

Perfect Anticipation (Why you (Won't) Want It)

Otto van Nieuwenhuijze

Independent Research Scientist, Amsterdam, the Netherlands

nowhere@wanadoo.nl - http://ourworld.com/opuserve.com/homepages/mathmedics_arts

Abstract

Anticipation denotes a poised state of mind. (This is "Anticipation" in an Subjective sense.) Anticipation is also taken to denote the premeditation of 'things yet to come'. (This is "Anticipation" in an Objective sense.) The 2nd meaning, the foreknowing of the future, effectively kills our realisation of creation: if we know what will happen, when, how and why, the experience of the future will become indistinguishable from our experience of the past/present. The experience of Life and creation will be totally lost. This is the kind of anticipation we will *not* want.

The kind of Anticipation we *will* want, is the knowledge of moments to maximise our experience in/of creation, by optimising our involvement. (The subjective mechanisms involved are separately described in a parallel paper; "Options & Choices, Doubts & Decisions") By understanding what (Subjective) Anticipation is *not* (objective predictability) the subjective realisation of Anticipation can be enhanced. This involves the principles of Total System Inversion, the properties of Boundary Transition, and the Criticality, Catastrophe, Collapse and Compressibility of a system. All of these reflect our own involvement; which is the basis for our understanding of Anticipation in the fullest sense.

Keywords: Anticipation, Prediction, Openness, Closure, Hell.

1 Introduction

Anticipation in the objective sense can be categorised in 4 groups, depending on our degree of involvement. (O#o, 2000b.)

Anticipation of the 1st kind (O₁) will predict the future State: it effectively eliminates our capacity for Decision, and turns the future into a continuation of the present. This kind of anticipation we will not want.

Anticipation of the 2nd kind (O₂) will predict the future Processes: it effectively eliminates our Choices, and reduces the future into a collage of predictable alternative realities. This kind of anticipation we will not want.

Anticipation of the 3rd kind (O₃) will predict the future Possibilities: it effectively fixes our Options, and reduces our future into a package of foreseeable realisations. This kind of anticipation we will not want.

Anticipation of the 4th kind (O₄) will predict the moments of Creation (the emergent futures): it effectively eliminates our ability to Doubt, and reduces the future into a set of predictable moments of interaction. This kind of anticipation we will not want.

These four types of Anticipation are intimately related: they are four aspects of the same principle. The connectedness lies in the relationship between States, Processes, Principles and Essence (O#o, 1982, 1989, 1991, 1993). The principle of connectedness can be described in terms of a Boolean Differential (Bazsó, 1996) and represents a set of related dimensional transitions (Young, 1976) by which Objects, Definitions, Conditions, and Creation are linked. The principle involved is that of Phase Embedding; it is the same as was described by the Alchemists as the relationship between Earth, Water, Air and Fire, which is nowadays formulated as the relationship between Solid, Liquid, Gas and Plasma. These physical 'states' are intimately related; they form in fact one continuum (comparable to Motion, Sound, Radio and Light, all of which are forms of Vibrations). The connectedness between the seemingly 'separate' forms lies in the concept of recursion: Matter (solids) have one degree of bonding more than Molecules (fluids), which again have one more degree of bonding than Atoms (gasses), which again have a degree of bonding more than subatomic Phase Fields (plasma). The internal degrees of bonding (and the inverse: the internal degrees of freedom) are all logically related: it is the gain or loss of a degree of freedom that determines the transition from one (phase) state to another. The gain/loss of degrees of freedom/bonding is the essence of Transmutation: change from within.

This ability to change state from within is characteristic for living beings. It is found in animals, plants and humans (Kervran, 1976); one of the forms in which it occurs is that of the exchange of protons between the nuclei of atoms. Such exchanges require resonant gaps: windows in which the motions in the atomic orbits are attuned. (Atoms can be represented wave patterns; and their attunement occurs via the principle of interference patterns, as exemplified in Moiré Harmonics). The change of internal state is thus related to the ('Interference Pattern') embedding in the context. In this relationship, 1) the identifiable object, 2) the interface of contact within the environment, 3) the interchanges through that interface and 4) the properties of the environment are all intimately connected; yet can be perceived as distinct. The ability to discriminate them stems from the different internal degrees of freedom/bonding. The capacity to see them as linked is based on the essence they all share. It is that combined connectedness-and-separation that can be described in one single simple term: Interfacing, i.e. the properties of a Boundary. A typical way to describe that transition is in terms of Systems Theory, in which 1) a Node, 2) a Branch, 3) a Circuit and 4) a Network are all equivalent terms, for integrating the multiple perspective that a System represents. This offers the same understanding as the Alchemical model; or the concept of a 4D Dynamic point (O#o, 1982). It is this multiplicity of perspective that needs to be addressed in evaluating (and appreciating) "Anticipation". Because Anticipation refers to, simultaneously, the system 1) State, 2) Processes, 3) Transformation and 4) Creation. (O#o, 1999c). Because Reality is a Realisation, the experience of Reality, in terms of 1) Space, 2) Time, 3) Energy and 4) Consciousness, is incomplete without taking our own states of consciousness, thus involvement (O#o, 1999c, 2000b), into account. This is especially the case in Anticipation. By interpreting Anticipation in an objective sense, Perfect Anticipation translates in to 'pure hell' (a closed system without

resolve). By understanding Anticipation in the Open System sense, as a poised state of mind: it can help us to experience Creation in fullness.

2 Integral Perspective

Anticipation requires non-local consciousness, beyond the Event Horizon of awareness of involvement. This requires a different kind of perception, a 'holographic' vision, in which the part is related to, and integrated in, the whole. This requires a system-transcendent mode of perception, and description. The 1) System State, the 2) System Dynamics, the 3) System Conditions, and the 4) System Embedding all need to be, simultaneously, addressed, and described. This requires a multiple perspective, the multiplicity of which can only be resolved by including the 'observer' (subject) in the observation (object). (O#o, 1996e, 1999a) The 'border' by which the Object (O_1) is dynamically(O_2)/catalytically(O_3) embedded (O_4) is defined by the participation if the Observer (O_1) in the Process (O_2) of Discernment (O_3) in the shared Context (O_4).

This requires a different type of Languageing (Maturana & Varela, 1980) than that used for 'Objective Science', because the Subject-Object relationship must be specified (O#o, 1996e, 1999a), together with the (implied) intent of the interaction, and the overall effect of the integration. The (O_1) Object level description can take place as statements within the limitations of Object(ive) Language. The (O_2) relational properties require a relative language (which must thus be dual) to address the processes involved. The (O_3) Transactional mode requires a language-transcending interactive form of description, to address the transfer due to the subjective involvement in the objectified experience. The Subjective Involvement itself, with all the consequences on our realisation of reality, can only be experienced, and lies beyond the scope of language.

The aspects of Anticipation, that *can* be described, are thus limited to the (O_1) Objective and (O_2) Reactive types of involvement. Those are the levels to which we are subject; of which our experience is 'passive'. (This is the 'reality' of Classical and Relativistic Science, beyond our Event Horizon.) There are however also levels of experience in which we are (inter)active: the (O_3) Interactive and (O_4) Creative levels of involvement. Those are the levels transcending (O_3), respectively beyond (O_4), what can be described.

The describable facets of (Objective) Anticipation concern the Objective Process (O_1, O_2) 'reality', beyond our (direct) control. Whatever can be described would happen anyhow, whether we know it or not. This is the 'uninteresting' side of Anticipation, the kind we 'don't want'/need': it simply specifies the inevitable.

The 'interesting' facet of (Subjective) Anticipation concerns our Subjective Participation (O_3, O_4), our Realisations, beyond the scope of (object(ive)) languageing. This is the aspect of Anticipation by which we are enabled to internally shift our 'pivot point of power'(O#o, 2000b) to change our involvement, and change our response. This takes place at the Interactive (O_3) and Creative (O_4) levels.

The difference between these types of (Objective/Subjective) Anticipation can be expressed in terms of 'crossing a Boundary': the Objective (Outsider) experience is directly related to the (Subjective) Insider experience, by 'crossing our own Event

Horizon'. This requires an intro-flection (O#o, 1989); beyond the levels of our operational and embedded reflexes, to address our own involvement in Creation. The following table exemplifies some aspects of the transition of the Subject-Object interface ('The Veil of Maya'):

Table 1: "Total System Inversion": Crossing the Interface of Observation/Involvement

(O ₁)	(O ₂)	(O ₃)	(O ₄)
State	Process	Transform	Integration
Space	Time	Energy	Consciousness
Object	Dvnamic	Catalyst	Subject
Passive	Reactive	Interactive	Creative

The crossing of the Subject-Object boundary/interface corresponds to a stepping beyond our own Event Horizon from a passive object to an active subject. This concerns the interface by which we relate to our environment, thus the transitions from regarding ourselves/reality as 1) object ↔ 2) process ↔ 3) transformer ↔ 4) subject/realisation. The crossing of this interface is equivalent, and identical, to a Total System Inversion, of the 'Object' (system) involved. (Total System Inversion is a basic operation required for Integral Systems Analysis/Integration, as useful e.g. in understanding the principles of health and healing in living beings.)

A complete description (and a complete Anticipation) requires a formulation of the integral (O⁺) system. It calls for a formulation of the (O₁) Object (state) specifiers, the (O₂) relative (process) relationship definitions, the (O₃) critical (energy) transformation conditions, and the (O₄) integral (co-ordinated) system embedding. (These (O⁺) descriptions requires as many components/levels in the description, thus are much more elaborate than 'objectified' descriptions. This is seen also in the characteristic difference in e.g. (O₁) physical science (objects), (O₂) social sciences (relationships), (O₃) arts (participation), and (O₄) mysticism (involvement). It also explains why only the O₁ level can be 'explicitly' described, the O₂ level partially, the O₃ incidentally, and the O₄ not at all (only by reflection). These restrictions are found also in the limitations on the scope of description of Anticipation.)

3 Modelling Anticipation <Φ₄±Δ⁴Φ₄>

An integral perception of any system already requires a 'holographic' description to specify its (O₁) Objective *State* in a identifiable sense. Then the (O₂) system variations (with respect to its environment) are to be accounted for (as is the case in Anticipation, and living beings). In this case the system's full Variational Set needs to be considered; at each of the O⁺ levels specified above. This Full Variational Set of the 2nd Order (O₂) system (process) dynamics can be expressed in terms of *Time*. In case the system's Internal variations (Intent) need to be accounted for too, this requires a 3rd Order (O₃) formulation to gauge the system transformation in terms of *Energy*. In the case of living systems, this also requires a 4th Order (O₄) formulation

concerning their mode of Involvement (Response-ability) (O#o, 1999a, 1996e, 1992, 1989).

In Science, the terms Anticipation is most often used in the Objective sense; the subjective aspects (and observer involvement) are habitually (and illogically) ignored. In that limited framework, only the (C₂) system dynamics (process [time] fluctuations) are observed; the (C₃) system internal [energy] transformation <'heat build up'> and (C₄) changes in interfacing <embedding [consciousness] res-/dis-solution> are disregarded and ignored.

In this limited perspective the system's variational set is defined in Time.

In the most limited sense, only the system processes are taken into account.

In the more limited form, the temporal instabilities (curvatures) of the environment are ignored.

In the extreme limited form, the intrinsic system time warp <heat build up'> is also ignored.

As a consequence, the most often presented view on Anticipation is a recapitulation of the local objective view of the system as Object. The perceptual extension of system function, "Anticipation", is a simile of the view of continuity used in (classical) physics, in which the past known states, and Anticipation amounts to an extension of the perceived process dynamics (not the internal state definition, as a result of interfacing in a context). (Objective) Anticipation then is 'reduced' to a (linearised) 'extension' (of the present past states) into the 'future'. This form of modelling is incomplete, as it assumes (thus imposes) invariance of the temporal domain ('eternity'), and thus can not account for variations of the environment in which the Anticipated Process 'takes place'. This makes this approach very limited indeed.

In a more general perspective, the system anticipation needs to take 1) the system, 2) its interfacing with the environment, 3) the changes of the environment and 4) the change in observer, into account. This means that the description needs to specify 1) the system state in Space, 2) the variational Processes in Time, 3) the interactional Conditions in Energy, and 4) the perception in Consciousness. (O#o, 1999c) Because the system has its own internal processes, its proper structural stability dynamics, and eigen variational embedding in its context, it needs to be described in [4D] Temporal Domain (O#o, 1996c), to account for each of the corresponding (and interrelated) temporal variations. Even then, as mentioned above, only the system state can be objectively described, the 4D Time variations only in part, the 4D Energy transformations only incidentally, and the 4D Consciousness transmutations 'not at all' (only by implication). These are limitations in our capacities for description in language; they are not limitations of the integral system interactive response.

For a complete description of the Anticipation System Development/Transformation Emergence, the full variational set needs to be taken into account, in Space, Time, Energy and Consciousness (O#o, 1999b), each of which has 4 dimensionalities. Thus the O^4 description contains the variational components of the system state, plus all variational phase modulations of $S_4 \pm \Delta^4 S_4$, $T_4 \pm \Delta^4 T_4$, $E_4 \pm \Delta^4 E_4$, and $C_4 \pm \Delta^4 C_4$, as components of $\Phi_4 \pm \Delta^4 \Phi_4$ (The [4D] full O^4 functional variational set, in STEC (O#o, 1999b).)

4 System Embedding

Anticipation involved a shift in perspective of System Perception. It corresponds with a corresponding shift in involvement, by the observer. By regarding the System as 1) Object, 2) Process, 3) Transformation and 4) Creation (each requiring different modes of Languaging), the system boundary/definition is effectively 'dissolved' (from 1) Solid to 2) Liquid to 3) Gas to 4) Plasma, in the Alchemical sense (O#o, 1997c)). The corresponding shift in involvement/immersion of the observer reflects a same boundary transition. The process of (dis)identification operates by the same principles of interfacing (thus dynamic boundary transition) as that of the shift in perspective of observation (from

The integrative concept involved is that of "Total System Inversion". Any system is embedded in its environment through its (separating/connecting) interface; by which the dynamic transformation of the system in/to the environment takes place. The system and its environment are never separate, but always fully integrated, interconnected, interwoven, and embedded. The 'separateness' of the system with respect to its environment is a consequence of system recursion, by which process loops are re-related (Hanappi, 1989), and continuum processes are reoriented as transient, linked and recursive, giving the appearance of a system as embedded, interconnected, related or separate. The form of pattern recursion is always in respect to the overall (underlying) process patterns, which are shared between the system and its environment (O#o, 1989).

Any System is, as a result, the Inverse of its environment. The connection/separation between the system and its environment is represented in the interaction/interface between them (which is more easily discerned by taking that interface as reference system (O#o, 1982)). The dynamics of the relationship of that embedding is determinant for the perceived system emergence/development. This is the same dynamic as by which the observer relates to his/her environment (and the perceived dynamics of observed systems are consequential to that). Total System Inversion can only be partially described: at the level of system/environment interaction, the language that we use becomes ambivalent, ambiguous, and needs to be abolished. The principle itself can however still be understood, by inference that the perceived relationships, and the principles by which we relate to our environment, are the same.

In understanding Anticipation, the concept of Total System Inversion plays a fundamental role: our own mode of involvement determines how we (dis)identify with the environment; and how we perceive any system (in an extended sense) as a result. As mystic literature shows: those people who have become able to understand their own 'system embedding' in a more encompassing sense, are also the people who can perceive observed systems, in such an extended sense. Psychic perception is a reflection of this (Tiller, 1997) Anticipation is such an extended perception, in which 1) the system state is perceived in context of 2) the system development process, 3) the system transformation, and 4) the system (dis)integration in/to its environment. (O#o, 1998c).

This means that Anticipation needs to take into account all the elements of system embedding; these are the same as (dynamically) seen in the form of (virtual)

System Inversion. The continuity criteria of the system, the discontinuities (singularities) therein, and the loss/emergence of discernability (Spencer-Brown, 1973) all need to be addressed. Implicit in this, is the shift of perception of a Boundary and a Field. (A Boundary, a Field, and a Filter are the same: they are modulations of phase space characterised by, respectively, phase reflection, phase continuity and phase shift.)

Crucial in this approach is the transition of the system boundary: that is the moment (O#o, 2000b) at which the system and its environment are no longer distinguishable in an objective sense. (An equivalent for this is the 'amorphous' phase of embryology, in which process transformations are determinant, while 'no' physical reference system 'exists'.)

In the transition 'through the boundary', the system undergoes a systematic compressibility, leading to system collapse, as the moment of system inversion. (Edwards, 1993, Tiller, 1997). These transitions are more easily described in terms of Transcendental Vortex System Analysis (O#o, 1995).

5 Total System Inversion

Total System Inversion (the most fundamental ontological existential continuity condition) requires full system *compressibility* (Winter, 1992). It also implies total system *collapse* (collapse of the wave function). This is a form of system *Catastrophe*. This requires a *supercritical* system transition of the system coherence-transformation-process-state (O#o, 1997e). Each of the elements, Criticality, Catastrophe, Collapse and Compressibility will be briefly addressed, as each affects the scope of achievable Anticipation.

5.1 System Criticality

"Criticality" of a system is a consequence of its Dimensional Definition (Langhaar, 1956). Any observed system is defined by parameters identified by *the observer*. Any change in the selected parameter set will change the system definition criteria, as expressed by the "Critical Parameters". (Examples of these are 'The Barrier of Sound' and the threshold of "Shooting Water", identified by (Dimensionless) Critical Numbers such as those of Mach and Reynolds. ("The Barrier of Light" is such a 'Critical Boundary'. Inversely, this category of critical threshold system definitions represents a general concept: "The Critical Barriers of Consciousness" (because it is by the Observer's selection of the set of parameters that those Critical Values are selected, determined and thus defined).))

5.2 System Catastrophe

"Catastrophe" is a related system-defining concept. It expresses the need to change from one type of system formulation to another, when a system Singularity is encountered. (This is thus related to the concept of System Criticality; it also reflects the principle of inclusion/exclusion of a system defining parameter/singularity.) This approach has been described by the works of René Thom and i.a. Christopher Seeman. In a more general sense, this relates to the whole mathematical domain of Topology and Singularity Theory, in which the collapse of system definitions is explored.

5.3 System Collapse

“Collapse” is a more general term, used particularly in probabilistic physics where the ‘collapse of the state vector’ is explored. Physical reality (as perceived by Quantum Theory) is an energy moment domain, beyond space and time. Phenomena are wave functions; as are human beings. The act of observation is an interference pattern (in the constructive and destructive sense), in which the (wave functions of the) observer interacts with the (wave functions of the) observed. This produces a relative relational state, and thus the nature of the observation (with time-like and space-like attributes). The noumenal (consciousness) state of the observer is co-factor in this interference pattern, determinant for the way the energy transformations are experienced, and thus needs to be described (O#o, 199b).

5.4 System Compressibility

“Compressibility” is a more critical condition in Total System Inversion, in which Criticality, Catastrophe and Collapse are integrated. It is the requirement for a continuity transformation in which the system can reorganise its phase coherence, internally and externally, in correspondence with its environment, in such a sense that it can go through all the phase transformations (of phase states, process phases, phase transformations and phase integration), and undergo the complete transmutation from the physical through chemical and electromagnetic to information mode of phase. System Inversion comprises all the changes in the Dimensional Definition, the Formulation Forms, and the Observer Orientation. (The process of Total System Inversion is related to our ability to ‘make a model of reality (‘realisation’) in our heads’ of our sense perception of our environment (‘reality’), via the interface (interference pattern) of our reality/realisation involvement (O#o 2000b, 1999c).

6 Conclusion

“Anticipation” aims to extend the scope of our perception of our observation. Because we are intimately involved in the observation, our own internal state is determinant in the outcome, and needs to be taken into account. This is the fundamental premise of STEC (O#o, 1999c). Our internal processing of realisation (O#o, 1996b, 1997a) operate by the same principles as those we ascribe to reality (O#o, 1989, 1993). The relationship between the two is most easily understood by regarding the (reality/realisation) interface through which our perceptions take place (O#o, 1996e, 1999a). The interaction itself can then be understood as the ‘crossing of the system boundary’. This is the essence also of Anticipation: extending our realisation of the system boundary, up to the level of accounting for the full system embedding in its environment. Due to the nature of the way we can describe those interactions, in terms of States, Processes, Transformations and Creation, this requires a full 4th Order description (O#o, 4th order Cybernetics), together with the full (O4)variational set in STEC. This requires a more advanced understanding of the boundary transition itself, including the nature, structure, stability and basis of the boundary itself. The criteria of Criticality, Catastrophe, Collapse and Compressibility help to clarify that

understanding. Especially the concept of Compressibility is fundamental: it relates to the concept of Total System Inversion, and specifies a continuity condition spanning the full scope of the emergence, manifestation and dissolution of a system. (I.e. a complete crossing of a boundary.) This transition includes a transmutations of the system through all of its phases of manifestation (solid, fluid, gas, plasma, i.e. the reorganisation of internal degrees of freedom/bonding, and all the transitions of organisation of phase.) The principle of a system 'turning inside out' is fundamental in nature (Edwards, 1993; Winter, 1972; Tiller, 1997); it elates the total system to the singularity point through which the inversion takes place (The Pivot Point of Power, O#o, 2000b). This is the 4D point on and by which the system is defined.

Perfect anticipation needs to account for the total system embedding in its environment. I.e. it must account for the total range and scope of the system definition/boundary. This includes all those aspect of the system definition that are based on our own involvement, because there is no observation without our participation.

Any form of anticipation that does not account for our own involvement is by definition incomplete, and in fact quite useless: it can only predict what would already happen 'whether we know it or not'. Our ability to interact (because it was ignored) cannot be brought into play. This is the restriction of Objective Anticipation; 'the form we won't want'.

All forms of anticipation that *do* account for our own involvement ('the forms of Anticipation we *do* want') will by definition specify our own mode of involvement; i.e. they will define the way we define ourselves with respect to our environment. This means that those models of anticipations model ourselves: they reflect our own mental state. That is the essence of Anticipation: the state of poised mental alertness, offering the openness to experience and express creation, in file. (O#o, 2000b).

References

- Bazsó F, Lábos E, (1996), "Towards a Differentiable Boolean Dynamics"; Cybernetics and Systems '96, R. Trappl, editor, Austrian Society for Cybernetic Studies, Vol. 1, pp. 14-19.
- Edwards, Lawrence (1993): "The Vortex of Life"; Floris Books, Edinburgh, GB
- Hanappi, Gerhardt (1989): "Understanding Understanding"; presented at the Amsterdam Conference on Problems of Society, Support and Culture".
- Kervran, Louis, (1976): "Biological Transmutations", (George Oshawa), Oroville
- Langhaar, Henry L., (1951), "Dimensional Analysis and the Theory of Models", Wiley, NY, USA
- Maturana, Humberto and Francesco J. Varela (1980): "Autopoiesis and Cognition"(The realisation of the Living), Reidel, Dordrecht, NL.
- O#o (van Nieuwenhuijze, Otto), (1982), "Human Limits to Man made Models", presented at the Modeling & Simulation Conf. '82, Vol. 13, Pittsburgh.
- O#o (van Nieuwenhuijze, Otto), (1989), "Patterns in Process(es)"; presented at the Amsterdam Conf. on Mutual Uses of Cybernetics and Science (ed. R. Glanville).

- O#o (van Nieuwenhuijze, Otto), (1991), "InterFacing & InnerPhasing"; presented at the Amsterdam Conf. on Problems of Society, Support & Culture (ed. R. Glanville).
- O#o (van Nieuwenhuijze, Otto), (1993), "Realisation of Reality" (Values: Absolutely Relative (In)Variants); Proc. Amsterdam Conf. Problems of Values & (In)Variants (ed. R. Glanville and G. de Zeeuw), pp. 139-148.
- O#o (van Nieuwenhuijze, Otto), (1995), "Excavating Systems: Vortex Cybernetics (Vorticity as a singular gear between reality systems); presented at the Amsterdam Conf. Problems of Excavating Cybernetics and Systems (ed. R. Glanville with G. de Zeeuw). Pp221-222
- O#o (van Nieuwenhuijze, Otto), (1996c), "4-Dimensional Time" (Modelling beyond Eternity; The Paradox of Time); presented at the Systems Research, Informatics and Cybernetics '96, Baden-Baden. (Symposium "Modelling Anticipative Systems").
- O#o (van Nieuwenhuijze, Otto), (1996b), "Organic Data Organisation" (Human Being as Data Process(or); presented at the ABA Conference, (Symposium on Cyber-Cluster-City-Concepts), Athens, July 10-17 1996, Athens, Greece.
- O#o (van Nieuwenhuijze, Otto), (1996e), "4D Personality ((Non-Euclidean) Socio-PsychoLogics)", Proc. 10th Cybernetics & Systems Conference '96, Bucharest.
- O#o (van Nieuwenhuijze, Otto), (1997a), "Acts of Consciousness" (Reflections on/off Reflexes); presented at the Amsterdam Conf. Problems of Actions & Observations (ed. R. Glanville).
- O#o (van Nieuwenhuijze, Otto), (1997c), " ∞ Forms of ∞ ", (Opening Closed Systems), presented at the Systems Research, Informatics and Cybernetics '97, Baden-Baden.
- O#o (van Nieuwenhuijze, Otto), (1998c), "(Dis)Integrity; The one source of health, the one cause of disease", Proc. Systems Research, Informatics and Cybernetics '98, Baden-Baden.
- O#o (van Nieuwenhuijze, Otto), (1998d), "BioHolograms", (Phase Coherence of Life), presented at the Int. Congress On Cybernetics, Namur, Belgium.
- O#o (van Nieuwenhuijze, Otto), (1999a), "PsychoLogics" (4D Logic Principles of the Psyche); presented at the Amsterdam Conf. Problems of Participation & Connection. (ed. R. Glanville).
- O#o (van Nieuwenhuijze, Otto), (1999c), "STEC: Space-Time_Energy-Consciousness" (The Paradox in Model Making), presented at CASYS, Liège, 1999.
- O#o (van Nieuwenhuijze, Otto), (2000b), "Option, Choices, Doubts and Decisions" (Precisioning the Pivot Point of Power), presented at CASYS, Liège, 2000.
- Spencer-Brown, (1973), "Laws of Form", Bantam, NY, USA.
- Tiller, William A. (1997), "Science and Human Transformation" (Subtle Energies, Intentionality and Consciousness), Pavior, USA.
- Winter, Dan. (1992): "The Alphabet of the Heart" (Sacred Geometry: The Genesis in Principle of Language and Feeling), private edition
- Young, Arthur M., (1976), "The Geometry of Meaning", Robert Briggs, USA.