

METAPHYSICALISM OF INFORMING

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This paper is an introduction to the phenomena of metaphysical informing occurring within an informational entity [Železnikar 92a, Železnikar 92b]. The basic question is how to structure and how to organize the processes of informing within the metaphysical triplet of informing, counterinforming, and informational embedding, which perform cyclically, in parallel, and spontaneously in a complex entity–metaphysical cycle. The problem of the so-called metaphysical informing (called metaphysicalism) has to be solved conceptually and, then, constructively, that is, in a language–formalized (machined) way. The open cyclic–parallel and spontaneous informing hides the potentiality of intelligence (intelligent information) which through informing, counterinforming, and informational embedding of an informational entity in question comes to the informational surface (of an observer). The aim of this paper is to expose certain possibilities of metaphysical informing within machines, programs, and tools performing in an informationally arising environment. Metaphysicalism, that is, cyclic, spontaneous, entity–intentional and informationally open informing, seems to be the most fundamental problem which has to be solved formally (constructively) on the way to informational machine. To some extent, the possibilities of such proceedings are already visible.

Ich würde hier sagen, daß uns ein Vorstellungsakt als solcher direkt anschaulich wird, wo wir gerade diesen Unterschied zwischen Vorstellung und Vorstellung dieser Vorstellung phänomenologisch konstantieren.

—Edmund Husserl [Husserl 00] II/1 508

1 Introduction

Metaphysicalism¹ (called also metaphysically cyclic informing [Železnikar 92b]) is a term denoting the interior phenomenality of an informational entity. Metaphysicalism of an informational entity means its *own* circular–parallel and

spontaneous informing. The metaphysical pertains to an entity's circular and parallel informing, which is spontaneous, that is, speaking generally, unforeseeable, unpredictable to certain extent (sense) or informationally arising, however, entity–intentional, structurally and organizationally oriented or, simply, informationally persevering.

Informing as a phenomenon of an informational entity is the entity process, by which the entity arises, that is, develops, maintains both its structure and its own and from the environment impacted phenomenality, acts in an informational way. Informing as an entity active component performs, as we say, through informing *per se*, counterinforming, and informational embedding. In the triplet informing–counterinforming–embedding, the informing is a regular informational phenomenon being in accord with the entity normal intention, its phenomenizing informational stream, keeping the entity identity,

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structure, and organization. In contrary to informing and in regard to it, the counterinforming is a disturbing informing component which arises during the process of informing, as a consequence of interior and exterior informational impacts. At the first glance, as a result within an entity informing, counterinforming is not well-structured and well-organized yet, it is not informationally well-connected in respect to the ruling informing, which determines the character of informational entity.

Informational embedding as the next component in the informing of an entity has to connect properly the arising and from the environment arriving informational items to the informational body of the entity. Embedding as a form of informing is arising according to the phenomena of the arising information within counterinforming as well as the phenomena of the arriving information from the entity environment.

In the pointed sense, metaphysicalism is nothing else than a common term for the informational phenomenality within an informational entity, within which the phenomena of informing, counterinforming, and informational embedding occur. This interior phenomenon of an informing entity is not necessarily evident for the entity exterior observer and, as one may say, remains concealed to a certain informational extent. The aim of this paper is to analyze and to determine these phenomena formally by means of the informational language [Železnikar 92a] and, through this formalization, to capture the conceptuality of informing of an informational machine implementation [Železnikar 92c]. Similar needs can arise within the so-called knowledge archives projects [Knowledge 92], where knowledge and components of knowledge can emerge and have to be determined informationally.

2 Formalizing Some Basic Axioms of Informing

How does an informational entity, marked by α , inform and in which way is it informed? We distinguish four basic types of α 's informing called *externalism*, *internalism*², *metaphysicalism*, and

²The informational internalism may be comprehended as a subjective informational phenomenism, phenomenizing the world and the entity into the entity in question.

phenomenalism [Železnikar 92b].

The externalism³ of the informational operand α means the possibility of α to inform other entities and itself, called also α 's *informing(ness) for others and itself*. The informingness of α is its basic (potential) property (predicate, physical phenomenon) marked by the general informational operator \models on its right side. The externalism of entity α is represented by informational formula $\alpha \models$ and reads α *inform(s)*. Thus, $\alpha \models$ is an open formula (with the open right side of operator \models).

The internalism of the informational operand α means the possibility of α to be informed by other entities and by itself; it is called also α 's *informedness by others and by itself*. The informedness of α is its basic (potential) property (predicate, physical phenomenon) marked by the general informational operator \models on its left side. The internalism of entity α is represented by informational formula $\models \alpha$ and reads α *is/are informed* or α *is/are being informed*. Thus, $\models \alpha$ is an open formula (with the open left side of operator \models).

The metaphysicalism of the informational operand α means the possibility of α to inform and to be informed by itself; it is called also α 's *informingness and informedness in itself*. The interior cyclic and spontaneous informingness and informedness of α , called α 's metaphysicalism, is its basic (potential) property (predicate, physical phenomenon) marked by the general informational formula (expression) $\alpha \models \alpha$. This formula reads α *informs and is being informed metaphysically* or, in an informationally general way, α *informs and is being informed cyclically and spontaneously in itself*. However, metaphysicalism $\alpha \models \alpha$ is in no way a closed formula depending solely on α 's own (internal) informingness and informedness.

The last of basic informational axioms is called phenomenism⁴. The phenomenism of entity α is a consequence of its externalism, internalism, and metaphysicalism, is an informational system

³Informational externalism is called also *informatio prima* because of the basic informational hypothesis that everything, which *is*, informs.

⁴Informational phenomenism is the most general principle, by which things inform and are informed in various ways, e.g. physically, biologically, socially, etc. Phenomenism may not be replaced by phenomenology, which is a philosophical discipline (for instance, [Husserl 00]).

of those phenomena and a systemic expression of two basic formulas (connected in parallel by a semicolon) $\alpha \models; \models \alpha$. Thus, the previous formulas are subformulas of α 's phenomenalism, that is

$$(\alpha \models, \models \alpha, \alpha \models \alpha) \subset (\alpha \models; \models \alpha)$$

Informational operator \subset marks the subinforming entities (externalism, internalism, metaphysicalism), separated by commas, within the informing entity (phenomenalism).

The four basic axioms, which pertain to *externalism*, *internalism*, *metaphysicalism*, and *phenomenalism*, are forms of the so-called *informationalism* concerning basic modes of an informational entity informing (in Latin, *modi informationis*). We have formalized them by sensible formulas being derived from basic axioms pertaining to entity α [Železnikar 92b]. These formulas are expressions. Externalism means always an expression, that is, exteriorization [Derrida 67] (output phenomenalism). On contrary, internalism means an impression, that is, interiorization (input phenomenalism). Both externalism and internalism carry meaning (in German, *Bedeutung* [Husserl 00]). This interwoven meaning causes the expression and impression of an entity metaphysicalism to an exterior observer together with the intention of circular and spontaneous metaphysical phenomenality. Similar could be said for α 's phenomenalism.

Within this expressional and meaningful scope the following can be concluded: metaphysicalness of α possesses its own externalism, internalism, metaphysicalism, and phenomenalism. And, also all externalism, internalism, and phenomenalism of α possess each own metaphysicalism (metaphysical recursiveness). But by cyclic and parallel decomposition of metaphysicalism $\alpha \models \alpha$, the marker (informational operand) α develops and is being developed through the arising of its meaning (contents, significance, structure, organization, informational broadening). In parallel to the cyclic decomposition, as a consequence of a straightforward metaphysical analysis, parallel meanings can emerge and in this way altogether can be composed into a complexly developing scheme of the initial (symbolic) metaphysicalism $\alpha \models \alpha$. A metaphysical informational system concerning entity α is coming into existence through informing of α and it concerning environment.

3 Problems of Informing of an Informational Entity

The question is how to determine, conceptualize, design, construct, organize and, lastly, implement the process of informing as a regular activity of an informational entity. What to say in accord to informing which represents the active informing component of an informational entity? With the last question, the duality of informingness (active component) and informedness (passive component) is implicitly introduced into the meaning of informational entity. The preceding questions are on the way to possibilities of an informational machine implementation which, in its particular cases, reduces in, for instance, electronic dictionary, knowledge archives [Knowledge 92], expert tools, or intelligent machine.

The general informational operator \models is, from the view of informational operand α , an implicit (to α belonging) expression of informing of (within) operand α . Informing of operand α can also be explicated in the form of an operand entity, marked by \mathcal{I}_α , or by the functional (predicative) form $\mathcal{I}(\alpha)$. A more directly corresponding notation for this kind of informing which pertains to α would be simply \mathcal{A} . The correspondence between entities $\alpha, \beta, \gamma, \dots, \omega$ and their informing would be $\mathcal{A}, \mathcal{B}, \mathcal{C}, \dots, \mathcal{Z}$, respectively.

3.1 Basic Metaphysical Decomposition

Within an informational entity α , the outmost metaphysical cycle will be $\alpha \models \alpha$. By definition, through the most primitive metaphysical decomposition, there is

$$\alpha \stackrel{\text{Def}}{=} \left(\begin{array}{l} ((\alpha \models \mathcal{I}_\alpha) \models \alpha); \\ (\alpha \models (\mathcal{I}_\alpha \models \alpha)) \end{array} \right) \quad (1)$$

As informing \mathcal{I}_α is introduced, it represents an α -inner metaphysical cycle in the form

$$\mathcal{I}_\alpha \stackrel{\text{Def}}{=} \left(\begin{array}{l} ((\mathcal{I}_\alpha \models \alpha) \models \mathcal{I}_\alpha); \\ (\mathcal{I}_\alpha \models (\alpha \models \mathcal{I}_\alpha)) \end{array} \right) \quad (2)$$

where $\stackrel{\text{Def}}{=}$ is read as *informs* or *means by definition*. In the first step of analysis of informing \mathcal{I}_α , we put the question how could \mathcal{I}_α be positioned and attitudinized within α and vice versa or, how do α and \mathcal{I}_α impact each other dynamically in an

informational way. The basic informational cycles pertaining to informingness and informedness of both entity α and its informing \mathcal{I}_α are, in fact, manifold, e.g.,

$$\left. \begin{array}{l} (\alpha \models \mathcal{I}_\alpha) \models \alpha \quad \alpha\text{-metaphysicalism 1} \\ \alpha \models (\mathcal{I}_\alpha \models \alpha) \quad \alpha\text{-metaphysicalism 2} \\ (\mathcal{I}_\alpha \models \alpha) \models \mathcal{I}_\alpha \quad \mathcal{I}_\alpha\text{-metaphysicalism 1} \\ \mathcal{I}_\alpha \models (\alpha \models \mathcal{I}_\alpha) \quad \mathcal{I}_\alpha\text{-metaphysicalism 2} \end{array} \right\} (3)$$

The question is, in which way a particular metaphysical cycle could imply the alternative ones. Thus, considering all possibilities of formula system 3, hypothetically,

$$\left((\xi \models \eta) \models \xi \right) \implies \left(\begin{array}{l} \xi \models (\eta \models \xi); \\ (\eta \models \xi) \models \eta; \\ \eta \models (\xi \models \eta) \end{array} \right); \quad (4)$$

$\xi \neq \eta;$
 $\xi, \eta \in \{\alpha, \mathcal{I}_\alpha\}$

where informational operator \implies represents the informational implication and reads as *informs in an implicative way* or, simply, *implies*.

In formula system 3, all formulas, that is, $(\alpha \models \mathcal{I}_\alpha) \models \alpha$; $\alpha \models (\mathcal{I}_\alpha \models \alpha)$; $(\mathcal{I}_\alpha \models \alpha) \models \mathcal{I}_\alpha$; and $\mathcal{I}_\alpha \models (\alpha \models \mathcal{I}_\alpha)$, are metaphysical and deduced (decomposed) from the basic metaphysical, that is, informationally cyclic form $\alpha \models \alpha$ and its inner consequence $\mathcal{I}_\alpha \models \mathcal{I}_\alpha$. Sometimes, we understand these basic formulas as the shortcuts for α 's and \mathcal{I}_α 's metaphysicalism which complexities are hidden in the general informational operator \models . Thus, the decomposition of $\alpha \models \alpha$ and $\mathcal{I}_\alpha \models \mathcal{I}_\alpha$ concerns, in fact, the cyclically connecting informational operator \models . We shall deal with more complex and parallel basic informational and composed (also perplexed) informational cycles within an entity metaphysicalism.

3.2 Spontaneity of Informing

In the second step of our investigation we rise the question of possibilities of (inner, metaphysical) informational spontaneity of informing \mathcal{I}_α , that is, of the phenomenon of informational arising of entity α .

Informational spontaneity does not mean an arbitrary development of an entity contents, structure and organization, that is, of an arbitrary

entity-informational broadening, meaningful filtering or notional purification. In an informational situation and attitude, entity α already has its informational structure and organization (course, orientation, intention, behavior) and in its own way filtered informational impactedness of its exterior (informedness) on disposal, both in the form of informing \mathcal{I}_α and entity α as a whole (including also the temporarily passive components of its arising informational structure). Informational spontaneity of α is caused intentionally by itself and it impacting exterior and is in accord with its instantaneously changing (arising) orientation (worldliness).

We have to answer the question of spontaneity pertaining to the entity-informational intention in a constructive way. Which mechanisms for informational spontaneity simulation, modeling, and organization are realistic, machine realizable, and conceptually possible? Answers to the last question are various and depend on particular situation, for instance, multimedial, pictorial, acoustic, and linguistic, pertaining to signals, data, written text, dictionaries [Dictionary 90a, Dictionary 90b], knowledge archives [Knowledge 92], etc.

Spontaneity means, for instance, a free moving along an existing informational net and taking with informational items which correspond, coincide, fit, match, etc. an informational situation and connect, interweave, embed, interpret, etc. them into, in, and within a concrete informational entity. This model of spontaneity could be called a model of free informational association. In fact, the decision, which items in the net to take with, is spontaneous, depending on some distinguished informational attitudes concerning the entity in question and its informational environment.

It is to stress that spontaneity as such is an informational entity by itself, which is a constitutive part of the informational entity and of to the entity pertaining informational environment. Spontaneity is intentional, concerns a goal-oriented information, is in no way something informationally surprising and quite unexpected. It arises from an informational impulse, tendency, but unplanned as an internal force or cause. Informationally spontaneous strategies, procedures, random associative processes, and like that have to

be conceptualized and used as system supporting mechanisms for spontaneous informing of entities.

3.3 Some Inner States of Circular Informing

How does an informational entity α begin to inform and how does it inform from one situation into another? The beginning of an entity informing \mathcal{I}_α is caused by the appearance of marker α , which is the most simple expression and carries the most primitive meaning, for instance, an identifier, a headword, symbol, token, sign, etc. In this very beginning situation, informing \mathcal{I}_α informs the basic meaning being different from nothing⁵. In an informational environment, the informing of initial entity α is being supported, for instance, through its physical environment, informational machine, knowledge archive, informational dictionary, living actor, linguistic system, multimedia exterior, associative mechanisms, dispersive algorithmic procedures, artificial surroundings, etc. Several entities can be informed of the occurrence of an initial entity α and can support its informational arising in different informational ways.

How does this inner development of informing proceed and which are the proposed (defined) mechanisms, structure, organization, in short, the entity metaphysicalism? We have to develop a systematic approach to the problem of informing, which could be applied in cases of an informational environment implementation, for instance, in an informational machine or even in a computer, which can model an adequate informational environment.

Informing \mathcal{I}_α is an active part of entity α . Sometimes, by \mathcal{I}_α , the whole informational activity of entity α is meant. But the emphasis of informing as a distinguishable entity within an entity as a unit is in its includedness or participation, that is,

$$\mathcal{I}_\alpha \rightleftharpoons_{\text{Def}} (\mathcal{I}_\alpha \subset \alpha) \tag{5}$$

⁵The nothing means the nonappearance of something in an informational context. However, as soon as we speak about the nothing of something, the something appears in the informational context and becomes an informing entity. Through this, the informational existence of something (as nothing) cannot be denied anymore.

In the metaphysical sense, there is

$$(\mathcal{I}_\alpha \models \mathcal{I}_\alpha) \subset (\alpha \models \alpha) \tag{6}$$

irrespective of the possible informational structure of cycle $\mathcal{I}_\alpha \models \mathcal{I}_\alpha$. It is understood that informing \mathcal{I}_α is an informationally subordinated active component of informational entity (unity) α . According to definition 5, as a consequence of the basic metaphysical includedness of \mathcal{I}_α in α , we can introduce the includedness of corresponding \mathcal{I}_α -cycles,

$$(\mathcal{I}_\alpha \subset \alpha) \rightleftharpoons_{\text{Def}} \left(\begin{array}{l} ((\mathcal{I}_\alpha \models \mathcal{I}_\alpha) \subset (\alpha \models \alpha)) \implies \\ \left(\begin{array}{l} ((\mathcal{I}_\alpha \models \alpha) \models \mathcal{I}_\alpha) \subset \\ ((\alpha \models \mathcal{I}_\alpha) \models \alpha); \\ (\mathcal{I}_\alpha \models (\alpha \models \mathcal{I}_\alpha)) \subset \\ (\alpha \models (\mathcal{I}_\alpha \models \alpha)) \end{array} \right) \end{array} \right) \tag{7}$$

for the corresponding short-form metaphysical decompositions. The decomposition procedure can extend further to longer and longer forms of cycles considering the components of informing, counterinforming, and informational embedding, that is, considering the generalized idea of metaphysical informing as discussed in the previous sections. In concrete cases, these general terms will be particularized and, certainly, decomposed in specific (particular) ways.

Within the general context, we can speak about short, medium-sized, and long metaphysical cycles of informing. If we introduce the measure for metaphysical length l_{meta} of an informational formula φ , that is, $l_{\text{meta}}(\varphi)$, then $l_{\text{meta}}(\mathcal{I}_\alpha) = 0$, $l_{\text{meta}}(\mathcal{I}_\alpha \models \mathcal{I}_\alpha) = 1$, $l_{\text{meta}}((\mathcal{I}_\alpha \models \alpha) \models \mathcal{I}_\alpha) = 2$, ..., $l_{\text{meta}}((((\mathcal{I}_\alpha \models \mathcal{C}_\alpha) \models \gamma_\alpha) \models \mathcal{E}_\alpha) \models \varepsilon_\alpha) \models \alpha) \models \mathcal{I}_\alpha) = 6$. In the general case of informing with counterinforming and embedding within entity α , the maximal length has the value 6 (a long metaphysical cycle). In concrete, particularized cases, the metaphysical length can be extended by proceeding into a greater detail of the informational problem.

Which are the medium-sized metaphysical cycles of informing? We determined an entity informing in a basic (formula 2) and in a complex way (formula 8), considering counterinforming \mathcal{C}_α with counterinformation γ_α and informational embedding \mathcal{E}_α with embedding information ε_α . Counterinformational and embedding-informational metaphysical subcycles can inform

within the long metaphysical cycle of informing (formula 17).

The long metaphysical cycles concerning informing \mathcal{I}_α are, systematically,

$$\left(\begin{array}{l} \mathcal{I}_\alpha \models_\mu \\ (\mathcal{C}_\alpha \models (\gamma_\alpha \models (\mathcal{E}_\alpha \models (\varepsilon_\alpha \models (\alpha \models \\ \mathcal{I}_\alpha))))); \\ (\mathcal{I}_\alpha \models \mathcal{C}_\alpha) \models_\mu \\ (\gamma_\alpha \models (\mathcal{E}_\alpha \models (\varepsilon_\alpha \models (\alpha \models \mathcal{I}_\alpha))); \\ ((\mathcal{I}_\alpha \models \mathcal{C}_\alpha) \models \gamma_\alpha) \models_\mu \\ (\mathcal{E}_\alpha \models (\varepsilon_\alpha \models (\alpha \models \mathcal{I}_\alpha))); \\ (((\mathcal{I}_\alpha \models \mathcal{C}_\alpha) \models \gamma_\alpha) \models \mathcal{E}_\alpha) \models_\mu \\ (\varepsilon_\alpha \models (\alpha \models \mathcal{I}_\alpha)); \\ (((\mathcal{I}_\alpha \models \mathcal{C}_\alpha) \models \gamma_\alpha) \models \mathcal{E}_\alpha) \models \varepsilon_\alpha \\ \models_\mu (\alpha \models \mathcal{I}_\alpha); \\ (((((\mathcal{I}_\alpha \models \mathcal{C}_\alpha) \models \gamma_\alpha) \models \mathcal{E}_\alpha) \models \varepsilon_\alpha) \\ \models \alpha) \models_\mu \mathcal{I}_\alpha \end{array} \right) \quad (8)$$

$$\subset (\mathcal{I}_\alpha \models \mathcal{I}_\alpha)$$

where \models_μ marks the so-called point of main (symbol μ) cyclic informing.

4 Problems of Counterinforming of an Informational Entity

To open the possibilities of counterinforming mechanisms, that is, their informational implementation, we have to make a short overview concerning concepts of counterinforming which have their roots in, for instance, linguistic meaning of both words *counter* and *informing*. Within the question of how to implement the process of counterinforming, by which in regard to the informing entity a new, different information is coming into existence, we can use various concepts concerning the meaning of the word *counter* (adverb, verb transitive, and word prefix) while the meaning of the word *informing* is consequently connected with the word *information*, understood in an extended sense.

To *counterinform* can mean to inform counter to the instantaneous course, intention, ruling, perseverance, phenomenism of an informing entity. This can happen in a pure informational way, where in parallel to the straightforwardness of an informational entity always to its contrary phenomenism (e.g., doubtingness, differ-

entia, diversity, associationism, dissociation, frustrations, etc.) comes to the informational surface. An example of counterinforming in a linguistic way is the coming up of antonymous meaning to an existing synonymous meaning of a headword, phrase, or sentence and connecting such phenomena of meaning reasonably to the already recognized meaning (knowledge) of the original informational item. This kind of counterinforming might mean nothing else than an additional interpretation of the original meaning, broadening the original meaning in significant and simultaneously various and varying ways. Such emerging of information concerning a distinct informational entity is common and obvious within human cultures performing discourse, confrontation of beliefs, democratic dialog, brainstorming, etc.

Counterinforming \mathcal{C}_α is a substantial generative part of informing \mathcal{I}_α and, by definition, is the producer of the counterinformational entity γ_α . There is no essential difference in regard to general formulas 1 and 2 and thus

$$\mathcal{C}_\alpha \stackrel{\text{Def}}{=} \left(\begin{array}{l} ((\mathcal{C}_\alpha \models \gamma_\alpha) \models \mathcal{C}_\alpha); \\ (\mathcal{C}_\alpha \models (\gamma_\alpha \models \mathcal{C}_\alpha)) \end{array} \right) \quad (9)$$

$$\gamma_\alpha \stackrel{\text{Def}}{=} \left(\begin{array}{l} ((\gamma_\alpha \models \mathcal{C}_\alpha) \models \gamma_\alpha); \\ (\gamma_\alpha \models (\mathcal{C}_\alpha \models \gamma_\alpha)) \end{array} \right)$$

The essential difference between informing \mathcal{I}_α and counterinforming \mathcal{C}_α in comparison to formula 5 is the following:

$$((\gamma_\alpha \subset \mathcal{C}_\alpha) \subset \mathcal{I}_\alpha) \subset \alpha \quad (10)$$

We see how counterinforming \mathcal{C}_α is informationally subordinated (included) in informing \mathcal{I}_α irrespective of other possible inclusions pertaining to different informational entities.

Metaphysicalism of counterinforming is a phenomenon with various faces, also in respect to the pure formalism, that is, to different possibilities of formal expressing. Which are the possible forms (all of them in a given situation) of counterinformational metaphysicalism within an informing entity α ? We can develop (decompose, compose) metaphysical concepts proceeding from the short-

est to the longest cycle, for instance,

$$\begin{aligned}
 &C_\alpha \models C_\alpha; \\
 &(C_\alpha \models \gamma_\alpha) \models C_\alpha; \\
 &((C_\alpha \models \gamma_\alpha) \models \varepsilon_\alpha) \models C_\alpha; \\
 &(((C_\alpha \models \gamma_\alpha) \models \varepsilon_\alpha) \models \varepsilon_\alpha) \models C_\alpha; \\
 &((((C_\alpha \models \gamma_\alpha) \models \varepsilon_\alpha) \models \varepsilon_\alpha) \models \alpha) \models C_\alpha; \\
 &((((C_\alpha \models \gamma_\alpha) \models \varepsilon_\alpha) \models \varepsilon_\alpha) \models \alpha) \models I_\alpha) \\
 &\quad \models C_\alpha
 \end{aligned} \tag{11}$$

Formulas of system 11 are not in a final shape since they can be metaphysically decomposed in regard to each in them occurring operand entity. For the last formula of system 11 we can introduce metaphysical markers for γ_α and α , for instance,

$$\begin{aligned}
 &((((C_\alpha \models (\gamma_\alpha \models \gamma_\alpha)) \models \varepsilon_\alpha) \models \varepsilon_\alpha) \models \\
 &(\alpha \models \alpha)) \models I_\alpha) \models C_\alpha
 \end{aligned} \tag{12}$$

Under such circumstances, in the process of metaphysical decomposition, also a direct informational connection between entity α and its counterinformational entity γ_α can come into existence as a parallel formula to the informationally arising metaphysicalism. This process is in no way arbitrarily spontaneous, it keeps the route of informational intentionality of α and it informationally influencing environment.

5 Problems of Informational Embedding of an Informational Entity

Informational embedding is a process by which the arisen counterinformation and from the exterior of an informing entity arriving information is informationally embedded (connected, meaningly associated, interpreted) into the informing entity. At this attempt of investigation, we shall not research into particular details, by which in a certain case the embedding process could be determined according to some concrete informational demands.

Informational embedding ε_α is a part of α 's informing and, by definition, the producer of the embedding information ε_α . There is no notional difference in regard to formulas 1 and 2, thus

$$\begin{aligned}
 \varepsilon_\alpha &\stackrel{\text{Def}}{=} \left(\begin{array}{l} ((\varepsilon_\alpha \models \varepsilon_\alpha) \models \varepsilon_\alpha); \\ (\varepsilon_\alpha \models (\varepsilon_\alpha \models \varepsilon_\alpha)) \end{array} \right) \\
 \varepsilon_\alpha &\stackrel{\text{Def}}{=} \left(\begin{array}{l} ((\varepsilon_\alpha \models \varepsilon_\alpha) \models \varepsilon_\alpha); \\ (\varepsilon_\alpha \models (\varepsilon_\alpha \models \varepsilon_\alpha)) \end{array} \right)
 \end{aligned} \tag{13}$$

The essential difference between informing I_α and informational embedding ε_α in comparison to formula 5 is the following:

$$(((\varepsilon_\alpha \subset \varepsilon_\alpha) \subset \gamma_\alpha) \subset C_\alpha) \subset I_\alpha) \subset \alpha \tag{14}$$

We see how informational embedding ε_α is indirectly, via counterinformational entity γ_α and counterinforming C_α , informationally included in informing I_α .

To interpret concretely informational embedding ε_α and by embedding produced embedding entity (information) ε_α , let us introduce understanding U_α instead or as a part of ε_α and meaning μ_α of an interior or exterior entity β , that is, $\mu_\alpha(\beta)$. In accord to formula system 13 and formula 14, there is

$$\begin{aligned}
 &(U_\alpha \models \mu_\alpha(\beta)) \models U_\alpha; \\
 &U_\alpha \models (\mu_\alpha(\beta) \models U_\alpha); \\
 &((((\mu_\alpha(\beta) \subset U_\alpha) \subset \gamma_\alpha) \subset C_\alpha) \subset I_\alpha) \subset \alpha
 \end{aligned} \tag{15}$$

Meaning $\mu_\alpha(\beta)$ is, for instance, an interpretation of meaning pertaining to entity β , produced by understanding U_α . Additionally, entity U_α can concern other meanings of other informational subjects, e.g., $\mu_\alpha(\xi), \mu_\alpha(\eta)$, etc. *To mean* means to apply different informational modi or rules (modes) of inference, known (in Latin) as *modus ponens*, *modus tollens* (affirmative and negative mode in traditional logic, respectively), *modus obliquus* (e.g., logic of absurdity, for instance, devious inversion, adjustment, or directionality, which appears together with the direct), *modus rectus*, *modus procedendi* (logic of intentionality and processing to reach a certain goal, respectively), *modus vivendi* (logic of tolerant coexistence, for example), *modus possibilitatis*, *modus necessitatis* (modal logic), etc.

6 A Constitution of the Metaphysical Cycle as Informing, Counterinforming, and Informational Embedding

So far, the structure of metaphysical cycles was determined with basic informational components and their length was measured by the number of occurring informational operators \models within the

cycle. Let us remind and systemize the previously discussed metaphysical cycles of various lengths. We distinguish several types of metaphysical cycles belonging to an informing entity. These cycles can be classified as, for instance, primitive, basic, medium-sized (counterinformational-embedding), and long (the longest, holistic) metaphysical cycles.

6.1 Primitive Metaphysical Cycles of an Informing Entity

Although primitive metaphysical cycles of an informing entity are trivial, they are the starting points, from which the cyclical decomposition begins. The longest metaphysical cycle belongs to the informational entity α in question. Its informing component \mathcal{I}_α is for one step shorter, etc., thus, at the end, embedding informational entity ε remains, at the present state of decomposition, in its trivial form. At the beginning, the primitive informational cycles are the following:

$$\left. \begin{array}{l} \alpha \models \alpha \text{ informational entity} \\ \mathcal{I}_\alpha \models \mathcal{I}_\alpha \text{ informing} \\ \mathcal{C}_\alpha \models \mathcal{C}_\alpha \text{ counterinforming} \\ \gamma_\alpha \models \gamma_\alpha \text{ counterinformational entity} \\ \mathcal{E}_\alpha \models \mathcal{E}_\alpha \text{ informational embedding} \\ \varepsilon_\alpha \models \varepsilon_\alpha \text{ embedding-informational} \\ \text{entity} \end{array} \right\} (16)$$

In the beginning conceptual state of decomposition, the basically extended metaphysical cycles are as follows:

$$\begin{aligned} & (((\alpha \models \mathcal{I}_\alpha) \models \mathcal{C}_\alpha) \models \gamma_\alpha) \models \mathcal{E}_\alpha) \models \\ & \quad \varepsilon_\alpha) \models \alpha; \\ & (((\mathcal{I}_\alpha \models \mathcal{C}_\alpha) \models \gamma_\alpha) \models \mathcal{E}_\alpha) \models \varepsilon_\alpha) \models \mathcal{I}_\alpha; \\ & (((\mathcal{C}_\alpha \models \gamma_\alpha) \models \mathcal{E}_\alpha) \models \varepsilon_\alpha) \models \mathcal{C}_\alpha; \\ & ((\gamma_\alpha \models \mathcal{E}_\alpha) \models \varepsilon_\alpha) \models \gamma_\alpha; \\ & (\mathcal{E}_\alpha \models \varepsilon_\alpha) \models \mathcal{E}_\alpha; \\ & \varepsilon_\alpha \models \varepsilon_\alpha \end{aligned} \quad (17)$$

However, we shall see, how these initial cycles will become as long as the longest cycle of entity α (formula 25) because of the strict circular nature of α 's informing.

6.2 Basic Metaphysical Cycles of an Informing Entity

We distinguished six informational entities as basic components of an metaphysical cycle belong-

ing to an informing entity, namely: α as the informing entity itself in its wholeness and to it belonging informing \mathcal{I}_α ; α 's counterinforming \mathcal{C}_α and by it informed (produced) counterinformational entity γ_α ; and, lastly, α 's informational embedding \mathcal{E}_α and by it informed (produced) embedding information (entity) ε_α .

All short metaphysical cycles of the involved informational entities $\alpha, \mathcal{I}_\alpha, \mathcal{C}_\alpha, \gamma_\alpha, \mathcal{E}_\alpha$, and ε_α are the following:

$$\begin{aligned} & (\xi \models \eta) \models \xi; \\ & \xi \models (\eta \models \xi); \\ & \xi \neq \eta; \\ & \xi, \eta \in \{\alpha, \mathcal{I}_\alpha, \mathcal{C}_\alpha, \gamma_\alpha, \mathcal{E}_\alpha, \varepsilon_\alpha\} \end{aligned} \quad (18)$$

Informational operator \in is read as *informs* in the context of a set of entities.

6.3 Metaphysical Cycles Pertaining to Informing \mathcal{I}_α

Informing \mathcal{I}_α of informational entity α is the inner mechanism of the activity of informational entity α . Within this cycle of informing several other cycles inform, for instance, both the counterinformational and the embedding-informational one.

The primitive metaphysicalism of α 's informing (the starting point of metaphysical decomposition) is expressed by formula $\mathcal{I}_\alpha \models \mathcal{I}_\alpha$. The next step of metaphysical decomposition are two possible short cycles, that is,

$$(\mathcal{I}_\alpha \models \alpha) \models \mathcal{I}_\alpha; \mathcal{I}_\alpha \models (\alpha \models \mathcal{I}_\alpha) \quad (19)$$

Counterinforming \mathcal{C}_α and informational embedding \mathcal{E}_α are the informing components (parts) of informing \mathcal{I}_α . Thus,

$$(\mathcal{C}_\alpha \models \mathcal{C}_\alpha) \subset \mathcal{I}_\alpha; (\mathcal{E}_\alpha \models \mathcal{E}_\alpha) \subset \mathcal{I}_\alpha \quad (20)$$

with $(\gamma_\alpha \models \gamma_\alpha) \subset \mathcal{C}_\alpha$ and $(\varepsilon_\alpha \models \varepsilon_\alpha) \subset \mathcal{E}_\alpha$. There may not exist an informational includedness between entities \mathcal{C}_α and \mathcal{E}_α .

Several medium-sized metaphysical cycles con-

cerning \mathcal{I}_α can be observed, for instance:

$$\begin{aligned}
 & ((\mathcal{I}_\alpha \models \mathcal{C}_\alpha) \models \gamma_\alpha) \models \mathcal{I}_\alpha; \\
 & (\mathcal{I}_\alpha \models \mathcal{C}_\alpha) \models (\gamma_\alpha \models \mathcal{I}_\alpha); \\
 & \mathcal{I}_\alpha \models (\mathcal{C}_\alpha \models (\gamma_\alpha \models \mathcal{I}_\alpha)); \\
 & ((\mathcal{I}_\alpha \models \mathcal{E}_\alpha) \models \varepsilon_\alpha) \models \mathcal{I}_\alpha; \\
 & (\mathcal{I}_\alpha \models \mathcal{E}_\alpha) \models (\varepsilon_\alpha \models \mathcal{I}_\alpha); \\
 & \mathcal{I}_\alpha \models (\mathcal{E}_\alpha \models (\varepsilon_\alpha \models \mathcal{I}_\alpha)); \\
 & (((\mathcal{I}_\alpha \models \mathcal{C}_\alpha) \models \gamma_\alpha) \models \mathcal{E}_\alpha) \models \mathcal{I}_\alpha; \\
 & ((\mathcal{I}_\alpha \models \mathcal{C}_\alpha) \models \gamma_\alpha) \models (\mathcal{E}_\alpha \models \mathcal{I}_\alpha); \\
 & (\mathcal{I}_\alpha \models \mathcal{C}_\alpha) \models (\gamma_\alpha \models (\mathcal{E}_\alpha \models \mathcal{I}_\alpha)); \\
 & \mathcal{I}_\alpha \models (\mathcal{C}_\alpha \models (\gamma_\alpha \models (\mathcal{E}_\alpha \models \mathcal{I}_\alpha))); \\
 & (((\mathcal{I}_\alpha \models \mathcal{C}_\alpha) \models \gamma_\alpha) \models \mathcal{E}_\alpha) \models \varepsilon_\alpha \models \mathcal{I}_\alpha; \\
 & (((\mathcal{I}_\alpha \models \mathcal{C}_\alpha) \models \gamma_\alpha) \models \mathcal{E}_\alpha) \models (\varepsilon_\alpha \models \mathcal{I}_\alpha); \\
 & ((\mathcal{I}_\alpha \models \mathcal{C}_\alpha) \models \gamma_\alpha) \models (\mathcal{E}_\alpha \models (\varepsilon_\alpha \models \mathcal{I}_\alpha)); \\
 & (\mathcal{I}_\alpha \models \mathcal{C}_\alpha) \models (\gamma_\alpha \models (\mathcal{E}_\alpha \models (\varepsilon_\alpha \models \mathcal{I}_\alpha))); \\
 & \mathcal{I}_\alpha \models (\mathcal{C}_\alpha \models (\gamma_\alpha \models (\mathcal{E}_\alpha \models (\varepsilon_\alpha \models \mathcal{I}_\alpha))))
 \end{aligned} \tag{21}$$

The next metaphysical cycle of informing, $\mathcal{I}_\alpha \models \mathcal{I}_\alpha$, belongs already to the long metaphysical cycle of \mathcal{I}_α and will be treated in subsection 6.5.

6.4 Counterinformational-embedding Metaphysical Cycles

It seems reasonable to discuss counterinforming and informational embedding within common informational cycles. Counterinformational entity γ_α , produced by counterinforming \mathcal{C}_α , has to be informationally embedded before it could become lost in the informational realm of the informing entity α . The basic question within this context is what does the arisen counterinformational entity γ_α mean at all. The answer to the meaning of γ_α is its embedding, that is informational connection into the informational realm of informing entity α .

We introduce the following informational includedness hierarchy concerning the basic metaphysical counterinforming-embedding subcycle:

$$\begin{aligned}
 & ((\mathcal{C}_\alpha \models \mathcal{C}_\alpha) \subset \mathcal{I}_\alpha) \subset \alpha; \\
 & (\mathcal{C}_\alpha \models \mathcal{C}_\alpha) \Rightarrow_{\text{Def}} \\
 & \quad (((\mathcal{C}_\alpha \models \gamma_\alpha) \models \mathcal{E}_\alpha) \models \varepsilon_\alpha) \models \mathcal{C}_\alpha); \\
 & (((\mathcal{C}_\alpha \models \gamma_\alpha) \models \mathcal{E}_\alpha) \models \varepsilon_\alpha) \models \mathcal{C}_\alpha \Rightarrow \\
 & \quad \left(\begin{aligned}
 & (((\gamma_\alpha \models \mathcal{E}_\alpha) \models \varepsilon_\alpha) \models \mathcal{C}_\alpha) \models \gamma_\alpha; \\
 & (((\mathcal{E}_\alpha \models \varepsilon_\alpha) \models \mathcal{C}_\alpha) \models \gamma_\alpha) \models \mathcal{E}_\alpha; \\
 & (((\varepsilon_\alpha \models \mathcal{C}_\alpha) \models \gamma_\alpha) \models \mathcal{E}_\alpha) \models \varepsilon_\alpha
 \end{aligned} \right)
 \end{aligned} \tag{22}$$

6.5 Long Metaphysical Cycles

The long metaphysical cycles⁶ are deduced from the most primitive forms, marking the involved informational entities within an informing entity α . The most simple surveying definitional scheme is, for instance,

$$\alpha \Rightarrow_{\text{Def}} \left(\begin{aligned}
 & \alpha \models; \models \alpha; \\
 & (\alpha \models \alpha) \Rightarrow \left(\begin{aligned}
 & \mathcal{I}_\alpha; \\
 & \mathcal{C}_\alpha; \\
 & \gamma_\alpha; \\
 & \mathcal{E}_\alpha; \\
 & \varepsilon_\alpha
 \end{aligned} \right)
 \end{aligned} \right) \tag{23}$$

We see how the metaphysical component $\alpha \models \alpha$ remains informationally open because of the presence of the system formula $\alpha \models; \models \alpha$ in which α 's metaphysicalism is recursively open, that is, can inform and can be informed both interiorly and exteriorly in concern to entity α . The metaphysical openness of entity α means that metaphysicalism of α informs and is informed, that is, $(\alpha \models \alpha) \models$ and $\models (\alpha \models \alpha)$, which is a recursive property of system $\alpha \models; \models \alpha$. This definitional scheme can be expressed in the primitive metaphysical form, which is

$$\alpha \Rightarrow_{\text{Def}} \left(\begin{aligned}
 & \alpha \models; \models \alpha; \\
 & (\alpha \models \alpha) \Rightarrow \left(\begin{aligned}
 & \mathcal{I}_\alpha \models \mathcal{I}_\alpha; \\
 & \mathcal{C}_\alpha \models \mathcal{C}_\alpha; \\
 & \gamma_\alpha \models \gamma_\alpha; \\
 & \mathcal{E}_\alpha \models \mathcal{E}_\alpha; \\
 & \varepsilon_\alpha \models \varepsilon_\alpha
 \end{aligned} \right)
 \end{aligned} \right) \tag{24}$$

Formula 23 and formula 24 are merely the initial schemes for the construction of the so-called long metaphysical cycles of informing within informational entity α . The implicational part of the long

⁶The term *long metaphysical cycle* concerns the longest cyclically structured operand-operator informational formula, which considers all the identified components occurring in a metaphysical cycle, constructed by a constructing informational entity. Within characteristic systemic components (informing, counterinforming, counterinformation, embedding, and embedding information) of an entity, concrete informational entities appear (look at, for example, formula 30), which can concretely lengthen the conceptually basic metaphysical cycle.

metaphysical cycle of entity α 's informing is

$$(\alpha \models \alpha)_{\text{long}} \Rightarrow_{\text{Def}}$$

$$\left(\begin{array}{l} \left(\left(\left(\left(\alpha \models \mathcal{I}_\alpha \right) \models \mathcal{C}_\alpha \right) \models \gamma_\alpha \right) \models \mathcal{E}_\alpha \right) \models \varepsilon_\alpha \right) \models \alpha \Rightarrow \\ \left(\left(\left(\left(\mathcal{I}_\alpha \models \mathcal{C}_\alpha \right) \models \gamma_\alpha \right) \models \mathcal{E}_\alpha \right) \models \varepsilon_\alpha \right) \models \alpha \\ \left(\left(\left(\left(\mathcal{C}_\alpha \models \gamma_\alpha \right) \models \mathcal{E}_\alpha \right) \models \varepsilon_\alpha \right) \models \alpha \right) \models \mathcal{I}_\alpha \\ \left(\left(\left(\left(\gamma_\alpha \models \mathcal{E}_\alpha \right) \models \varepsilon_\alpha \right) \models \alpha \right) \models \mathcal{I}_\alpha \right) \models \mathcal{C}_\alpha \\ \left(\left(\left(\left(\mathcal{E}_\alpha \models \varepsilon_\alpha \right) \models \alpha \right) \models \mathcal{I}_\alpha \right) \models \mathcal{C}_\alpha \right) \models \gamma_\alpha \\ \left(\left(\left(\left(\varepsilon_\alpha \models \alpha \right) \models \mathcal{I}_\alpha \right) \models \mathcal{C}_\alpha \right) \models \gamma_\alpha \right) \models \varepsilon_\alpha \end{array} \right) \quad (25)$$

In long metaphysical cycles, entity α observes its constituting parts $\mathcal{I}_\alpha, \mathcal{C}_\alpha, \gamma_\alpha, \mathcal{E}_\alpha$, and ε_α , but these parts can observe the entity as a whole too. In principle, all parts can observe each other and the entity as a unit. This situation is in no way principally contradictory. Of course, the question arises, how do different parts "know" the wholeness of entity α , also this knowledge can be equally exhaustive for all constitutive entities, if it is supported (delivered) from a central informational place, where all information concerning informational entity α is collected (e.g. in an informational machine, in the informational operand dictionary [Železnikar 92c]). In this way, in any metaphysical cycle, within which α occurs, entity α is one and the same entity.

The other approach would be to understand entity α , at any place or situation it appears, as a sample of α . For instance, in a formula system,

$$(\alpha \models \mathcal{I}_\alpha) \models \alpha; (\mathcal{I}_\alpha \models \alpha) \models \mathcal{I}_\alpha$$

entity α in both formulas could mean one and the same entity. In a different situation, entity α in the first formula could represent one sample and, in the second formula, the other sample of one and the same thing. This situation is not so surprising as it might be understood by the traditional philosophy (readiness-to-hand). Similar affairs take place in a living mind, where different samples of one and the same thing occur within different mental situations and attitudes.

7 Metaphysicalism of an Informational Entity

Metaphysicalism is a common notion, by which the internal informing of an informational entity is determined. This informing is entity-cyclic and sensitive in respect to the entity environment in a semantic-pragmatical (ontic, ontological) way. The entity-cyclic pertains to the informing, counterinforming, and embedding-informational nature of an entity. The semantic-pragmatical of an entity concerns the internalization of external entities, so that they inform within an entity's cyclicity. This cyclicity is structured in parallel and has its short, medium-sized, and long cycles, which pertain to internalized external entities. In this way, metaphysicalism is not only a simple, direct, and straightforwardly shaped informational cyclicity determined once and for all. It is an entity-ontological process, which develops by entity informing in its own way and by means of entity-sensitive impacting of external entities. We shall show the semantic-pragmatical part of metaphysicalism by an example of intelligent informational entity ι in section 8.

Metaphysicalism is a composed and parallel structured cyclicity of an informing entity, which has its internal intention, but remains open for external informational impacts. In this respect, it is a particular view of possible informing of an entity, of its individual and externally impacted processing, in which the identity of an informational entity emerges in an internal way and, for an external observer, also in an externally influenced way.

In this section we have to show the metaphysicalism of an informational entity in its entirety. We have to join the results obtained in the previous sections and interpret them in a compact form. So, let us make a verbal compilation of discussed metaphysical possibilities.

Decomposition of an entity α metaphysicalism starts by the trivial formula $\alpha \models \alpha$. This formula acts as a title (idea as the linguistic-informational meaning) in the top-down design of metaphysicalism. Within this initial situation, metaphysicalism can be tackled by two basic ideas of informing. The first one is in the cyclically based triplet *informing*, *counterinforming*, and *informational embedding*, which is the fundamental way of an

entity informing. The second idea is semantic-pragmatical, which particularizes the first concept and makes it more concrete. In fact, the second idea (in section 8) is an informational projection to the first one.

The next step further from the trivial situation $\alpha \models \alpha$ is the introduction of informing (\mathcal{I}_α), counterinforming (\mathcal{C}_α) with counterinformational entity (γ_α), and informational embedding (\mathcal{E}_α) with embedding informational entity (ε_α). In this way a long basic metaphysical cycle is obtained and all shorter cycles can be derived as parallel informing cycles. At this step of development more concrete entities, particularizing the previous ones, can be brought into the game. For instance, intelligent informational entity ι in section 8 is a good example of a general concept of an intelligent system, which concerns intelligently an entity α .

The question "What is the informing \mathcal{I}_α of an informational entity α ?" particularizes entity \mathcal{I}_α with the next question, which is "What are counterinforming \mathcal{C}_α with counterinformational entity γ_α and embedding \mathcal{E}_α with embedding-informational entity ε_α ?" In this point of view, both γ_α and ε_α are certain results of entities \mathcal{C}_α and \mathcal{E}_α , respectively.

For instance, we can introduce some strategic functions and their results as counterinformational entities (\mathcal{C}_α and γ_α) in the form of intention, significance, sense, etc. Embedding components can embrace certain sensing, observing, perceiving, etc. situation in concern to an observed interior or exterior entity. Then, informing \mathcal{I}_α produces cyclically a result (e.g. meaning to the understood situation), etc. In this manner, a pragmatic way of α 's informational structure and organization remains open for possibilities of further development, improvement, intention, etc., that is, an entity's metaphysicalism.

8 Intelligence as an Informational Entity's Metaphysicalism

The question of intelligence can be tackled by the informational theory of metaphysicalism in an innovative, that is, informationally arising, circular, and creatively spontaneous way. Informational schemes of intelligence become highly parallel and

circularly perplexed; this yields together with informational formula systems, an informationally arising formula system, describing parallel, circular, and interwoven intelligent informational phenomena. On this basis, intelligent entities can be treated as emerging systems, which can be modeled (machined) by the proposed metaphysical conceptualism.

Intelligent informational entities concern several other mutually perplexed informational entities, for instance, understanding, meaning as a result of understanding, consciousness as a specifically circularly structured informational phenomenality, phenomena of observing, perceiving, conceiving, concluding, comprehending, etc. producing observation, perception, conception, conclusion, comprehension, meaning, etc. as intelligent informational items, respectively. Further, intelligence concerns knowledge, truth, belief, faith, significance, etc., which meaningfully overlap each other and form a redundant informational overlapping, that is interweavement, parallelism, community. Only an informational entity possessing some of these characteristics as commonly recognized properties occurs as intelligent, that is, informationally satisfactory in an intelligent way. Thus, the intelligent means to have a sufficiently dynamically phenomenalizing meaning, contents, externalism, internalism, and, certainly, metaphysicalism.

Let us structure metaphysically intelligent informational entity to some extent, proceeding from basic informational cycles to more cyclically and parallel complex ones. As we said in the previous paragraph, intelligent information must be such and such when conceptualizing it from a basic point of view.

We can build up a hierarchy of intelligent functions as they appear in a circular and spontaneous act of understanding. At the bottom is the capability of sensing, which is followed by functions of observing and perceiving of sensed informational entity. Then, on this basis, the conceiving generates concepts, which concern observation and perception of something. A mutual game between perception and conception entity delivers conclusions in the framework of consciousness, which is a kind of comprehension. On the top of intelligent informing metaphysicalism are cycles and parallels of understanding, which produce topi-

cal and detailed meaning of something and behave in their individual and common intelligent ways. Products of such informing are senses, observations, perceptions, conceptions, conclusions, consciousnesses, comprehensions, and meanings, which may embrace other essentially conscious or unconscious entities as there might be intention, significance, sense, identification, etc. within the informational game. All those components can be informationally determined, structured, organized, and formalized.

Now we can sketch some initial attempts of a strategy, by which concepts of intelligence could be informationally implemented. An intelligent informational entity ι informs and is informed in an intelligent metaphysical way and intelligence is always demonstrated in concern to a concrete subject, that is, concrete informational entity, say α . An intelligent entity phenomenalism is marked simply by

$$\iota(\alpha) \Rightarrow_{\text{Def}} (\iota(\alpha) \models_{\text{intelligent}}; \models_{\text{intelligent}} \iota(\alpha)) \quad (26)$$

Intelligent entity ι is an informational function of entity α and notation $\iota(\alpha)$ expresses this functionality. The informational arising of intelligent entity ι depends on informing of entity α . Further, $\iota(\alpha)$ is a regular informational entity inclusive with its components, which are informing $\mathcal{I}_\iota(\alpha)$, counterinforming $\mathcal{C}_\iota(\alpha)$, counterinformational entity $\gamma_\iota(\alpha)$, informational embedding $\mathcal{E}_\iota(\alpha)$, and embedding informational entity $\varepsilon_\iota(\alpha)$. We can take a more concretely componential and circular formula, where the so-called intelligence pertains to a certain entity α , by

$$\iota(\alpha) \Rightarrow_{\text{Def}}$$

$$\left(\begin{array}{l} \mathcal{S}_{\text{sense}}^{\iota}(\alpha) \models \mathcal{S}_{\text{sense}}^{\iota}(\alpha); \\ \mathcal{O}_{\text{observe}}^{\iota}(\alpha) \models \mathcal{O}_{\text{observe}}^{\iota}(\alpha); \\ \mathcal{P}_{\text{perceive}}^{\iota}(\alpha) \models \mathcal{P}_{\text{perceive}}^{\iota}(\alpha); \\ \mathcal{C}_{\text{conceive}}^{\iota}(\alpha) \models \mathcal{C}_{\text{conceive}}^{\iota}(\alpha); \\ \mathcal{C}_{\text{conclude}}^{\iota}(\alpha) \models \mathcal{C}_{\text{conclude}}^{\iota}(\alpha); \\ \mathcal{C}_{\text{be_conscious}}^{\iota}(\alpha) \models \mathcal{C}_{\text{be_conscious}}^{\iota}(\alpha); \\ \mathcal{C}_{\text{comprehend}}^{\iota}(\alpha) \models \mathcal{C}_{\text{comprehend}}^{\iota}(\alpha); \\ \mathcal{U}_{\text{understand}}^{\iota}(\alpha) \models \mathcal{U}_{\text{understand}}^{\iota}(\alpha) \end{array} \right) \quad (27)$$

$\subset \iota(\alpha)$

In this definition of informational inclusion, which pertains to intelligent entity $\iota(\alpha)$, its components have a superscript ι while a subscript expresses a

more concise pragmatical property. In this definition, the so-called operands of informing, that is, $\mathcal{S}_{\text{sense}}^{\iota}(\alpha)$, $\mathcal{O}_{\text{observe}}^{\iota}(\alpha)$, $\mathcal{P}_{\text{perceive}}^{\iota}(\alpha)$, $\mathcal{C}_{\text{conceive}}^{\iota}(\alpha)$, $\mathcal{C}_{\text{conclude}}^{\iota}(\alpha)$, $\mathcal{C}_{\text{be_conscious}}^{\iota}(\alpha)$, $\mathcal{C}_{\text{comprehend}}^{\iota}(\alpha)$, and $\mathcal{U}_{\text{understand}}^{\iota}(\alpha)$ produce (adequate) results in the form of informational entities, as $\sigma_{\text{sensation}}^{\iota}(\alpha)$, $o_{\text{observation}}^{\iota}(\alpha)$, $\pi_{\text{perception}}^{\iota}(\alpha)$, $\gamma_{\text{conception}}^{\iota}(\alpha)$, $\gamma_{\text{conclusion}}^{\iota}(\alpha)$, $\gamma_{\text{consciousness}}^{\iota}(\alpha)$, $\gamma_{\text{comprehension}}^{\iota}(\alpha)$, and $\mu_{\text{meaning}}^{\iota}(\alpha)$, respectively. Arbitrary pragmatical components of informing can be introduced at the informational formalization of philosophical texts⁷.

Within a long metaphysical cycle concerning intelligent entity $\iota(\alpha)$, its informing-active pragmatical components in formula 27 can be structured metaphysically as follows:

$$\begin{aligned} &(((((((\iota(\alpha) \models \mathcal{I}_\iota(\alpha)) \models \mathcal{S}_{\text{sense}}^{\iota}(\alpha)) \\ &\models \mathcal{O}_{\text{observe}}^{\iota}(\alpha)) \models \mathcal{P}_{\text{perceive}}^{\iota}(\alpha)) \\ &\models \mathcal{C}_{\text{conceive}}^{\iota}(\alpha)) \models \mathcal{C}_{\text{conclude}}^{\iota}(\alpha)) \quad (28) \\ &\models \mathcal{C}_{\text{be_conscious}}^{\iota}(\alpha)) \models \mathcal{C}_{\text{comprehend}}^{\iota}(\alpha)) \\ &\models \mathcal{U}_{\text{understand}}^{\iota}(\alpha)) \models \iota(\alpha) \end{aligned}$$

In this cycle we kept informing $\mathcal{I}_\iota(\alpha)$ of intelligent entity $\iota(\alpha)$ to be involved cyclically in informing of chosen pragmatical components. The basic pragmatical metaphysical cycles in formula 28 are

$$\begin{aligned} &(\mathcal{S}_{\text{sense}}^{\iota}(\alpha) \models \sigma_{\text{sensation}}^{\iota}(\alpha)) \models \\ &\quad \mathcal{S}_{\text{sense}}^{\iota}(\alpha); \\ &(\mathcal{O}_{\text{observe}}^{\iota}(\alpha) \models o_{\text{observation}}^{\iota}(\alpha)) \models \\ &\quad \mathcal{O}_{\text{observe}}^{\iota}(\alpha); \\ &(\mathcal{P}_{\text{perceive}}^{\iota}(\alpha) \models \pi_{\text{perception}}^{\iota}(\alpha)) \models \\ &\quad \mathcal{P}_{\text{perceive}}^{\iota}(\alpha); \\ &(\mathcal{C}_{\text{conceive}}^{\iota}(\alpha) \models \gamma_{\text{conception}}^{\iota}(\alpha)) \models \\ &\quad \mathcal{C}_{\text{conceive}}^{\iota}(\alpha); \\ &(\mathcal{C}_{\text{conclude}}^{\iota}(\alpha) \models \gamma_{\text{conclusion}}^{\iota}(\alpha)) \models \\ &\quad \mathcal{C}_{\text{conclude}}^{\iota}(\alpha); \quad (29) \\ &(\mathcal{C}_{\text{be_conscious}}^{\iota}(\alpha) \models \gamma_{\text{consciousness}}^{\iota}(\alpha)) \models \\ &\quad \mathcal{C}_{\text{be_conscious}}^{\iota}(\alpha); \\ &(\mathcal{C}_{\text{comprehend}}^{\iota}(\alpha) \models \gamma_{\text{comprehension}}^{\iota}(\alpha)) \models \\ &\quad \mathcal{C}_{\text{comprehend}}^{\iota}(\alpha); \\ &(\mathcal{U}_{\text{understand}}^{\iota}(\alpha) \models \mu_{\text{meaning}}^{\iota}(\alpha)) \models \\ &\quad \mathcal{U}_{\text{understand}}^{\iota}(\alpha) \end{aligned}$$

and α marks something, for instance, a word, sentence, text paragraph, picture, etc. (in short, an informational entity), which will be in the process of understanding within intelligent entity $\iota(\alpha)$.

⁷Such an attempt was made at informational formalization [Železnikar 92d] of ¶ 31 (Being–there as Understanding) in [Heidegger 62].

As in the discussion pertaining to general informing of an entity, various short, medium-sized, and long metaphysical cycles for intelligent entity ι and its components can occur, making the intelligent structure as complex, perplexed, interwoven, cycled, parallel, spontaneous, etc. as possible. Additional components of intelligent informing can be considered in an intelligent informational game, for instance, $\iota_{\text{intention}}^{\iota}(\alpha)$, $\sigma_{\text{significance}}^{\iota}(\alpha)$, $\sigma_{\text{sense}}^{\iota}(\alpha)$, etc. E.g., while intention may appear already on lower levels of an understanding process, significance can become a strategic role on a higher level of a recognizing process, etc. Also, the object of understanding α becomes meaningfully more and more informationally identified. Different parallel metaphysical cycles inform the intelligent entity ι as a whole as well as its components. The reader can imagine how extremely complex schemes and scenarios, that is, informational formulas of understanding will come into existence.

An essential question is how one can choose informational components, which interact in an understanding process. That what is known and comes into the consciousness about understanding of something, concerns certainly the sensing of something. But, sensing of something, by which a sensation of something comes into existence, is a lower (or the lowest) function in an observing system. This system generates the observing information as a consequence of the observing analysis and synthesis, which certainly have some perceptual and conceptual characteristics. We see how the main metaphysical cycle of understanding begins to appear via sensing, producing sensation into observing, producing an observational information with elements of perceiving and conceiving of something. But, this is only the beginning of a cycle, which becomes more and more structured and complex in a componential way. Information of perception and conception is the result so far. After this initial situation, higher informational functions of understanding can enter into the informational game of understanding. Concluding is a highly informationally integrative entity, which takes the arisen and cyclically structured components of sensing, observing, perceiving and conceiving, and produces a sort of the first approximation of that, which we can call a conclusion about something. But, conclusion pertaining

to the concluded of something is in no way the final result. First, it can be cycled informationally with the intention to obtain a more sophisticated information about something and, second, it can mediate the concluding results to hierarchically higher positioned entities as, for example, comprehending and understanding are. The process of comprehending has, for example, the function of an informational comprehension of an integral form of conclusion within the being-conscious.

Informational comprehending is an action of informational grasping, seizing, comprising, and including as a consequence of the previous informational consciousness. Everything, which in the cyclic process of understanding was produced in informational ways till this situation, has to be grasped anew and included into the consideration of comprehending. In this way, comprehending functions as an overtaking of something and coming up with the overtaken. This process of grasping reminds on sensing on a higher level and, certainly, conceiving. The result of comprehending is a comprehensional information, which now waits to be understood in a new way, when the action proceeds into new metaphysical cycle (middle-sized or long one) for the informational refinement of that, which was sensed, observed, perceived, conceived, concluded, conscious, comprehended, and understood up to this situation by an intelligent informational entity and its informing.

Understanding something is a function of apprehending the meaning of something, that is, grasping the idea, information, concept of something. On this level of informing, understanding is thoroughly acquainted or familiar with something, so it can deal with something properly when producing the meaning pertaining to something. When the result of this acquaintance is not satisfactory or not final (informationally still relevant), a further cycling of the understanding process is going on, producing a refined or more sophisticated meaning of something. Usually, understanding of something can never reach the point of being final or satisfactory, because the arisen meaning is a structure of an informational (linguistic, semantic, tautological) net with various unexplored possibilities. On this way of informing, especially through its cycling, understanding as an informationally acting entity can

proceed to higher informational levels of knowledge, which concerns something. As the highest and all-embracing component within the metaphysical cycle, understanding is in the possession of faculties of lower metaphysical components that concern something. In this sense, together with participating metaphysical components, understanding masters the informing (communication, language, information), which expresses and impresses the meaning of something.

As an additional matter, metaphysical cycles pertaining to understanding are, in their nature, cyclic-parallel.

After this discussion, we can introduce a medium-sized and pragmatically conceptualized parallel-serial metaphysical cycle, which considers all the mentioned components and delivers, when analyzed, a set of evident serial cycles in parallel. At this occasion still modes of informing $\mathcal{I}^i(\alpha)$, $\mathcal{S}^i(\alpha)$, and $\mathcal{S}^i_{\text{make_sense}}(\alpha)$ are introduced, which are self-explanatory. Thus, instead of formula 28 we have a parallel-serial metaphysical scheme for intelligent entity ι :

$$\begin{aligned}
 & \left(\left(\left(\left(\iota(\alpha) \models \mathcal{I}_i(\alpha) \right) \right) \right) \right) \models \\
 & \left(\begin{array}{l} \mathcal{I}^i_{\text{intend}}(\alpha); \\ \mathcal{S}^i_{\text{signify}}(\alpha); \\ \mathcal{S}^i_{\text{make_sense}}(\alpha) \end{array} \right) \models \\
 & \left(\begin{array}{l} \iota^i_{\text{intention}}(\alpha); \\ \sigma^i_{\text{significance}}(\alpha); \\ \sigma^i_{\text{sense}}(\alpha) \end{array} \right) \models \\
 & \left(\begin{array}{l} \mathcal{S}^i_{\text{sense}}(\alpha); \\ \mathcal{O}^i_{\text{observe}}(\alpha); \\ \mathcal{P}^i_{\text{perceive}}(\alpha); \\ \mathcal{C}^i_{\text{conceive}}(\alpha); \\ \mathcal{C}^i_{\text{conclude}}(\alpha); \\ \mathcal{C}^i_{\text{be_conscious}}(\alpha); \\ \mathcal{C}^i_{\text{comprehend}}(\alpha); \\ \mathcal{U}^i_{\text{understand}}(\alpha) \end{array} \right) \models \quad (30) \\
 & \left(\begin{array}{l} \sigma^i_{\text{sensation}}(\alpha); \\ \sigma^i_{\text{observation}}(\alpha); \\ \pi^i_{\text{perception}}(\alpha); \\ \gamma^i_{\text{conception}}(\alpha); \\ \gamma^i_{\text{conclusion}}(\alpha); \\ \gamma^i_{\text{consciousness}}(\alpha); \\ \gamma^i_{\text{comprehension}}(\alpha); \\ \mu^i_{\text{meaning}}(\alpha) \end{array} \right) \models \iota(\alpha)
 \end{aligned}$$

The last informational formula is a shortcut for a parallel system of serial formulas of all possible forms, that is,

$$\begin{aligned}
 & \left(\left(\left(\left(\iota(\alpha) \models \mathcal{I}_i(\alpha) \right) \right) \right) \right) \models \xi(\alpha) \\
 & \quad \models \mathcal{Y}(\alpha) \models \eta(\alpha) \models \iota(\alpha); \\
 & \mathcal{X} \in \{ \mathcal{I}^i_{\text{intend}}, \mathcal{S}^i_{\text{signify}}, \mathcal{S}^i_{\text{make_sense}} \}; \\
 & \xi \in \{ \iota^i_{\text{intention}}, \sigma^i_{\text{significance}}, \sigma^i_{\text{sense}} \}; \\
 & \mathcal{Y} \in \{ \mathcal{S}^i_{\text{sense}}, \mathcal{O}^i_{\text{observe}}, \mathcal{P}^i_{\text{perceive}}, \\
 & \quad \mathcal{C}^i_{\text{conceive}}, \mathcal{C}^i_{\text{conclude}}, \mathcal{C}^i_{\text{be_conscious}}, \\
 & \quad \mathcal{C}^i_{\text{comprehend}}, \mathcal{U}^i_{\text{understand}} \}; \\
 & \eta \in \{ \sigma^i_{\text{sensation}}, \sigma^i_{\text{observation}}, \pi^i_{\text{perception}}, \\
 & \quad \gamma^i_{\text{conception}}, \gamma^i_{\text{conclusion}}, \gamma^i_{\text{consciousness}}, \\
 & \quad \gamma^i_{\text{comprehension}}, \mu^i_{\text{meaning}} \}
 \end{aligned} \quad (31)$$

Formula 30 shows how a serial-parallel expression can be formally presented by a system of cycles, in which all possible informational permutations come into the foreground. We see how specific informational entities, belonging to specific entities of informing, can become informationally influenced not only by informing entities, but also by entities themselves and vice versa. In this way, each entity can informationally impact and can be informationally impacted by an occurring entity.

With formula 30, we can suggest a long metaphysical cycle, considering all components of intelligent entity $\iota(\alpha)$, which appear in the formula. We can "properly" permute the positions of components, e.g., within four parallel blocks in formula 30. The length of the long metaphysical cycles pertaining to $\iota(\alpha)$ is the number of successive informational operators in a long cycle, that is, $\ell_{\text{meta}}(\iota(\alpha)) = 22$. However, 22 is not a final value, because some of the appearing components can be additionally decomposed (for example, $\mathcal{I}_i(\alpha)$).

Let us show only one of the long metaphysical cycles of intelligent entity $\iota(\alpha)$, within which we consider the informational pairs, as follows: intending and intention; signifying and significance; making sense and sense; sensing and sensation; observing and observation; perceiving and perception; conceiving and conception; concluding and conclusion; being-conscious and consciousness; comprehending and comprehension; and understanding and meaning concerning something (that is, entity α). Thus, one of the examples (possibilities) of long metaphysical cycles is the

following one:

$$\begin{aligned}
 & ((((((((((((((((((\iota(\alpha) \models \mathcal{I}_i(\alpha)) \models \\
 & \mathcal{I}_{intend}^i(\alpha) \models \iota_{intention}^i(\alpha) \models \\
 & \mathcal{S}_{signify}^i(\alpha) \models \sigma_{significance}^i(\alpha) \models \\
 & \mathcal{S}_{make_sense}^i(\alpha) \models \sigma_{sense}^i(\alpha) \models \\
 & \mathcal{S}_{sense}^i(\alpha) \models \sigma_{sensation}^i(\alpha) \models \\
 & \mathcal{O}_{observe}^i(\alpha) \models \sigma_{observation}^i(\alpha) \models \\
 & \mathcal{P}_{perceive}^i(\alpha) \models \pi_{perception}^i(\alpha) \models \\
 & \mathcal{C}_{conceive}^i(\alpha) \models \gamma_{conception}^i(\alpha) \models \\
 & \mathcal{C}_{conclude}^i(\alpha) \models \gamma_{conclusion}^i(\alpha) \models \\
 & \mathcal{C}_{bc_conscious}^i(\alpha) \models \gamma_{consciousness}^i(\alpha) \models \\
 & \mathcal{C}_{comprehend}^i(\alpha) \models \gamma_{comprehension}^i(\alpha) \models \\
 & \mathcal{U}_{understand}^i(\alpha) \models \mu_{meaning}^i(\alpha) \models \\
 & \iota(\alpha)
 \end{aligned} \tag{32}$$

The reader can imagine how many other long metaphysical cycles concerning intelligent entity $\iota(\alpha)$ are possible and how each of them represents an alternative case of metaphysical informing. In this variety of syntactic possibilities of long metaphysical formulas, which can inform in parallel (simultaneously, cooperatively), participating components can arise in various informational ways, constituting the spontaneity and cyclicity of an intelligent informational entity.

9 Conclusion

Metaphysicalism is a concept of inner informing of entities. By metaphysicalism, the informational arising of entities in scopes of their informational contents is performed in an informational constructive way. Metaphysicalism is a basic principle (called *informatio tertia*) and is an essential circular-spontaneous property of an informing entity. Entities within an informational system (e.g. informational machine) can obtain metaphysical support by the system, but can also have their own metaphysical “mechanisms”. In this sense, metaphysicalism is a constructive approach in a conceptual and a machine-oriented way.

Metaphysicalism may not be paralleled by metaphysics as *philosophia prima* or supernatural power. The term expresses that, which concerns the informational emerging of an entity’s possibilities and lies in different presentations (in German, Vorstellungen) of one and the same thing at different observing places with different informational possibilities. Metaphysicalism is an inner creative power of an informing entity. Under such

circumstances, it is never completely foreseeable in advance⁸ for it can be impacted interiorly and exteriorly in respect to the informing entity.

Within the conclusion pertaining to metaphysicalism, we have to say which are the possibilities of its technological implementation. Informationally supported computing system is the first step to such implementation. Such a system must deliver a basic informational support to informing entities and, within its operating system, there must be informational dictionaries [Dictionary 90a] and, for instance, knowledge archives [Knowledge 92], in which informational entities needed for informational arising of an informing entity can be searched.

The speed of an informational machine implementation and machine’s functional (informational) performance will dramatically depend on the sophistication of machine metaphysicalism, that is, on basic informing, counterinforming and informational embedding mechanisms by which informational machine as an informing entity by itself will systemically support the informing of occurring informational entities (operands and formulas, informational programs, informational bases) [Železnikar 92c].

In some former essays [Železnikar 92d] it was shown how semantically reasonably structured written texts, that is, words, word groups, idioms, sentences, paragraphs, sections, etc. inform and are informed in various circular and parallel ways, which are mutually interwoven. It became evident that an informational interpretation (understanding) of a text surpasses the conventional, human style of linguistic comprehension, which is on a global level serial, atomistically structured (consciously particularized), also non-parallel, and not dynamically structured in the way of a system of text and its parts interpreting informational

⁸ *To foresee in advance* may not be equaled with *to predict*. By informational terms, we can put, for example, $F_{foresee_in_advance} = ((S_{see} \models_{in_advance}) \models_{in_advance})$ while, for the other case, there is, $P_{predict} = (S_{say} \models_{before})$. A further difference is in the semantical nature of both cases and concerns, in the first case to *see before in advance* or, also, to *see in advance, in advance* and, in the second case, to *say in advance*. As we understand, the seeing and saying might be completely different informational phenomena. In the common speech, it may be inappropriate to say to *foresee in advance, in advance*. Within the informational discourse, this case can become a matter of informational externalism and internalism.

formulas. Of course, besides unforeseeable pragmatic approaches of a text recognition, an informational system (machine) of informing entities (operands and formulas) can consider various traditional and scientifically organized methods and structures of text interpretation, cognition, informational processing, etc. But, all that may not suffice for a dynamically understood written text, which informs highly parallel in an openly structured informational realm, that is, in the world, where information and informational understanding arise at every time.

Thus, let us close the discourse on metaphysicalism of informing with the following rumination. Perceiving of the physical is metaphysical. Components as sensing, observing, perceiving, conceiving, concluding, being-conscious, comprehending and, at the end, understanding⁹ are characteristic metaphysical informational entities. But, metaphysicalism does not mean that these components do not possess their own physical, biological, chemical, genetic, neuronal, social, etc. backgrounds of matter, energy, information (structure, organization), which enable the appearance of "metaphysical" phenomenalism. Or, said in another way ([Husserl 00] II/2, p. 244): *Und sie existieren dabei keineswegs bloß phänomenal und intentional (als erscheinende und bloß vermeinte Inhalte), sondern wirklich.*

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⁹An initial philosophy of understanding as an informational entity and a first attempt to its informational formalization is presented in [Železnikar 90a] (Part One: A General Philosophy and Theory of Understanding as Information) and in [Železnikar 90b] (Part Two: A Formal Theory of Understanding as Information).