Article

Angeletics and Logic in Reality

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Abstract: Rafael Capurro has defined Angeletics (or messaging theory—John Holgate's preferred term) as the study of messages and messaging and proposed its paradigmatic role in 21st century science and society. As stated in *Messages and Messengers. Angeletics as an Approach to the Phenomenology of Communication*, edited by Capurro and Holgate, the objective of Angeletics is to further both a philosophical and a hermeneutical understanding of this phenomenon. My paper is directed at key issues outlined in the reference document by several authors that involve the *physical* grounding and evolution of messaging and information processes. My approach is to apply my recent extension of logic to complex real systems, processes and concepts, including information, messages and their interaction (Logic in Reality, LIR). LIR supports the grounding of Angeletics in reality and emphasizes the congruence between informational issues in science and in philosophy, as in Capurro's distinction between an "angeletic philosophy" and "philosophic Angeletics". From this perspective, LIR can act as a framework for the debate about the nature and function of messaging and information theory and their relevance for a more ethical information society.

Keywords: angeletics; complexity; contradiction; dialectics; dynamics; information; logic; messages; phenomenology; process

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1. Introduction

1.1. Angeletics

Rafael Capurro and his followers have defined Angeletics (or messaging theory—John Holgate's preferred term) as the study of messages and messaging and proposed that it can play a paradigmatic

role in 21st century science and society. As stated in the recent compendium *Messages and Messengers. Angeletics as an Approach to the Phenomenology of Communication* [1], hereinafter referred to as *M&M*, edited by Capurro and Holgate, the objective of Angeletics is to further both a philosophical and a hermeneutical debate about this phenomenon. Angeletics offers a conceptual space for reflection in which the foundational relationships between messages, their senders and their receivers can be explored.

This paper is frankly synthetic in being directed at key issues outlined by several authors in [1] that it can be characterized as involving the *physical* grounding and evolution of messaging and information processes in the broadest sense. The originality of my approach is to apply my recent extension of logic to complex real systems, processes and concepts, including information, messages and their interaction [2]. I will show that this logic (Logic in Reality, LIR) provides a basis for an ethical stance that does not depend on a transcendental view of human existence, while giving any such view appropriate ontological value as a primitive dimension of that existence. It is based on the logic of the *included* middle, grounded in physics, which was first elaborated by the Franco-Romanian thinker Stéphane Lupasco (Bucharest, 1900–Paris, 1988) in the middle of the 20th Century [3].

I suggest that Logic in Reality enhances the utility of Angeletics by offering rigorous alternatives to certain dichotomies and *distinguos* it has retained. I see these as the unnecessary and undesirable residues or relics of the inappropriate use of binary, truth-functional logics and their equivalents in set and category theory as a basis for analysis. Angeletics for me is, in the narrower and wider senses of Capurro, *both*, "A science in its own right—an anthropology of messengers and messaging, *and* an epistemological or philosophical stance defining an attitude toward messages and information theory and science." The two are in a dialectical relation that alternately emphasizes one or the other, without conflation or "fusion", depending on the perspective chosen and in which the interactive relations and overlaps are as important as the differences.

The advantage of my proposed interpretation of Angeletics is thus to favor as general as possible an ethical and political dialogue about it. I emphasize the congruence between informational issues in science, such as Matsuno's discussion of carbon, and in philosophy, as in Capurro's distinction between an "angeletic philosophy" and "philosophic Angeletics", where, "Once the phenomenon of announcing (messages and messengers) AS such is established and explained, normal science can start [4]." No particular metaphysical doctrine or model of the world is required other than that it should include *both* realist and anti-realist aspects, also in a dialectic interaction that is itself grounded in the non-separable objectivity and subjectivity of a non-separable physical and "psychic universe" (a Lupasco term).

1.2. The Problem of Logic

Angeletics will be described from several historical and philosophical perspectives in other papers in this Special Issue. I see, however, one of the major issues affecting Angeletics, as well as other complex cognitive processes, is the absence of an applicable logic that would help to establish its credibility and legitimacy in relation to the science and philosophy of information.

Definition of individual and collective responsibility and other moral issues requires an understanding of the beliefs and intentional characteristics of human beings, as well as the structure and functioning of the society in which they are embedded. The foundational approach of Capurro, in Angeletics, to the

nature and dynamics of messaging as well as information has been a pioneering approach to a correction of philosophy in relation to science in the information field. Fundamental philosophical issues about Being and the Being of man in the world take on a new relevance in this context, as well as how best to answer metaphysical questions, such as the origin of morality and whether people are free agents exercising free will in a fundamentally deterministic or indeterministic universe.

Few discussions of logic are to be found to date in writings on Angeletics, and the reason is not hard to find. Logic has been largely absent from the discussion of Angeletics for the good, if unfortunate, reason that standard propositional, truth-functional logics, even in their modern modal and epistemic forms, are incapable of handling the recursive and topic *non*-neutral features of messages and, indeed, of information other than at the lowest computationally defined level. Binary truth-functional propositional logics, even in their modern modal, doxastic and deontic forms, serve as the underpinnings of a current scientific paradigm from which questions of human values and their relation to Being and becoming are almost totally absent. If such issues are discussed in terms of logic at all, it is essentially metaphorically, as a more or less classically structured system of beliefs and practices. Standard logics, and the entirely equivalent disciplines of set and category theory, are not designed for the analysis of either fundamental ontological questions or complex psychological and socio-economic phenomena, such as that of art. Accordingly, I discuss briefly the messaging processes involved in the perception-appreciation of art objects (Section 6.4).

The exclusion of critical domains of thought involving questions of change, consciousness and the self and ethics from logic and, therefore, from science in its original conception of knowledge of all nature, seems unsatisfactory. For example, change is ubiquitous in existence and experience. Theories of change, however, have focused on making it mathematically, computationally and logically tractable, within the framework of standard logic. In fact, change is contradictory: it is regular *and* irregular; consistent *and* inconsistent; continuous *and* discontinuous. Since the only logics available are incapable of accepting real contradictions, they have been incapable of describing change.

All approaches to such phenomena thus suffer from more or less explicit dependence on underlying logics, bivalent or multivalent, that are semantic and truth-functional, including their most recent modal, epistemic, doxastic and paracomplete (intuitionist) versions. These logics require absolute separation of, for example, continuity and discontinuity, space-time and matter, chance and necessity, *etc.*, and lead to the paradoxes with which we are all familiar. Even paraconsistent logics, which accept contradiction, capture only the linguistic, as opposed to the physical, aspects of processes, although some real inconsistencies in simple change (Sorites problems) are accepted. Logics of epistemic change [5] are based on linguistic abstractions from which physical processes have been largely eliminated.

In this paper, I will argue for a new logical approach, which is applicable to complex cognitive processes in general. The new LIR perspective focuses on the connections, rather than the distinctions, between phenomena and provides a new basis for the discussion of moral issues in a more principled, scientific manner. In my view, it does little good to talk despairingly about the negative consequences of the expansion of the informational world without providing some basis for a fundamental understanding of the basis of its misuse (a corollary, which is being studied in detail by Christian Fuchs and his colleagues, is the need for a new understanding of the information-related aspects of the global, private or state essentially capitalistic economic system).

1.3. Outline of Paper

Accordingly, in the next Section 2 of this paper, I present the briefest possible outline of Logic in Reality (LIR) as a framework for understanding science that can, at the same time, accept the philosophical foundations of Angeletics. In Section 3, I will summarize several of the philosophical considerations at the heart of Angeletics and begin to contrast them with perspectives derived from LIR. Section 4 continues this approach with reference to the specific perspectives of some of the authors in [1]. Section 5 will address issues of Angeletics and science and Angeletics as science. In Section 6, I will turn to the relation between messaging and information theory and the contribution that LIR might make to their definition. The relevance of Capurro's work on Information Ethics and the role of both Angeletics and LIR are discussed. In my concluding Section 7, I place Angeletics in the context of some emergent approaches to information and its philosophy, which, in my view, have strong kinship to Angeletics as part of a new informational paradigm.

2. Logic in Reality (LIR)

2.1. Axioms, Calculus and Semantics

Logic in Reality (LIR) is a new kind of logic that extends the domain of logic to real processes and can address complex interactions at the level of individuals and society, as well as relating them to an underlying metaphysics. LIR is grounded in a particle/field view of the universe, and its axioms and rules provide a framework for analyzing and explaining real world entities and processes at biological, cognitive and social levels of reality or complexity.

The term LIR is intended to imply both (1) that the principle of change according to which reality operates is a logic embedded in it, the LIR, and (2) that what logic really is or should be involves this same real physical–metaphysical, but also logical, principle. The major components of this logic are the following:

(i)   Its foundation in the physical and metaphysical dualities of nature;
(ii) Its axioms and calculus intended to reflect real change;
(iii) The categorical structure of its related ontology;
(iv) A two-level framework of relational analysis.

Details of LIR are provided in [2]. Stated very rapidly, its most important concepts are that (1) every real complex process is accompanied, logically and functionally, by its opposite or contradiction (principle of dynamic opposition), but only in the sense that when one element is (predominantly) present or actualized, the other is (predominantly) absent or potentialized, alternately and reciprocally, without either ever going to zero; and (2) the emergence of a new entity at a higher level of reality or complexity can take place at the point of equilibrium or maximum interaction between the two.

LIR should be seen as a logic applying to processes, in a process-ontological view of reality, to trends and tendencies, rather than to "objects" or the steps in a state-transition picture of change. Processes are described formally as transfinite chains of chains, *etc.*, of alternating actualizations and potentializations of implications, considered with the other logical operators, conjunction and

disjunction as real processes themselves. The directions of change are either (1) toward stable macrophysical objects and simple situations, the result of processes of processes, *etc.*, going in the direction of a "non-contradictory" identity or diversity, or (2) toward a state of maximum contradiction (T-state for included third term) from which new entities can emerge. LIR is, therefore, a logic of emergence, a new non-propositional, non-truth-functional logic of change.

Standard logic underlies, rather, the construction of simplified models, which fail to capture the essential dynamics of biological and cognitive processes, such as reasoning [6]. LIR does not replace classical binary or multi-valued logics, but reduces them for simple systems and situations. These include chaotic systems, which are not mathematically incomprehensible, but also computational or algorithmic, as their elements are not in a functionally interactive relationship. The interactive relationships within or between levels of reality to which LIR applies are characteristic of entities with some form of internal representation, biological or cognitive.

The levels of reality referred to in LIR are ontological, defined by the different but isomorphic physical laws that apply. I have recently compared the LIR view of reality as constituted by levels to Floridi's levels of organization (LoOs), which also support an ontological approach [7]. According to this, systems for analysis are supposed to have a (usually hierarchical) structure in themselves, *de re*, which is allegedly captured and uncovered by its description. For example, levels of communication, of decision processing and of information flow can all be presented as specific instances that can be analyzed in terms of LoOs.

2.2. The Categorical Ontology of LIR: Inconsistency

As I have also written recently in this *Journal* [8], many theoretical arguments depend on some form of absolute separability of dichotomous terms via the importation, explicit or implicit, of abstract principles of propositional binary logic exemplified in standard notions of time, space and causality. LIR discusses philosophical problems in physical, dynamical terms that do not require abstract categorical structures that separate aspects of reality. The critical categorical feature of the LIR process ontology is the non-separability of opposing phenomena, *e.g.*, two theories or elements of phenomena, e.g., syntax and semantics, types and tokens.

In the categorical ontology of LIR (Table 1), the sole material category is energy, and the most important formal categories are process and dynamic opposition.

Table 1. Categories of LIR.

Material	**Formal**		**Subject, Object, and Subject–Object**
	Process	*Dynamic Opposition*	
Energy/quantum field	Emergence, closure, and downward causation	Separability and non-separability	*T-state*

From the LIR metaphysical standpoint, for real systems or phenomena or processes in which real dualities are instantiated, their terms are not separated or separable! Real complex phenomena display a contradictory relation to or interaction between themselves and their opposites or contradictions. Note that the requirements in (1) classical category theory of exclusivity and exhaustivity and in

(2) absolute separation of sets and their elements do not apply: they are bivalent logic in another form. LIR approaches in a new way the inevitable problems resulting from the classical philosophical dichotomies, as well as such concepts as space and time, simultaneity and succession as categories with separable categorical features. Non-separability underlies all other metaphysical and phenomenal dualities, such as cause and effect, determinism and indeterminism, subject and object, and continuity and discontinuity. I thus claim that non-separability at the macroscopic level, like that being explored at the quantum level, provides a principle of organization or structure in macroscopic phenomena that has been neglected in science and philosophy.

Logic in Reality thus differs in its treatment of the subject-object duality from all of the vast discussion of this topic. The philosophy of LIR can be characterized as a non-naive dualistic realism that postulates a real, interactive, oppositional relation between all the classic dualities when they are instantiated in reality. It is part of the new ontological turn in philosophy. The LIR view, critical for the discussion of free will and the origin of moral responsibility, is that the world is ontologically deterministic and epistemologically indeterministic, in the contradictorial relation suggested above.

In contrast to standard logics, LIR has no difficulty in dealing with inconsistency, interpreting it as a natural consequence of the underlying principle of dynamic opposition in physical reality. Many, if not most, of the problems in the (endless) debate about the nature of change, as pointed out by Mortensen [9], seem to require a fundamental inconsistency in the world, which LIR accepts as an essential part of its ontology.

That philosophical discourse as a whole might require drastic modification of its underlying logic has been expressed very rarely, for example (and only indirectly) in a recent paper [10] by Bonnefon *et al.* As these authors point out, real reasoners take into account the preferences of other agents, while the psychology of reasoning follows classical logic and focuses on disinterested inferences. In fact, reasoners use conditional rules describing actions and consequences and follow them at the expense of (standard) logic when it and preferences point to different conclusions. Logic in Reality provides a framework for such rules and accounts of real reasoning [11].

As I have stated in [2], the logical framework that LIR provides is intended to be one in which issues of interest to science receive a treatment that emphasizes the differences and interrelationships between the opposing elements of phenomena, including theories as well as the data of those theories. However, LIR can be criticized from a philosophical standpoint as appearing to have incorporated too many assumptions and principles that are those of standard science and philosophy, but foreign to Angeletics and its Heideggerian philosophical base.

In the next Section, I will outline some of the philosophical considerations at the heart of Angeletics, as I understand it, and contrast them with perspectives derived from Logic in Reality. I will then mention a few of the (very constructive) objections that have been raised against LIR and suggest that they are primarily the consequence of a (previously justified) position of defense against the abusive encroachment of the standard scientific paradigm. I have used scientific language in this paper, first of all, because it should not be too unfamiliar to readers of this Journal, but also to convey a certain degree of rigor through the use of scientific "language". There should be no disjunction with the social language used to discuss social issues. This paper, hopefully, will thus serve to show that the doctrine of Logic in Reality supports the neo-humanist tenets of Angeletics and provides a conceptual interface for an ethically responsible development of science and metaphysics.

3. Angeletics and Philosophy

3.1. The Rationale for Angeletics

Capurro and others have moved from a concept of information to one of messages and messaging to describe exchanges between, especially, human beings. The finality of this movement is a more perspicacious grounding of the philosophical and ethical implications of those exchanges. Angeletics is defined by Capurro [4] as the study of messages and messaging, the term and concept being grounded in the classical Greek word for messenger *angellos.*The other key term and concept—message—is derived from the Latin *mittere*, to send. This term is not only more dynamic than that of information as it is usually defined, but implies the triple of sender, message and receiver. Further and more importantly, the choice of the term Angeletics for the study of messages and messaging is to signal the use of a philosophical framework, closest to that of Heidegger, which is ultimately based on the irreducible uniqueness of the individual human consciousness in and of the world—Being.

This approach requires a major redefinition of a large number of fundamental assumptions in philosophy and modern science that have been taken for granted. Summarizing very rapidly, the latter all suffer from having eliminated an essential, qualitative human-relatedness in phenomena in favor of their predominantly reductionist quantitative formulation by modern science in mathematical terms. Recovery from this undesirable state of affairs requires a great deal of philosophical "work", for example, to restore to the concept of information itself the underlying dynamic change of form that it implies. Another is to insure recognition of the non-separability of critical dualities, e.g., subject and object and absence and presence, better absencing and presencing (to emphasize their processual aspects).

Standard scientific concepts in the view presented by Michael Eldred [12] are totally limited by the complete inaccessibility, if not non-existence, of things in themselves. Nicolescu [13] has called this the "zone of non-resistance" to all our ideas, theories, experiments, *etc.* Such scientific concepts are, as a consequence, to be totally relativized to their contemporary formulation, in a conceptual time-space designated in this Heideggerian framework as the existential "clearing", constituted by individual human consciousnesses.

In somewhat different terms, Holgate [14] suggests that science should continue "the epistemological revolution of our time" and extend relational concepts to every field of science and the mind (relativity, pluralism, polarities, information exchange, *etc.*), and explore "the various possible paths of the inner quest". The sharing and networking of messages is or is becoming, then, critical to any spiritual objective, as well as its intended goal of development of a new non-materialistic ethics.

For a person to send a message to another, no matter how simple, is a creative act. It is an energetic process that has emerged by overcoming a resistance to doing nothing, or not sending any message. If this is so, the theory of sending messages, messaging or Angeletics, cannot be established according to principles that fail to take into account the creative, value-laden process of messaging. The characterization of the messages themselves is a rather simpler problem, especially in this context. Messages can refer directly to the physical survival of the receiver, or more indirectly to her mental and spiritual well-being. The transmission of such messages, and of the information associated with them, is thus a moral necessity for both sender and receiver.

Capurro, Holgate, Eldred, Hofkirchner and others have provided the comprehensive historical perspective that justifies the above rapid comments, going back, in the West, to the ancient Greeks and reaching an advanced development, particularly, in the ontology of Heidegger. It is this central functional role of philosophy in messaging theory that calls for definition of a new specific field for the clarification of residual problems at the interface of the domains of messages, communication and information, in which the notion of Being plays a central role.

3.2. Being

The following is my restatement of what I consider are the essential features, for the discussion of Angeletics, of "Being in Reality". In Capurro's words [15], the ontic difference between a sender a messenger and a receiver as separate entities presupposes the original unity of Being as sender, the world as message and humans as messengers. We can distinguish analytically this original unity, but we must be aware that any ontic separation (at whatever level of reality and concerning whatever kinds of beings) presupposes our being-in-the-world (to use Heidegger's formula). By the same token, the modern analytic separation of subject and object (which LIR rejects) is a possibility that is grounded on the original relationship between man (or humans) and world. Whatever we perceive AS being this or that (and this perception is now, we can say, an original angeletic perception) and on whatever kind of relation (causal or not, *etc.*) is done on the basis of our being originally open to the message of Being, which is the world. The world AS message means that we are open not only to the pervading/prevailing perspective of things AS this or that (for instance, in the form of scientific theories), but that what is being unconcealed by us AS this or that is being done on the basis of perceiving some IS as AS. This hermeneutic task of questioning pervading views (of whatever kind) of IS as AS presupposes then that we are able to pass on not only ontic messages regarding some particular being AS being this or that (on whatever relationship to other beings), but that we are originally a unity of this event of un-concealing itself. As we mostly "forget" this original process because of our tendency to take for granted what IS as this or that, we "forget" also the original unity that allows us both, to forget and to question any kind of IS as AS. It is easy to see why then hermeneutics and Angeletics in this ontological (and not only ontic) perspective are in some way the same, *i.e.*, they arise AS messaging or AS interpretation presupposing each other.

The expression of the properties of Being by Heidegger are not identical to the categorical non-separable features of reality as described by Lupasco and in Logic in Reality. But Lupasco proposed a way of "doing" logic that was extremely radical. This is a metalogical consideration, as it deals with the logic of a logical system and its major components, rules, relations and objectives. We may say that in operating his radical and unique change in the conception of logic, Lupasco effected a metalogical rejunction of logic with a global science of nature, returning logic to its original sense. "Rejunction" in effect becomes a new logical connector, which better describes the *rapprochement* of interactive processes that are dialectically linked and never totally separated or separable. Rather than conjunction and disjunction, which are "relics" of classical bivalent logic, one should speak from now on, to be consistent, only of rejunction and dejunction [16].

Thus when Angeletics and LIR "interact", a new potentially useful system appears for discussing in tandem the physical and philosophical aspects of both Being and becoming. As a specific example, we

may discuss the (real) process of the experience of hermeneutics and Angeletics as presupposing one another as one that instantiates the Principle of Dynamic Opposition expressed by the LIR Axiom of Conditional Contradiction. This example indicates that it is not quite correct to say that Lupasco's system follows Aristotelian, Hegelian and Marxian metaphysics simply because it deals with classic dualities such as matter/form (information), subjectivity/objectivity, existence/non-existence, *etc.* Lupasco provided a framework in which the *non*-separability of these dualities could be profitably discussed. (On the other hand, Lupasco failed totally to provide a reading of Being which is acceptable to me, placing it in a total disjunction with Becoming, which he designated as non-Being. His logic and Principle of Dynamic Opposition were stated to apply only to the latter, while the former was the locus of affect or affectivity. This part of Lupasco's work will not be discussed further in this paper.)

3.3. Being and Non-Being in LIR

Heidegger provides some perhaps unexpected support of a dynamic view of the LIR conception of logical contradictions in reality when he describes Being as both wholly indeterminate and at the same time highly determinate. "From the standpoint of the usual logic we have here an obvious contradiction: …determinate, wholly indeterminate Being. *If we decline to delude ourselves,* (emphasis mine) … *we find ourselves standing in the very middle of this contradiction. And this stand of ours is more real than just about anything else we call real; it is more real than dogs and cats, automobiles and newspapers.*" As in LIR, it is contradictions that are fundamental to reality, being characterized by its contradictorial relation with non-being, as well as with becoming. Jacquette [17] criticized Heidegger for basing his conception of ontology on human experience, but it is not a criticism to say, as I do, that a logic may be more fundamental than Heidegger thought! Heidegger saw that the constraints on thought imposed by classical or traditional logic ("a court of justice, established for all eternity" [18]), of which the principle of non-contradiction was the cornerstone, were unacceptable, and his idea finds confirmation in LIR. Aerts differentiates between a process view of reality that includes being and becoming, and a geometrical view, that discusses only being, and shows that there is no contradiction between them. One is dealing, of course, with two views of being—the physical and the metaphysical, but in LIR the distinction loses force: in the latter, being seems also to mean the normal physical contents of the universe, without "time", but the ontological categorization of them in LIR as Process and Energy is needed to adequately characterize both being, becoming and their relation [19].

Being and non-Being are terms 'of art' which describe in some way the totality of the universe, related to what I have defined as the real in energetic terms. I would also suggest that Being and Becoming, *as concepts*, clearly stand in the dialectic relationship to one another: as one thinks of the world as Being, the world as Becoming is potentialized and *vice versa* in the usual way. With these notions of LIR as background, let us look at the question of hermeneutics as such.

3.4. Hermeneutics

In the Capurro-Holgate volume, hermeneutics and hermeneutic understanding and methodology are examined in relation to messages and messaging from many different standpoints. Discussing the relation of Logic in Reality to all of these would require a separate article, so I will limit myself to a

few comments, which will bring out why the LIR approach cuts through some of the debate on what hermeneutics is and what it can do. I look forward to the responses of students of hermeneutics to them.

(1) LIR supports the ontological turn in hermeneutics. For LIR, as for Heidegger, hermeneutics is ontology [20]. If hermeneutics is about the most fundamental conditions of man's Being in the world, LIR is about the most fundamental properties of man's becoming in the world.

(2) Heidegger says that understanding is a mode of Being, something we are, and LIR says further that what we *are*, also, in part the opposite of what we *know*.

(3) The world is tacitly intelligible to us because we are physically part of it, sharing the same energy. Accordingly, I would tend to disagree that no bridge between science and hermeneutic understanding is possible, and I suggest that the ontic-ontological distinction is part of the problem, not of the solution.

(4) LIR sees no conflict between a Heideggerian conception of the clearing, in which the world appears to us AS something and a basis of that clearing in a dynamic view. These, too, are in dialectical relationship, with neither being totally adequate or inadequate.

(5) As for Heidegger, the hermeneutic circle is not a linguistic one, but refers to the interplay between our self-understanding and our understanding the world as an existential task. In LIR, the image of the circle is replaced by the spiral to better reflect that one never returns to the same point, as per its Axiom of Non-Identity. Capurro suggests that, following the later Heidegger, "we can say that the 'hermeneutic circle' is in fact an angeletic circle insofar as it concerns the relation between senders, messengers, messages and receivers. …Being is sender and receiver insofar as a world is always a potential perspective for understanding. Heidegger writes: 'the messenger must already come from the message. But he must also already have gone towards it'." Logic in Reality follows the dynamic evolution of these movements of subjects and objects or, better, subject-objects, as *real changes* leading to the emergence of *new* understanding, as in the discussion of the *new* and *news* by Holgate and Knödler-Pasch [21].

(6) When we do make interpretations, LIR provides a logical framework for reframing both (i) the connection between linguistic parts and wholes and (ii) and the "dialogical" interplay between past and present.

(7) Like Gadamer and Heidegger, LIR refuses to allow any fundamental dichotomy between what a subject represents (to him/herself) as true and how the world actually, objectively is. Both are processes in which the Principle of Dynamic Opposition is instantiated as it is in all complex patterns of interaction.

In fine, LIR can be considered, among other things, as a hermeneutics that counters the epistemic, dualistic and anti-realist paradigms of modern philosophy. LIR both opens new philosophical ground by avoiding simplistic relativism and skepticism, calling for a "new skepticism" that does not accept theories that themselves do not accept any antagonistic dynamics. Let us now test these concepts against other features of Angeletics as described in *M&M*.

4. Angeletics, Philosophy and LIR

4.1. Convergence and Divergence: What is Primitive?

I propose that LIR is a candidate for a way of thinking about reality and information transfer and messaging that is not doomed to culminate in science as technology, since it questions the *logic* underlying the foundations of the standard metaphysics-science-technology paradigm. LIR thinking does not insist on need for linguistic truth as the object of (linguistic) proofs, but sets as primitive the "truth" of reality. The thinking of Logic in Reality is then something like what Capurro calls angeletic thinking, moving self-referentially inside in a process whose finality is the change in ourselves of which we are the messengers. I have related LIR elsewhere to the "informational thinking" proposed by Wu Kun for much the same reasons [22].

It is neither necessary nor correct to overlook the opposition between LIR and some of the philosophical conceptions of Angeletics, which have an apparent anti-realist, anti-scientific bias (perhaps for the reason indicated in Section 2). However, I prefer to say that the two approaches primarily differ by a question of priority. As Capurro defines it, Angeletics is a program that implies a philosophical (or phenomenological) approach, as well as a scientific one. An "angeletic philosophy" means that we are aware of being(s) AS announcing itself/themselves AS being(s). while a "philosophic angeletics" means that we perceive the phenomenon of announcing (messages and messengers) AS such, so that once this is "explained", a scientific theory (or several) can be developed and "normal science" can start.

For LIR, what makes human beings uniquely human can be defined by the interactions between individuals in which meaningful messages, in contrast to simply necessary information, are exchanged. The concept of messages makes particularly clear the role of man in the universe where there is a physical, as well as a philosophical, ground of those interactions. Eldred prefers the term "interplay" to interactions, because he sees communication as a domain in which there are multiple potencies as starting-points (each human being is a spontaneous starting-point of its life-movements). The outcome of the inter*play* remains unpredictable and incalculable and refers to human players who are the origins of their own free movements, while inter*action* refers to things. He therefore distinguishes between interaction and interplay to allow for the spontaneous nothingness of Dasein.

Capurro's conception is "not to forget that we are part (or players) of the "angeletic" interplay with and "in" the world. And, this openness to the world means a "restriction" of the infinity of the world, but at the same time, if we understand it AS a restriction, lets us be free to perceive the message of the "whole". We can thus avoid getting lost within contradictory phenomena (or trying to tie them down through dialectics or information), as well as taking the fundamentalist way (which can be also a scientific one) of taking a particular perspective on "the whole" AS being the "true" one.

In Capurro's more literary formulation, "The main issue of Angeletics is to be able to perceive the message of the strange goddess called *Aletheia* (truth) that does not (as gods usually do) reveal us an "eternal" and "transcendent" "truth" but sends us the message concerning the temporal-spatial three-folded unity of the world, that we, humans, perceive in its unity and difference between what was, what is and what will be." In the metaphysics of LIR, on the other hand, spontaneity and the individual freedom of will and movement are appearances that accompany and are accompanied by the

reality of unpredictability and incalculability. The ascent from the interactions at the lowest physical to the highest cognitive level is not "seamless", an idiotic current buzzword, but alternates between continuity and discontinuity.

A further relation between hermeneutics and Angeletics is characterized by Capurro as follows: when we discuss/interpret a scientific theory we presuppose not only that such a theory has a meaning to be analyzed and discussed (which is the task of hermeneutics), but also that such a theory can be seen AS a message, and that from this perspective, the question of relevance (for whom? *etc.*) is different from the question of truth. The theory is one of messages/messengers that is grounded in the human sphere regardless of the different contexts involved (physical, biological, social, political, *etc.*).

Capurro suggests that the terminology (coming from modernity) concerning "objectivity" and "subjectivity" is no longer necessary, as we are dealing with messengers and messages, not with objects and subjects. Such a transformation would also concern the relation between the physical and the "psychic universe" in the sense that we can say that in order to phenomenologically SEE something AS a messenger or AS a message (at whatever level), there must be an original angeletic relationship between Being as Sender/receiver of the world AS a message that needs humans AS messengers in order for messages/messengers/messaging of whatever kind to be interpreted AS such and such. In other words, there is an original relationship between sender-message/messenger-receiver that makes possible that we, in a second step, can distinguish one from the other and even take the subject/object perspective that appears then not AS an original dichotomy, but AS a possible interpretation of the phenomena, that is, the messages themselves.

The approach of LIR is to start from the world rather than Being, as does Angeletics. But in my view, both are possible and desirable, and neither should be excluded. The two are in a dialectical relation that alternately emphasizes one or the other, without conflation or "fusion", depending on the perspective chosen. The interactive relations and overlaps at this level are, here too, as important as the differences. Coming as I do from the scientific-hermeneutic "side", it is clear to me that some new "language" is required for any desired co-evolutionary progress of Angeletics and Logic in Reality; of phenomenology in its epistemological aspects; and ontology. This paper is perhaps a start in that direction.

4.2. What is a Message? The Phenomenology of Communication

As discussed by Capurro, the question, "what is a message?" [4] opens a new perspective, not only with regard to media studies, but also to the study of signs and their interpretation. Angeletics is a research field at the crossroad of media studies, semiotics and hermeneutics, and each interpretation (in the non-ontological sense of hermeneutics) presupposes a process of message transmission. (Hermes is the messenger of the gods, not an interpreter of these messages. For those, we have the semi-mythological figure of the *oracle*, whose messages are, in addition, uniquely hermetic (*sic*!)). The message-bearing nature of communication is what Angeletics aims to analyze. But any process of message transmission presupposes a hermeneutic situation in which sender and receiver have some common basis of understanding. In other words, Angeletics operates with the sender/receiver difference based on the belief that understanding or, more generally, that a selection process between two systems is possible. Hermeneutics operates with the difference between pre-understanding and

interpretation based on the belief that what is object of the process of interpretation has been successfully transmitted, *i.e.*, offered to the receiver as an object of selection. Since Peirce, standard semiotics is concerned with the whole process by which a sign, what it intends to signify and what the interpreter is supposed to select are viewed as a dynamic, self-organizing structure.

An interim conclusion of my analysis is that the concept of messaging (sending of messages; communication) is a process concept that brings it closer to the LIR concept of information, that is, of information-as-process. However, there is a danger here of introducing an additional set of metaphysical assumptions simply by accepting Peircean notions of sign and representation. If Being is in the world in the phenomenological "clearing", in its existence, it does not need to be associated with some tautological sign of itself. I have criticized standard notions of representation in information elsewhere [8]

4.3. Plotinus' Angeletics: A Neo-Platonic Message Theory

That Angeletics and LIR can be used together may be shown in the following brief analysis of Stamatellos paper on Plotinus' conception of the soul as a kind of neo-Platonic message theory [23]. Whatever the soul is, it is both medium and mediator; active sender and receiver simultaneously: it *receives* the messages of physical reality (*i.e.*, the qualities of the perceptible objects) and *sends* the message of the One (*i.e.*, the indefinites of amorphous being). As a *receiver*, the messenger is the soul's process of sense-perception delivering the perceptible message to discursive reason (*logos*), while, as a *sender*, the messenger is the soul's process of contemplation (*theoria*) delivering the message of the One.

Plotinus' doctrine can be assimilated to current Angeletics as an innovative insight into active message communication that synthesizes psychology, epistemology and metaphysics in an interdisciplinary theory. He can be said to have inaugurated a theory of communication as mediation in which messages and messengers are in direct contact, involving influence and communion at different ontological levels.

For Logic in Reality, it is not necessary to accept this partially transcendental doctrine (of a One, *etc.*) literally in order to accept its psychological value with relevance for real communication. I only suggest that the requirement of *simultaneity* is unnecessary in descriptions of real angeletic processes. Media and mediators, senders and receivers share in part one anothers' properties, which are alternately and reciprocally predominantly actualized or potentialized, as in the other interactions involved. If we substitute mind for soul and the world for the One, we have a picture of the complex contradictorial dynamics of real messaging.

4.4. The Angeletic Condition

As we have seen in this paper, there are a number of other occasions where LIR can be used simply to augment otherwise correct insights in the application of Angeletics. I take as another example here the following comments by Pak-Hang Wong [24] about the angeletic approach to epistemology, in particular his proposal of the concept of angeletic condition as the focus of Angeletics. By angeletic condition, he refers not to interpretation and understanding of messages performed by individual subjects, but to the physical background of the transmission of the messages themselves. It includes the

processes and mechanisms by which a message is transmitted from one party to another and the material basis that engenders and shapes the processes and mechanisms. For example, Capurro has shown that the rise of the Internet has radically transformed our ontology; this transformation, in effect, can be understood as a transformation of the material basis of message transmission as well as the processes and mechanisms it involves. "The Internet, based on digital technology, proffers new processes and mechanisms of sending and receiving messages. It provides a new background for transmission of messages unlike that of the pre-Internet age, when messages were only analogue and messengers heavily subject to time and space constraints."

A shift of angeletic condition is often accompanied by unexpected ethical, social and political issues. Because each angeletic condition embodies its own set of normative principles, and usually exhibits relationships between the senders/producers and recipients set by and within that angeletic condition,the novel set of normative principles that comes with a shift of angeletic condition is very likely to challenge the set of normative principles left behind by the previous angeletic condition.

In describing Angeletics as a study of angeletic conditions, Wong reminds us of their plurality. It should be obvious that there are multiple angeletic conditions diachronically, but angeletic conditions are synchronically plural too. The angeletic condition of one society may differ from that of others, that is, in the material basis of message transmission and/or in their respective processes and mechanisms of message transmission.

Angeletics should not start with predefined criteria of judgment, but examine the nature of the processes and mechanisms themselves. Whether one system (or angeletic condition) is better than another is not determined only by its truth and/or efficiency *a priori*. In other words, the angeletic approach can be a corrective to a truth- and efficiency-oriented social epistemology. Once the diachronic and synchronic plurality of angeletic conditions is recognized, researchers should look for ways of fusions, rather than replacements of angeletic conditions.

LIR can provide the following considerations in support, as well as in criticism, of this view:

(i)   a further tool for examining the nature and evolution of complex processes;
(ii) an example of a workable non-truth-functional system of reasoning (logic);
(iii) a picture in which complex processes logically instantiate both synchronicity and diachronicity, simultaneity and succession;
(iv) replacement of the term "fusion", which implies loss of the properties of the precursor elements, by the concept of their dynamic logical opposition in which the properties are retained, simply, alternately more or less predominantly actualized or potentialized.

I repeat that the LIR theory of information and of other complex processes starts from their materiality as a matter of course. I further insist, however, that that materiality cannot and does not have to be separated from the subsequent pattern of evolution of those processes, as well as their meaning for both sender and receiver. The negative, as well as positive, psychological and intellectual consequences of the Internet on the angeletic "condition" of some of its users are well known.

5. Angeletics and Science

Going through the hermeneutic process is a necessary step for the discussion of messaging and information and involves the establishing of *some* acceptable concept of a ground of human existence. This philosophical analysis has been carried out by Capurro, Eldred, Holgate and other contributors to, *Messages and Messaging,* the Capurro-Holgate compendium, and I have presented an interpretation of only some of their contributions here. I simply note that they place man and his conscious existence at the center of any discourse, and that the system of Lupasco as developed by Nicolescu and myself has the same criterion of relevance. I thus offer LIR as neither more nor less than a framework for further discussion of Angeletics. (The basis of LIR itself is of course open to criticism using its own methodology; its legitimacy must come as a result of interaction with an external, contradictory theory.)

In addition, however, LIR provides a new basis for discussing issues in the philosophy of science and information, and hence messages, that was not open to Aristotle and Hegel, and certainly not used by Heidegger, Gadamer or any of their contemporaries. I suggest that LIR is, accordingly, important, since the philosophical component of the discourse about messages and messaging should not only be understandable in relation to its precursors, but also have the capacity to clarify issues of current ethical concern.

The relations of philosophical doctrines in general and Angeletics in particular to science are, therefore, also essential. However, as Mitchell has shown in the case of emergence [25], standard philosophical approaches are unable to use the concepts of scientific emergence, posit the wrong dichotomies, confuse compositional physicalism with explanatory physicalism and are unable to represent the type of dynamic processes (self-organizing feedback) that both generate emergent processes and express downward causation. I will not discuss emergence in detail here, but I will simply use the above as a checklist, and where appropriate, point to aspects of Logic in Reality, as outlined above, that facilitate the bridging between philosophical and scientific aspects of Angeletics.

A contradictory view of presence and absence, space-time and synchronicity and diachronicity were critical features of Lupasco's system. These concepts look backward, as Eldred has shown, to Aristotelian conceptions of movement and dynamic opposition (overlapping) between presence and absence, and forward to current cosmological theories that postulate the absence of a background space-time (For Lupasco, objects and processes create their own space and time. As I have discussed elsewhere [2], Lupasco made a trenchant critique based on his conception of logic, of Hegel, Schopenhauer, Kant and Bergson. In particular, he shows the dialectical opposition of the theories of time and space of the latter two.).

As touched on in the above, a major contribution of Logic in Reality to the utility of Angeletics may be in giving form to the still diffuse notions of whether or not Angeletics is a science and if it is, what its characteristics might be. In a few words, the contribution is based on the Principle of Dynamic Opposition applied to theories, the subjects of theories and the interaction between them. It provides a logical basis, albeit grounded in physics, for avoiding the absolute dichotomy and *distinguo* based on an overriding categorical feature of *non-separability.* However, rather than being couched in vague (non-scientific) terms of reciprocity and complementarity, as these are generally applied outside the quantum world—metaphorically, LIR insists on attention being paid to the form of the evolution of the opposing or contradictory statements or messages being made.

It is necessary for this dialogue to take place so that a reader, who might be well-disposed to Angeletics but (rightly) suspicious of both physical and social science and technology as they are practiced today, might understand that such practices do not exhaust the category of science. Rigorous concepts of final, as well as efficient causality and alternate, applicable notions of space-time, and an applicable non-reductionist neuroscience are possible. Only a reductionist *philosophy* would ignore such a science. There are a number of issues raised in *M&M* to which these considerations apply, and I am indebted to Michael Eldred for pointing them out. Thus, it is not that modernity and modern science *must* lead to an undesirable dichotomy between matter and form, but it *has* clearly done so, not only with regard to messages and information, but other complex phenomena including change, consciousness and mind.

For example, the standard approach to physical descriptions is based on differential calculus and its assumptions, which were also those of Peirce and Weyl and are still widely quoted. In my view, however, a principle of continuity, plus a mathematically defined non-linear dynamics as the basis for physical reality is clearly inadequate. In [2], I have discussed the failure of differential calculus, since Weyl, to give a proper picture of a reality that is both continuous and discontinuous. I therefore wish to clearly dissociate Logic in Reality from theories in "modern science" that assume predictability and calculability and/or define them and control, implicitly or explicitly, as desirable goals. Where the philosophical insights of Angeletics provide interpretations of the interactions of human agents involved in messaging, Logic in Reality now offers supplementary interpretations that can describe the evolution of those interactions.

5.1. Angeletics as Science

As pointed out by John Holgate in his major paper in *M&M* [14], Martha Smith and Tadashi Takenouchi have written insightful articles, which suggest potential research agendas for Angeletics. Key research questions which need to be addressed if Message Theory (MT) is to become a coherent scientific discipline—a "new science"—include how MT can interface with theories of the science (and philosophy!) of information and what the structure of MT is as a descriptive, explanatory and predictive discipline. It is also clear that any empirical science called Angeletics should be distinguished from a philosophic Angeletics, as well as from an angeletic philosophy. This would be a similar distinction as the one made between hermeneutics as a methodology, philosophic hermeneutics as developed by Gadamer, and Heidegger's hermeneutic philosophy.

The remarks in *M&M* on the concept of messages and messaging in the social and natural sciences suggest a potential inter- or trans-disciplinary message theory that would take seriously the hierarchical differences and similarities of communication at different levels of reality. As Holgate has pointed out, a connection is possible, *pace* Luhmann, between Angeletics as a socio-cultural insight and messaging theory as an explanatory account of communication in physics and biology. There does not have to be an epistemic cut. The basic questions of such a theory are not new, at least since the rise of cybernetics and system theory, but mainstream discussions, as Holgate rightly points out, so far have dealt mainly with a concept of information often biased by the computer analogy and the digital paradigm. If we take the concept of message, as has been done in Angeletics and my proposals of its logical (in the LIR

sense) characteristics as a second-order category, one may be able to avoid reductionism and to look for a "complexity science" of the message phenomenon.

The evolution of this issue, accordingly, would seem to depend on the evolution of new developments in both the science and philosophy of information that would incorporate the insights of Angeletics itself. In the next Section, I will try to (re)position Angeletics in relation to information today consequent on the original critique of Capurro and his colleagues.

6. Angeletics and Information

The appearance of this article on Angeletics and Logic in Reality in the Special Issue on Angeletics of a Journal entitled *Information* is a significant event in the understanding of both. As noted above, Capurro's move toward messages and messaging was due to his dissatisfaction with information as it had been defined, limited and prescribed by the practitioners of the prevailing scientific paradigm. As philosopher-scientists in the broadest sense, that is, as normal people, would we exclude a return toward a notion of information if it were extended to meet our criteria? The intention of this paper is to propose the more formal framework of Logic in Reality that suggests this objective is desirable and its achievement possible. The redefinition—one is tempted to say—rehabilitation of the concept of information depends in my approach on the application to it of the philosophical framework of Angeletics *in conjunction* with the logical framework of LIR. For example, when information is looked at as a real dynamic process, the distinction between messages and information becomes less important and one can focus on their dialectic relation

6.1. The Capurro Trilemma

In the vast literature on information, Capurro's "trilemma" stands out as capturing something of the multiplicity of its meanings across the different scientific disciplines and spheres of experience. I recall Hofkirchner's demonstration [26] that the information concepts in Capurro's classification as involving synonymy, analogy and equivocity can be considered reductive, projective and disjunctive, respectively. The proper balance of unity and diversity implied by these terms can only be achieved, as suggested by Morin, by some form of unity-through-diversity, an integrative view or "way of thinking" that is not eliminative with respect to its simpler, more polarized precursors, and might lead to a unified theory of information (UTI) in the future.

The 2010 book of Mark Burgin [27], *Theory of Information*, provides the most complete available general classification of the kinds of information, their axiological bases and their functions as operators. However, despite the subtitle of the book being *Fundamentality, Diversity and Unification*, I do not feel that Burgin's GTI goes in the direction of *a* potential UTI that I could endorse. My argument is based on Burgin's limited treatment of exactly what the key points of Angeletics are, namely, those which relate to the ethical, value-laden aspects of information-as-process in the interactions of and exchanges between human beings (see above, Section 3.1 and the differences between messages and information below, Section 6.2).

Thus, in his very complete listing of directions for future research in information, Burgin lists the building of theoretical-mathematical models of intelligence, emotions, instinct and will. Such a program of course would be an addition to the General Theory of Information, but it would not

necessarily be a contribution to a potential UTI. In any case, as Capurro has suggested, a UTI may not be achievable. Following Hofkirchner, I feel such models would cover individual information processes in these areas, but might also hypostatize their unique particularities and dynamics into concrete notions.

The problem with these approaches to a definition of information, as I have discussed elsewhere [28], is the focus on information as a static entity, and indeed Hofkirchner moves toward a systems approach, in which complex evolutionary systems provide the framework or foundations for, "The dimensions in which information processes occur." I have also discussed information in terms of information-as-process. The basic concept of information in the LIR logic of processes, namely that logical (in the LIR sense) information *is* the actual state of the world. Information in LIR includes, but is not limited by, the standard characteristics of information.

Based on the contradictory principles of LIR outlined above, what information is in reality and what constitutes a proper theory of information cannot be totally separated. Further, the real properties of informational entities or processes, binary and non-binary, are not independent of and cannot be discussed without reference to the *a priori* non-binary energetic processes that are their source, in some real situation, at all levels of reality.

6.2. The Differences between Messages and Information

In *M&M*, there is a good deal of discussion of information and communication processes as part of, or the resultant of messaging or Angeletics. As described by Capurro, a message and information are related but not identical concepts:

(i) a message is sender-dependent, an utterance that gives rise to the receiver's selection through a release mechanism or interpretation, *i.e.*, it is based on a heteronomic or asymmetric structure. This is not the case of information: we receive a message passively, but we ask for information actively;

(ii) both messages and information bring something new and/or relevant to the receiver, and can be coded and transmitted through different media.

A useful statement that could be made, following the principles of LIR, is that the two are the same *and* different, dialectically connected.

In another Article, Capurro emphasizes, in communication processes, not the unity, but the unmistakable difference between message and information that is strengthened in writing and printing, suggesting that messages somehow follow their own rules. Capurro follows Luhmann in making a difference between message (*Mitteilung*), the action of offering something (potentially) meaningful to a social system, (*Sinnangebot*), information, the process of selecting meaning from different possibilities offered by a message, and understanding (*Verstehen*), the integration of the selected meaning within the system, as the three dimensions of communication within social systems.

Unfortunately, Luhmann's interpretation of systems theory and his application of it to sociology, from the LIR perspective, has some serious weaknesses [29]. Luhmann's functionalist conception of society *as* communication described social systems as consisting of communications and their attributions as actions. Communications are operations that cannot be observed directly, but one can

make inferences about them by testing hypotheses against the observable interactions among the agents. The communications and agents are strongly coupled, and therefore, the states of the agents can be used as indicators of the evolving communication processes among them. This model, in my opinion, in terms of isolated (closed, autonomous) sub-systems excludes the human subject.

"Society" does not "contain" human beings, but society is a group of human beings, composed of individuals and the group, and their contradictory relations and dynamics. Luhmann took human beings as agents out of his system, and replaced them with abstractions. As Leydesdorff has shown, Luhmannian structures can be defined *analytically*, but that is not sufficient for a phenomenology of communication. My conclusion is that it is neither necessary nor desirable to emphasize the differences between message and information, provided a qualitative, value-laden view of information is utilized.

Capurro requires a dependence of any conception of information on some fundamental philosophical presuppositions. If one proceeds from a presupposition of the meaning of existence as sensuously perceptible presence in the present, then one can come to a concept of information as proposed by LIR and, for example, by Wu [22]. If one questions these presuppositions, as does Eldred, then one comes to another conception of information. But both Capurro and I can agree that information is, in the first place, the hermeneutic AS of our age.

6.3. Information Ethics. Ethical Dynamics

Closely related to his views of Angeletics as a way of approaching both old and new forms of communication phenomenologically, Capurro has developed, in parallel, a conception of Information Ethics (IE). IE deals with new forms of human communication in a world where the classic local parameters for the creation and distribution of messages are more and more dependent on the global digital network—and *vice versa* [30].

Capurro considers that the question and challenge of Heidegger's "calls for thinking" are at the core of Information Ethics today, insofar as it concerns our dwelling in a shared world shaped by information and communication technology. Ethics is a way of interpreting and transforming our Being-in-the-World. A comparative ethical reflection focused on information and communication technologies in different historical and cultural contexts can be considered an intercultural information ethics.

In the language of Angeletics, the philosopher is a messenger that passes on ideas through the medium of her own critical and autonomous "message sphere" instead of proclaiming a mythical truth coming from above. "Philosophy is born out of this angeletic turn concerning the relation between sender, messenger, message and receiver. It implies a new information ethics based on dialogue and reasoning striving beyond nature towards the metaphysical divine. It is a metaphysical humanism."

"Instead of an ethics of moral imperatives coming from within and beyond the individual (Capurro writes), we can develop an ethics of hospitality and care coming from in-between the plurality of humanities articulated in the "here" of a shared world. Instead of looking for strategies of fleeing or mastering the world, it is up to us to take care of it beyond utilitarian calculations. Such an ethics is not about universal laws, but about messages of hope. In short, it is not primarily about us but about this shared world. We are called to make sense of Being. It is an uncanny call and, as far as we know, it is our call and it is beyond humanisms as they have been generally, and narrowly, understood."

From the LIR standpoint, the angeletic turn, as Capurro describes it, is "absolutely" necessary, but it is not "absolutely" sufficient. By stating his essential message as an exclusion (instead of), Capurro excludes, even if only temporarily, the potential contribution of an ethics that does not suffer from an obviously inacceptable utilitarian-totalitarian ideology of control. I have described this alternative by the term "Ethical Information" [31].

I conceive of Ethical Information (EI) as a sub-domain of the informational world in which the most significant property of the information that is transferred is not its propositional truth *per se*, but its intentional content and corresponding impact on the receiver. Ethical Information is thus much less concerned by the physical, technological context or substrate, (e.g., cyberspace) in which the behavior occurs as with the human agents involved. The consequence is that EI may apply strictly to human individual agents and groups, but not to artificial agents. The ethical value assigned in Information Ethics to artificial agents is obviously not the *same* as to living beings, and the difference is worth emphasizing to avoid some ill-founded confusion.

Having seen that moral behavior of persons is part of a larger scheme that assigns value to all existence or being, we can return to the specific human domain with increased confidence that there should be objective physical, scientific and logical grounds for judging ethical behavior. The physical and epistemological starting points of the LIR theory of ethics will not be discussed in detail here, but they basically depend on the absence of total separation between human beings, the internalization of a part of one person by another and consequently, of a criterion of "self-interest" in moral behavior. In my view, the interactions at the basis of Ethical Information can thus also be formulated in terms of messaging processes—Angeletics—and the two then profitably studied in conjunction.

The Information Ethics of Floridi [32] focuses on entities as constituted by information in an overall strategy that generalizes the concept of moral agents, but the concept of information used remains abstract. Further, key issues of Being are not addressed. LIR and its related ontology naturalize critical aspects of Floridi's theses, especially, the moral value of Being as such and a non-separable joint responsibility of individuals and groups.

In LIR, Ethical Information is defined "ecologically" in process terms as reality in a physical space, with an intentional "valence", positive and negative, in the morally valued interaction between producer and receiver. As we have seen, LIR is neither topic-neutral nor context-independent, and can support an ethics involving apparently contradictory perspectives (e.g., internalist and externalist). Ethics involves practical reasoning, and unlike standard logics, LIR supports Magnani's approach to abductive reasoning in rational moral decision making. The basis of moral responsibility and the consequent behavior of individuals involved in communication today is the same logical-metaphysical principle of dynamic opposition instantiated at other levels of reality. The way moral responsibilities are actively accepted (or not) by individuals supervenes on their primitive psychological structure, which in turn reflects an evolutionary development grounded in the fundamental dualism of the physical world.

One of the advantages offered by the synthesis I have suggested is its greater accessibility for people who are constitutionally incapable of relating to concepts of Being as vital to their existence. In a shared world, in other words, LIR focuses on the ethical dynamics, so to speak, of the process of sharing.

6.4. Art and Angeletics

I include the discussion of art in the Section on information because, as is well known, a work of art contains a great deal of information in a highly condensed form. One is always confronted with the need to define (at least) three levels of information transfer, about (1) the physical substrate of the art; (2) its ostensible subject and (3) its meaning, that is, the implications for some value-laden emotional or intellectual issues.

In John Holgate's article [14] on the Hermesian Paradigm and the Metaphysical Perspective, he illustrates the mythological figure of Hermes as presented in several major works of Western art. Shown for example are:

- A classic sculpture of Hermes in the stance of the messenger;
- Iris as the messenger of Zeus;
- The temporal phases of a basic angeletic process in a Botticelli painting.

What Holgate does not discuss explicitly here is the process of the messaging effected by the art-work itself—the messaging of the messaging. One might define such messages as "metamessages", but in a different sense than Holgate uses the term, namely to mean messages that describe the structure of other messages.

The work of art is, certainly, a pure sender, unaffected by the sending, a pure medium. The true agentive sender is the artist, but one cannot be always sure that what we see or claim to see as the "message of the art" is what he or she intended (let us avoid the pathetic fallacy of attributing intentionality to a message itself). In fact, one can talk to an artist who will refuse to say what his work "means", leaving that, in his view lower-level task, to art critics and writers.

In conclusion, however, we may say that the value of a work of art is often determined by the same kind of consensus that Peirce thought desirable and possible with regard to science. Both quantity and quality of information in "true" art are, perhaps, what people respond to, consciously and unconsciously, in most cases as a positive experience. There is something *irreducible* about art that shares the irreducibility of life. When, as sometimes happens, scientists include an artistic dimension or references in their work, they confer an unmistakable further aura of authenticity to it. The message of the art propagates further from its scientific context.

As noted above, messages can refer indirectly to a receiver's mental and spiritual well-being. The messages of art seem to be appropriate examples of such messages whose transmission, and the furtherance of whose transmission, "Is thus a moral necessity for both sender and receiver." Angeletics can be the framework for understanding this universal role of art in society.

7. Conclusion and Outlook

I propose that a novel extension of logic to complex real processes, Logic in Reality (LIR), can be applied in support of Angeletics as a messaging theory, as well as to the philosophy and science of information itself. The consequent development of Angeletics and the understanding of its conceptual interactions with information can have major consequences for philosophy and science in general. This approach can be considered as part of a movement to correct overemphasis on digital-computational

theories of information and messaging as foundational, while accepting the facts of the ubiquity of computational practices in the society.

Angeletics can also be related to significant recent developments in information theory, including the metaphilosophy of information of Wu Kun [33], the "absential" approach of Terrence Deacon [34] and the causal-compositional concept of information of Gerhard Luhn [35]. All these theories have in common a refusal to accept the restrictions imposed on critical concepts by a scientific tradition based ultimately on an inappropriate monolithic *linguistic* truth-functional logic. Such logics ignore or relegate to second-level status the truth of reality as defined from both philosophical and ontological perspectives, both of which, and the dialectic relation between them, can be accommodated in LIR.

I thus look forward to synergy between these new approaches and Angeletics in which Angeletics "holds down", in American baseball slang, the "base" of philosophy, while at the same time benefitting from a dialogue with a science and logic that do not have absolute truth, predictability or calculability as their goals. Angeletics is one of the critical concepts of Information Ethics, as this discipline has been developed in parallel by Capurro and others, and the normative principles of LIR, in contrast to all other logics, support such an ethics.

In summary, in this paper, I have suggested that Angeletics can integrate some of the principles of Logic in Reality into its philosophical base. LIR can act as both "glue" and "lubricant"—eminently *angeletic conditional* functions (the term is that of Wong)—in the debate about the role and function of messages and information in achieving a more ethical society. We may therefore say, to emphasize the 'message' of this paper, that Angeletics is "Messaging in Reality".

Acknowledgments

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