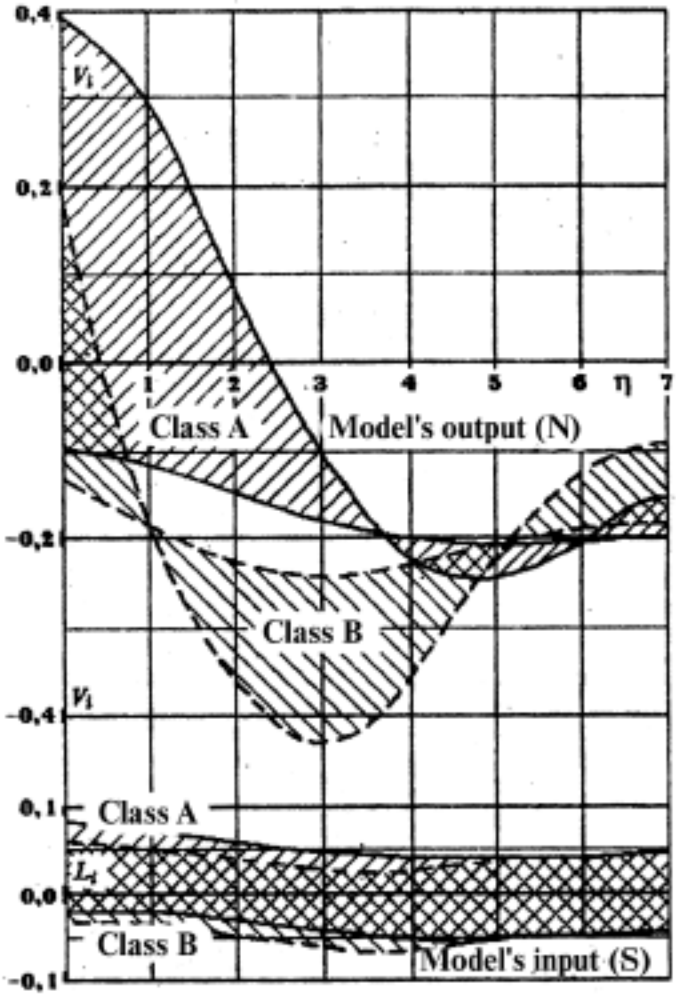


Fig. 2.5. Results of modelling the recognition process, reflecting the impact of the φ0 degenerate operator on the temporary (scalar) component of the signal (S is input and N is output of the model)

SECTION 3

SPECIFICS OF ACCESS TO HIDDEN INFORMATION

3.1. Why can the metatron operator isolate the hidden information?

The phenomenon assimilation for practical purposes necessitates a more profound comprehension of its nature. The phenomenological model may have not just a single version of explanation for isolating hidden information in the metatron. Considering the issue on a qualitative level, let us take this explanation for instance: the $\bar{Q}$ signal sent to one of the magneto-inductors, according to the hypothesis, transmits the information it carries to the receiver – a biological sub in the full amount (with the spatial component included). As a result, the immeasurable information about the interaction of its carries in a magnetic field should be reflected in the vector characteristics of elementary particles having a charge. This assumption does not seem to be very contrary to the laws of nature since other authors independently suggested using a beam of free particles to define the internal fields in antennas.

Then it is quite easy to imagine that the distribution of charges between two magneto inductors, whose output characteristics are phase-opposed, will depend on the vector characteristics. The response of the $F(\bar{Q})$ value, that determines them, to the $\bar{Q}$ vector change will be either "N" or "S". This is a qualitative concept of the effect of the F operator in the space of real vectors of the $\bar{Q}$ signal. It does not concern some of the important questions, such as: what properties of information carriers manifest themselves in this process and what constructive solutions may by necessary and sufficient for its realization?

3.2. Comparison of the metatron operator with nonlinear transformations of scalar signals

Let us define the characteristics of the metatron that most objectively mirror the dependence of its information properties on both the magnitude of magnetic induction and other causes of change in its mode of operation.

We will define the functional of the metatron operation over N time, sufficient for the evaluation of signal attributes, considering that:

$$V = \int_0^T I dt = \int_0^T \varphi(\overline{Q}) dt \ .$$

This relationship is, properly speaking, equivocal because the V value depends not only on the input signal but also on the whole complex of influences which can be clearly seen even in a simplified arrangement. Besides the Q signal, let us single out a class of control actions in the complex and present them in the form of obvious dependence on the both arguments. The φ operator is determined by the magneto inductor (MI) modulation frequency chosen by the metatron. The combination of all MI information frequencies representing a multidimensional controlling effect on the operator is designated by the $\overline{v}$ vector. Considering this, let us specify:

$$J = \varphi(\overline{Q}) = \Im(\overline{v}, \overline{Q}) \ .$$

The linear relationship between J and v_j allows to present the component of control action as an obvious function:

$$\varphi(\overline{Q}) = \sum_{j=1}^{10} v_j \Im(\overline{v}_j, \overline{Q}) \ ,$$

where v_j is a normalized control action defined as v_j=1 on MI. A set of functions associated with it $\Im(\overline{vj}, \overline{Q})$ for $j= \overline{1,2}$ is called a basic metatron characteristic. Fig. 2.1 shows a fragment of the metatron basic characteristic used specially to form the scan paths meeting the conditions of the above described experiment.

By isolating the v_j values, irrespective of the integration variable, from the integral sign we will derive:

$$V = \sum_{j=1}^{10} v_j V_j = \overline{v} \cdot \overline{V} \ ,$$

where $$V_j = \int_0^T \Im\left[\overline{v}_j, \overline{Q}(t)\right] dt \ ,$$

j^{th}-component of the $\overline{V}$ multidimensional vector that characterizes the *Q(t)* signal realization with the metatron basic characteristic taken into account. The characteristic represented here by the ' $\bar{V}$ ' vector is conventionally called attribute-function of the signal on the basis of the metatron. Henceforward, subintegral values changing over 'T' integration time will be represented by the functions of the 't' argument as opposed to the introduced parameters of the 'v' control action admitted to be constant within 'T' time in the experiment under consideration.

Considering the assumed distinction between the functional and analytical models, these expressions should be regarded as just a qualitative description of the functional physical model, i. e. the metatron. For the above-stated reasons the description of the metatron functions aiming to replace it by computing operations is not dealt with herein. So the 'V' and 'V_j' values can only be defined by means of measurements with the metatron in operation. Let us define them as particular consequences against which background the information anomaly of the metatron could be revealed.

To make a comparison with the metatron a digital model was developed that was found more appropriate to be used as an analytical one. The 'i(t)' time signal was introduced to this effect. This kind of time elimination from the space of the time signal description is done by means of some known methods and allows, to put it figuratively, "to can" some significant attributes of the scalar signal, if the nonlinear transformation is 'transparent' for its informational frequencies (so signals within the limits of the metatron frequency band 1,5GHz were used). The possibility of timeless representation of the signal in the analytical model cleared up the problem of algorithm fast action which we cannot but take into account with a functional version of the digital model because a quantum signal is required for the real-time calculations.

The mathematical expectation of the stationary process is known to be connected with the 'p(i)' characteristic by the expression:

$$\frac{1}{T}\int_0^T i(t)dt = \int_{-\infty}^{\infty} p(i)i\,di\,.$$

Considering this, the functional operating in the interval $0 \le t \le T$ of the nonlinear transformation of the *'i(t)'* signal by the φ_0 operator will be determined by the following expression:

$$V_i = \int_0^T \varphi_0[i(t)]dt = T\int_{-\infty}^{\infty} p(i)\varphi_0(i)di\,.$$

As a particular consequence the following will be true of the scalar form of the signal:

$$\varphi_0(i) = \sum_{j=1}^{10} v_j \Im_0(\bar{v}_j, i).$$

By replacing the $\varphi_0(i)$ function and isolating the v_j integral values, irrespective of the 'i" integration variables, from of the integral sign we will arrive at:

$$V_i = \sum_{j=1}^{10} v_j V_{ij} = \bar{v}_j \bar{V}_i ,$$

where $$\text{где } V_{ij} = T \int_{-\infty}^{\infty} \Im_0(\bar{v}_j, i) p(i) di ,$$

is an i^{th}-component of the $\bar{V}_i$ multidimensional vector that represents the attribute-function of the signal based on the analytical model of the controlled nonlinear operator.

For the analytical model of a nonlinear signal transformation its attribute-functions were calculated in two variants. In one of them the component of the basis function $\Im_0(\bar{v}_j, i)$ was described on the basis of the laws of entropy logic and in the other one it was formally imitated by an exponential dependence not related to any physical concept concepts.

The adopted form of transformation description allows to compare the signals by their essential attributes without considering any minor factors on which final results – V and V_j functionals of action also depend. Such a minor factor as control action is represented by the fist factor of the scalar product of the vector. The information about the qualities of the transformation of the output signal is presented in a normalized form in the second factor, the attribute-function. When one signal is sent to all the converters their comparative evaluation is possible via the value of the entropy potential, determined for the vectors of V and V_j attribute-functions on the basis of Euclidean metrics.

The components of the (V_j) attribute-function of the metatron were measured experimentally by consecutive assignment of normalized effects $v = v_j$. Also measured was the attribute-function of the signal converted with a functional model of nonlinear controlled operator. The measurement results of the i(t) real signal were introduced into the attribute-function of the digital analytical model as a timeless p(i) function obtained by known methods.

3.3. Experimental results

The comparison of the metatron and the models was carried out according to the results of discrimination between two sources of the electromagnetic noise signal affected by normalized interference. The compared information indices $R(\overline{V})$ and $R(\overline{V}_j)$ were determined depending on a certain α parameter representing the average level of interference. An increase in the interference level (and proper α) leads to decreased resolution capabilities of the metatron.

The dependencies of information indices on (plot 'a' in Fig.3.1) are defined: for the metatron – by curve 1, for the nonlinear controlled converter – by curve 2 and for the two analytical models of nonlinear transformation – by the area within the bounds of two curves 3. It follows from the characteristics that the metatron resolution can be adequately described with the models of nonlinear transformation of the scalar signal.

3.4. Test data analysis

Let us consider in what way the special features of the metatron expressed in information indices are related to the transformation operator J= φ(i). This timeless dependence of the time-changing J(t) and i(t) values most obviously represents the qualities inherent in the metatron as a controlled nonlinear converter. The dependence can be seen on the oscillograph screen as the so-called phase portrait (Fig. 3.2).

Let us look closely at two cases of realization of the operator which is set by one combination of v control action but converts signals from two different sources. Besides the obvious similarity of the cases of realization related to the v nature, some differences between them can also be easily seen. It is very important that with v =const each case of operator realization has stratification, i. e. is represented not just by one function J=φ(i), which could be logically expected due to the special transparency of the operator, but by a family of functions. Anyway, in each case the stratification has its own distinctive pattern which is indicative of certain natural changeability (dynamism) of the operator.

It is known that a discriminant function of a hyper plane class with the minimum power (entropy potential) corresponds to each function J=φ(i) in the timeless space of the scalar signal description – p(i) or V_{ij}. The observed dynamic pattern of the operator along with the increased resolution can be regarded as attributes of conformity of the real operator of the metatron with the discriminant functions of the entropy potential which fall under a more powerful class of hyper planes, if v≠const, which are calculatedly optimized with a change in the signal attributes taken into account. However in the described experiment no change in (the purposive one included) was brought about. By virtue of this, the achieved result can be regarded either as a consequence of the dynamic nature of nonlinear transformation of the scalar signal, with this nature turning out to be reasonable for some reasons, or as a consequence of the discriminant function of the entropy potential formed by means of the metatron in the more informational $\bar{Q}$ space. In the latter case a family of functions in the two-dimensional phase portrait (J,i) can be regarded as the projection of an operator of a larger dimensionality. In the course of the experiment it was found out that the dynamic nature of the operator does not depend on the entropy potential and manifests inself in the stratification of the phase portrait but does not optimize the operator by the resolution with reference to nonlinear transformation. With any dynamic nature of the operator (both related and not related to the entropy potential) excluded, the stratification of the phase portrait cannot be observed, and the information characteristics of the metatron and nonlinear converters naturally coincide.

As a result, it becomes clear that hidden information can be accessible under condition of an increased entropy potential of the metatron along with the dynamic nature of the operator.

The essential aspect of information processes observed in both experiments described and a number of others is for the most part not clear yet. For instance, it is not known what causes different effects for which no explanation can be found within the frames of classical concepts in such a device as the metatron.

It should be noted that the examples of the form factor and anomalous memory manifestations give grounds to contemplate the similarity to torsion fields which were mentioned in paragraph 1.8.

3.5. Conclusions

The results of the experiments showed that the real information processes in the metatron were in conformity with its models based on the theory of quantum entropy logic only with certain modes of metatron operation, specifically with a high entropy potential of the detector. Beyond these limitations there is a drastic change for the worse in such an index of signal processing quality as resolution.

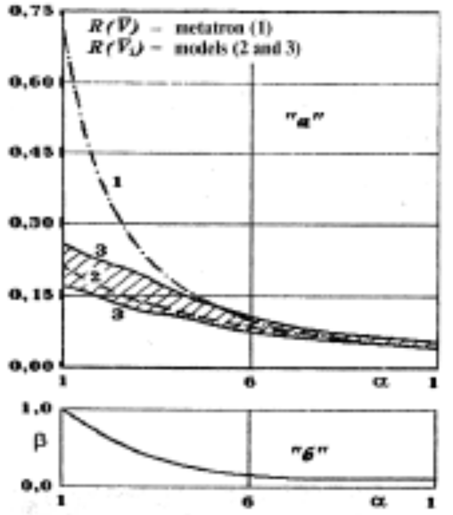


Fig. 3.1. Dependencies of the metatron resolutions ("a"), and the entropy potential ("b") on the interference norm setting level

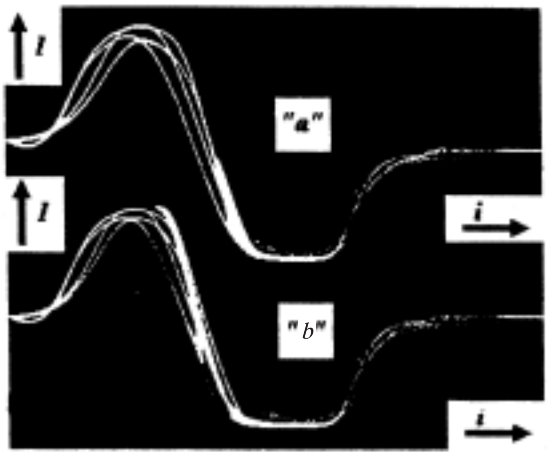


Fig. 3.2. Phase portraits of the metatron signal transformation operator, which are a family of functions J=φ(i)

SECTION 4

EQUIPMENT FOR TELEMETRIC PROCESSING OF DATA FOR NONLINEAR ANALYSIS

The metatron potentialities, that had been investigated in the context of technical tasks in Russia and some other counties by the early 90-s, were dealt with earlier in the book. As the potentialities, as well as the general orientation of the spreading psi-approach to the information phenomenon investigation, were studied over the years, a conviction budded that the choice in favor of the biological application of the metatron appears to be far more advantageous.

In this context, of interest is the task in which an attempt was made to substantiate the supposition that information transfer in nerve filaments is associated with a vector of magnetic field density. Those who read the earlier parts of the book at least in general outline will be able to realize why an independent statement about the importance of the differential parameter of the magnetic field in low-frequency signals was by itself a valuable discovery for researchers and in addition an incentive to promote the research in the biological field. Specifically, this accounts for the fact that the book largely deals with the problems of gaining access to hidden information reserves by 'decoding' the spatial quantum-correlational component of the signal. The attributes of the form factors revealed as a result of the analysis of the spatial component of a signal of artificial origin were also detected in the measurements of many psychosomatic reactions.

The advent of accessible computer technology, particularly PC, favored the advance of the research to study many psi-functions. The fact is that the research in this direction faces serious difficulties in terms of repeatability and stability of the results. Many researchers attribute them to singularity of a psychic process even in an individual. However, this is just one of the possible causes of poor reproducibility of results. In addition, another cause, that may have an adverse effect on the reproducibility, is insufficient conformity between the action variable affecting the condition of the human being and the response to such an effect. The use of a personal computer can help solve these problems which supports a more substantiated opinion of the causes of the response. Automated testing procedures appear to be effective too. They allow to take 'pure' measurements in examinee-friendly conditions and minimize the interference associated with accidental external impact on the examinee's psychic state and errors on the part of the operating staff. If required, a PC can help simplify direct observation of the current human being response and express-analysis of the resulting data. A device called Oberon was invented to telemetrically process data for nonlinear analysis and it combines the functions of the metatron with those of a PC. It proved to be an adequate instrument for investigating human reactions to different information impacts.

Oberon device provided for telemetric data processing for nonlinear analysis

This device is provided for telemetric data processing for nonlinear analysis; it is IBM PC compatible and is designed to study human reactions to different kinds of information impacts. Oberon allows to coordinate the process of measurement of human reactions with the process of influence on a human being and performs the following operations:

1) it measures J(0) which reflects the change in the characterizing parameter, the entropy potential with reference to the initial value;

2) it converts the continuous J(0) signal of specific frequency bands into a histogram (a series of numerical values of scanned frequencies with ordinal numbers ζ from 1.8 to 8.2 Hz);

3) it transmits the ψ current values to the PC and displays the plot ψ (ζ) on the monitor screen just at the time when influence is exerted on the examinee;

4) it stores ψ values in its memory block, if on completion of the measurements the histogram examination appears to be more convenient;

5) it issues instructions harmonized with the ζ scale that are necessary to normalize the influence exerted on the examinee in the course of investigation;

6) it transfers the ψ values from the memory block to the PC memory after the measurements are completed and stores them in the memory block until recording of further data measurements is started.

The device is designed to record psychophysical changes in the body and allows to:

- get a qualitative assessment of the functional state of the body in terms of topical analysis;
- check the efficiency and effects of various methods of impact;
- analyze the dynamics of change in the functional state of the body over time;
- detect the primary nature of the foci of functional disturbance;

- access the pattern of changes using expert systems;
- access the main parameters of homeostasis.

The device is based on the principle of amplification of the initiating signal with disintegration of the metastable structures (an increase in the entropy potential of the detector).

Magnetic moments of molecular currents in admixture centers of cortex nerve cells, affected by an external electromagnetic field, lose their original orientation which is followed by misalignment of spin structures of delocalized electrons, which causes therein unstable metastable conditions whose disintegration acts as an initiating signal.

The device is a system of electronic oscillators resonating at electromagnetic radiation wavelengths with their energy being adequate to the energy breaking the dominant bonds that maintain the structural organization of the object.

The device allows to produce a bioelectrical activity of the patient's brain neurons which enables them to selectively amplify signals hardly detectible against static fluctuations.

Information about temporary condition of a specific organ is collected contactlessly by means of a digital trigger sensor developed with the help of up-to-date information technologies and micro circuitry. The sensor detects faintly detectible signal fluctuations, picked out from average statistical noise field characteristics and converted into a digital sequence that is processed by means of a microprocessor to be transmitted to the computer through an interface cable.

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