*Article*

# The New Humanities Project—Reports from Interdisciplinarity

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**Abstract:** New Humanities is an international research and teaching project promoted by an interdisciplinary group of people from five different faculties and departments based at the University of Roma Tre. Initially set up as a forum for academic dialogue between the humanities and the sciences (including social sciences), the project became a transition space and platform for experiencing new research methodologies and teaching curricula that would question the present epistemological order of the European university system. In order to develop this approach, we have organized our work around a number of interdisciplinary clusters, each describing an epistemological node. In this paper we will discuss five interconnected case studies that emerged from an active collaboration between scientists and humanists. The first node, *Protocols of Vision*, investigates the cognitive nature of sensory perception and the different forms of knowledge it produces—empirical, artistic, and scientific. *Memory*: *Mathematics*, *Computer Science, and Literature* recapitulates many of the different threads in these discussions by exploring the interdependencies between the various kinds of memory: from external to subjective memory, from storage

tools and techniques of self-construction to the invariance of mathematical structures. The third node, *Signs and Bodies between Digital and Gendering*, reflects on the problematic relationship between digital media and literary and linguistic gendering. *Narrative Identity*: *Nature, Ontogeny and Psychopathology* critically re-examines the main concepts and theories concerning the nature, ontogeny, and pathologies of the autobiographical self or narrative identity. Finally, the last node, *Contribution of Quantum Physics to the Idea of Consciousness* is a cross-cultural investigation into the phenomenon of consciousness tackled from the points of view of quantum field theory and ancient Indian philosophy.

**Keywords:** new humanities; cognitive studies; memory; computer science; literature; narrative identity; digital gendering; consciousness; quantum physics

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## 1. Introduction

"All the so-called visual media turn out, on closer inspection, to involve the other senses (especially touch and hearing). All media are, from the standpoint of sensory modality, 'mixed media'. The obviousness of this raises two questions: (1) why do we persist in talking about some media as if they were exclusively visual? Is this just a shorthand for talking about visual predominance? […] (2) Why does it matter what we call "visual media"? Why should we care about straightening out this confusion? What is at stake?" [1].

This passage is taken from W. J. T. Mitchell's essay *There Are No Visual Media*, important not only in terms of media theory, but also because the reasoning at work here can be applied to the order of *savoirs* too. The practices of knowledge are always trans-disciplinary in the sense that they involve contexts, methods, and instruments institutionally assigned to different disciplines. Academic disciplines, in the last thirty or forty years, have been changing their self-representation, showing less cohesion and a tendency to move from the notions of "discipline" and "canon" to practices based on collaboration around problems, *i.e.*, "in clusters that may be too short-lived to be institutionalized into departments or programs or to be given lasting disciplinary labels" ([2], p. 819).

In dealing with what appears to be obvious, and increasingly so, certain questions keep coming up, and we should welcome them: why do we continue to conceal this obviousness? Why do we persist in speaking of clear-cut disciplines, albeit indirectly (while actually yearning for interdisciplinary practices)?

The same aspect applies to, and especially so, the well-known distinction between the so-called two cultures, between humanities and sciences (a dichotomy that later degenerated into biased expressions such as "soft and hard sciences", *etc.*). It is a distinction that became institutionalized in the late 19th century with the creation of two orders of knowledge to maintain a clear separation. One of the intellectual figures behind this operation was Wilhelm Dilthey. Distinguishing between *Naturwissenschaften, i.e.*, the natural sciences and *Geisteswissenschaften*, the science of the spirit or humanistic sciences, he established an essential difference between two objects and two methods that in fact have nothing, which is clearly distinguishable [3].

Dilthey sees the object of humanistic sciences—man and his historical-social environment—as basically defined by its historicity and their knowledge modality by a hermeneutic process of

comprehension, a *Verstehen*, *i.e.*, a process of construction of sense and significance in which subjectivity is allowed to participate. Comprehension takes place via an active projection of one's own experience and leads to a restructuring of the Self. The other, the extraneous, is *understood* (in the sense of Latin *cum-prehendere*, "to seize"), *i.e.*, inserted and made to act in its own space and time.

The natural sciences are just the opposite. Here, we do not have construction, just the discovery of a given reality, the natural, and its laws. Their mode of knowledge is an *Erklären*, an explanation of that which, in nature, is given and has only to be clarified. Natural phenomena are explained when they reflect a general law, understood as eternally valid. This is the ideal of an objective knowledge, which would like to abstract from subjectivity and temporality, which postulates a neutrality of the subject of knowledge as well as an immutability of the object. It is the attempt to create a territory of knowledge detached from temporality and subjectivity, and freed of the struggles of hermeneutic understanding as to legitimate only an interpretation, which presents itself as a scientifically given reality.

This "fiction" started tottering some time ago. For some time we have known that hermeneutics cannot be confined to the examination of cultural phenomena, that even the data we retrieve from nature imply an interpretation, that no object can be freed of temporality and the localized nature of knowledge, no examination can be considered irrespective of the analysis of subjects of knowledge and the conditions of its production, representation, circulation, and reception. That no perspective is exempt from the hermeneutic circle, that every piece of data, everything, every observation is always linked to a pre-comprehension. This is also true—Dilthey had already said this—for the natural sciences too. Though not embracing necessarily a post-modern vision, it would appear difficult to release data from their interpretation. It is just this—and not just today—that humanistic knowledge insists upon recalling. And it is just for this reason that it is in crisis and under attack [4], deprived of its legitimacy precisely because it endangers this old distinction, which holds its critical capacity in check. Thus, the distinction between scientific and humanistic knowledge still remains active; it is still to be deconstructed via cognitive practices, which draw the most radical consequences from the wavering of this distinction.

New Humanities is an international research project, which has been created to work in this direction. Thus, not a reflection upon the crisis or sense of regret about an asset legitimized by the powers of the past, but a new research model and, as a result, an educational one—*a new epistemic for a new paideia*. And the construction of this new cultural code cannot be considered irrespective of the establishment of new relations not only between areas of knowledge but between the people and the different cultures of the planet. There is nothing here about new ideas. Though in the West we have preferred to ignore them, there have always existed educational experiments, which have tried to draw the best from different traditions. In the last century the Nobel prize winner Rabindranath Tagore founded Visva-Bharati [5] (Visva means "union", and Bharat is India), a new concept of university founded on certain key principles, among which the equal dignity of cultures and religions in the world, interdisciplinarity and the idea that teacher and student decide together the time and pace of their education [6].

We mention this institution (Nobel prize winner Amartya Sen was among his pupils) because our project originated with the collaboration of a group of researchers, teachers, and students of Roma Tre who wished to interpret the "crisis" of the humanities like a phase of regeneration and passage towards a new form of human science which should: (1) acknowledge the interconnections between disciplines

and actively recognize that "scientific practices are modeled through notions such as networks, assemblages, experimental systems, trading zones, and so on" ([2], p. 819); (2) take up once more the dialogue between sciences of nature and those of culture which had slackened and was then interrupted from the 17th century on, so as to go beyond their distinction; (3) absorb analytically and systematically the epistemic leap imposed by the digital transformation of data, knowledge and identities in a heated analytical dialogue with those technologies which have re-defined research and representation methodologies in all fields. We are aware that in setting up this agenda we were not alone but had illustrious predecessors. However, a detailed discussion on the epistemological and historical aspects of interdisciplinarity was well beyond the scope of this paper. It is worth remembering that interdisciplinary work has encountered historically a number of practical and theoretical obstacles: from epistemic barriers (involving "incompatible styles of thought, research traditions, techniques, and language that are difficult to translate across disciplinary domains" ([7], p. 47) to evaluation criteria and tenure anxiety, from the lower academic status of interdisciplinary journals to institutional, administrative and departmental drawbacks, *etc.*

New Humanities has tried to bypass some of these problems by organizing clusters around specific research themes from which we selected the present five reports. We hope the differences in style, length, and content of these reports will be justified by the heterogeneity of the case studies and the events from which they originated. In the last two years the research group has organized about fifteen seminars, meetings, conferences, and book presentations on seven clusters in which the research was originally structured. Physics and sociology, biology and philosophy, mathematics and literary criticism, computer science and history of art, are some of the areas, which have engaged in dialogue and have been reshuffled, exploring unexpected connections or rediscovering old relations. That does not necessarily mean that the knowledge and approaches presented are completely new or revolutionary [8]; indeed some aspects under discussion in the essay are well established in their disciplinary contexts. The sequence of the five reports does not follow the original chronological order, but it lays down a research path which we think has a main theme, that of rethinking the relation and dialogue between body and mind, between perception and consciousness. In the background we find the question of the digital transformation of knowledge and cultural and cognitive representations, a common ground for all the contributions. We hope our selection will demonstrate that these challenges cannot be met by single discipline alone.

Clusters edited by Ugo Fracassa and Teresa Numerico are dedicated respectively to the problem of vision and that of memory, both involving a background of algorithms and digital representations. Following this, we have the cluster edited by Laura Fortini on the questions, which the digital raises about bodies and the signs which represent them, and the text on narrative identity authored by Massimo Marraffa. The last assemblage, edited by Domenico Fiormonte, Michele Lucantoni, and Mauro Bergonzi, is the longest and probably the most challenging, as authors tried to set up a dialogue between distant fields in the attempt to build a cross-cultural perspective on consciousness. We are convinced that this brief core sampling in the activity of New Humanities presents trans-disciplinary transfers and reflections that reveal, ever more fully, the transience of the confines between nature and culture, natural sciences and humanities, producing a decentralization of the single disciplines. Knowledge no longer appears fragmented in distinct and separate territories, but transforms into a large inter-connective network, which constantly repositions its nodes. The challenge today is to imagine

new models to connect cognitive horizons and production modalities of knowledge, which are with increasingly more insistence, breaking the boundaries of the single disciplines in which they have been confined. According to the Ancient Indian wisdom (not "philosophy" in the Western sense), "innovating means to expand our consciousness of what reality is and has never ceased to be" ([9], p. 18). This is an interesting "extracting", not-accumulative idea of progress (expanding consciousness, not accumulating books or building monuments, *etc.*) that may help us also to think about scholarship, and science in general, in a new way.

## 2. Seeing, Knowing, Recognizing: Protocols of Vision in Science, Art, and Life

The seminar "Protocols of Vision", organized at the University of Roma Tre on 15 March 2013, dealt with questions concerning the cognitive nature of sensorial perception and the different forms of consciousness—empirical, artistic, scientific—which might be the outcome. In particular, thanks to the contributions of three scholars, Michele Rucci (Boston University), Lucia Foglia (McGill University), and Ugo Fracassa (Roma Tre), from different disciplines (computer science, philosophy and literary theory) the idea that there exists a simple "seeing" is challenged. The three approaches converge ultimately upon the case study provided by the famous portrait *The Afghan Girl* by the American photographer Steve McCurry for the "National Geographic" in 1984. To consider the knowledge-recognition dialectic in the light of visual perception it seemed it might be useful to focus on the point at which visual perception and esthetic experience converge.

Artificial intelligence systems are now able to emulate the logical-deductive processes that are characteristic of humans. Examples range from the IBM computer that beat the chess champion Garry Kasparov in 1997, to programs now available on any smartphone. However, similar progress has not occurred in the field of visual perception. What are the principles hidden by biological vision systems that have not allowed their replication in machines?

Perception, like other vital functions, in man, has much more sophisticated procedures than those in other living species, though the functional objectives remain the same, vision for example. Such complexities are not to be explained by the structure of the sensory system, which is at times more developed in other living organisms than in humans. It derives from the filtration of the perceptions at the level of a nervous system that does not limit itself to accepting them as they are when it receives them.

In humans, sensory information processing displays characteristics that seem unique: it does not involve the nervous system alone, and information dependent upon the body and its interactions with the environment play a guiding role. Sensory information processing is also affected by personal constructs, learning history, and exposure to particular cultural stimuli. Though these influences do not cancel out the salience and richness of the incoming sensory stimuli, they do have an impact, to a great extent, upon how neural information processing is achieved. Rather than being a mere description of a "given", perception always unfolds within a particular frame of reference and involves skills and knowledge that go beyond the mere reception of an external stimulus. We cannot really say that the objects we see are "facts", given, once and for all, as they are mentally constituted within the theoretical framework that expresses them.

The ways in which we perceptually experience the world pose a challenge to the notions of "pure perception" and "informational encapsulation". After all, it is the very organization of the visual areas that allows for numerous feed-forward and back projections and the existence of a cross-talk between cortical and non-cortical regions which shapes and modulates how information is processed. Thus, understanding the nature of perception means going beyond the neural activation of specific visual areas, and taking into account the non-visual information that modulates how perception is achieved. In other words, a visual system does not function independently of the individual who embodies it, and it cannot be taken to be isolated from cognition and action. Therefore, each result of our perception requires us to take into account our individual, "egological" coordinates, *i.e.*, the information, attitudes, and tendencies that the individual possesses on the basis of his previous experiences and the history of his mind.

Culture too, understood as a set containing knowledge, beliefs, norms, and values, may affect the way perception is achieved (in terms of accuracy and speed). Empirical evidence in support of cultural variation has shown, for example, that North-American populations tend to display more attention to focal objects and their features and neglect or ignore the interdependence existing between a given object and its surrounding context, thus deploying a holistic processing style. In closing, what we visually perceive is, on the one hand, what our visual system allows us to see, and on the other, what we "can" actually see relative to the non-visual information that interferes with and modulates sensory information processing.

In 1986, Carlo Ginzburg recalled in a well-known essay, that the eye "is more sensitive to the (perhaps marginal) differences between human beings than those between rocks and leaves" ([10], p. 123): for those wondering about mental, emotional, and cultural interferences in vision, the photographic portrait of Sharbat Gula, now a planetary icon of alterity at the end of the last century ([11], p. 3) might now be worthy of an in-depth study. Once more in the news, with the recent Italian exhibitions (in Perugia, Rome, and Genoa) the famous picture by the American photographer encourages reflection about the influence on the act of seeing of culturally acquired mental factors—including a certain post-colonial and gender deformation [12]—and raises specific questions about the burden of these factors on the formation of each specific perception. Gula was photographed again seventeen years after the first photograph and her life (and body) had changed entirely. She was identified thanks to the Iris Scan (an algorithm patented by John Daugman, professor of Computer Vision at Cambridge [13]), a practice that denies the most common and typically human practice of recognition. Finally, in a similar perceptive adventure, the esthetic vision of the portrait intervenes, an experience thanks to which it seems we can re-read the entire Afghan Girl affair as a symptom of a true "western prosopagnosia" [14].

## 3. Signs and Bodies between Digital and Gendering

In this section we summarize the seminar that took place at Roma Tre on 13 May 2013 and coordinated by Laura Fortini. The participants were Silvia Contarini, professor and co-director of the Department of Italian Studies at the University of Paris Ouest Nanterre La Defense, Tiziana Terranova, associate professor of Sociology of Communication at the University of Naples "L'Orientale", and Teresa Numerico, philosopher of science of the research group New Humanities.

In the 1970s a feminist literary criticism appeared which spent a long period of time, discussing *sessuazione* [15] of language in literary texts, getting involved in particular with gender connotations of the sign. In a memorable meeting, which took place in Urbino in 1983 [16], Nancy Huston, Patrizia Magli, Rosi Braidotti Susan Rubin Suleiman, Nancy Miller, and others discussed the possibility of positioning sexual difference within the system of signification. In later years in Italy the discussion continued, with, among others, Patriza Violi's study concerning the relation between language and sexual difference [17]. However, from the 1990s on, the increasingly elaborate presence of writing on line seems to have concealed *sessuazione* of the body in the literary text, if not in the form itself of semiotic construction. The arrival of gender and queer studies too, has led to serious doubts about the nature/nurture binomial, analyzed by Donna Haraway [18] and Judith Butler [19], among others.

In Italy, feminist literary criticism has not become part of the academic and cultural mainstream, despite the clear crisis in Italian literary criticism, which is by now encountering, at least as far as traditional assumptions are concerned, obvious difficulties in determination. What exactly is critical activity today and how should it be defined? Even though the object of critical practice changes each time—the literary text for example—what does not seem to change is the status of criticism and thus its epistemological crisis.

On their way out—fortunately—are those national paradigms still propped up by questions about mother tongue languages, these too however, deeply challenged by migrant literature. What seems also outdated is linear, consecutive historiography, given the difficulty of elaborating it according to paradigms that cannot easily be shared by multiple and relative territorial geographies and chronologies. And it seems equally outdated to apply the concept of literariness to hybrid and undetermined textual forms—unless we go back to subjective aesthetic judgment. Thus, it is difficult to find some horizon of sense, not so much for literature, which lives its own life independently of any theoretical background, but for literary criticism understood as human science.

Contiguity with the human is in fact misleading. If the postulate is that literature and criticism are necessary because they constitute ethical and moral horizons for the human, with respect to other sciences, the question of the human becomes difficult to define. What do we call the animal relation forms like those described by biologists [20] just as affective, just as relational, just as capable of emotional learning as the human? Compared to these, the human shapes up as one element at work in the science of consciousness, for which we might rather suggest the term "arts of consciousness": complex constructions of the modes of consciousness, constantly moving, dynamic, undergoing continuous definition and redefinition of their own critical strategies.

The connection between body signs and *sessuazione* seems crucial in this context in questioning and deconstructing a cultural panorama which, up to the 1900s, defined itself as universal and monologic, abstract, and apparently objective, in other words patriarchal and which no longer represents itself as such; the risk is being labeled as responding to a tradition and a symbolic horizon now behind us. However, that which seemed to correspond to a certain reality, or the body, or rather the bodies of women and men, with the advent of technologies, appears increasingly more uncertain and difficult to determine; like textual bodies of writing [21,22] which seem, digitally, to lose material consistency, lose a certain authorial value as a possible collocation.

Thanks to the Internet, both bodies and texts seem more uncertain and at the same time widespread, in molecular fashion. However, this is an element of disorientation and also has propositional force, if

we take into account the difficulty those who write online have, in achieving certainty, as indicated by Tiziana Terranova, who, first with *Corpi nella rete* [23], and a careful analysis of the micro-politics of information [24] has reflected upon the need to "think simultaneously the singular and the varied, the common and the unique" ([24], p. 11).

With these considerations in mind, what consistency has the question of *sessuazione* of language and literature? Teresa Numerico [25,26] has pointed out that already in 1991 Evelyn Fox Keller had noted the risk, for example, in representing life as a machine: the elimination of the parturient female in the technology of reproduction ([27], p. 179).

Here, Silvia Contarini has put the axiomatic association "women and maternity" to the test, at the center of the current debate about assisted reproduction, with respect to the futurist texts of the 1910s and 1920s [28]. Futurist authors anticipate the fear of machines incarnated in possible future worlds in which we will not need women to be born: these images are useful for deconstructing apocalyptic scenarios in which we see the intervention of machines in the reproductive possibilities of the human race. What is different is the way this comes over in texts written by women, both futurist and contemporaries, even at a distance of a century. On the one hand we have a hypothetical and futuristic representation of possible emancipation from a tiring maternal role, as in the case of the futurist Rosa Rosà (1918) [29]. On the other, the reality of a complex relation with machines, like in *Lo spazio bianco* by Valeria Parrella [30], a novel dedicated to a premature birth and the complex relation a mother mantains with the incubator bringing her daughter up.

Looking at the results of the seminar as a whole, we could say that the digital dimension challenges bodies and signs with an intense post-human potential [31]. If the digital defines itself as the place where texts do not have body, either textual or material, and bodies themselves seem to lose certain connotations, literature, online or on paper, seems to maintain the capacity for *naming*—of use in an attempt at defining uncertain, but also interesting, shifts in the confines of our present. Forerunners in questions relative to the human and the post-human are writers like Clarice Lispector and her excellent story *The Passion according to GH* (1964) [32], which has meant so much in the sphere of feminist thought because of its reflections on links with the animal world [33–35]. Or a text like *L'iguana* by Anna Maria Ortese (1965) [36], which investigates the obscure and uncertain confines with something seemingly as unlike man as can be imagined, *i.e.*, an iguana. Which means that, basically, paraphrasing Gertrude Stein, a sign is a sign is a sign, whose corporeal articulation—gendered, human, post-human online or on paper—is an active, unavoidable component of this present time.

## 4. Memory Construction: Invariants, Variability, and Media [37]

This contribution summarizes the work of the seminar "Memory: mathematics, computer science, literature", held on 20 November 2013 at the University of Roma Tre. Participants were Giuseppe Longo (Centre national de la recherche scientifique-Paris) Francesco Fiorentino (Roma Tre), and the coordinator Teresa Numerico. The idea behind the meeting was an examination of the practices of memory in different disciplines, in the knowledge that it is the way the "data" are organized that affects what the outcomes of the cognitive process will be [38]. Furthermore, the representation of memory and its role in consciousness affects the perception of the historicity of scientific practices, as well as the variability of possible outcomes. Therefore, this section will reflect upon the practices and

policies of construction of sense through memory, in different disciplines and in relation to the uses of conservation mediums and the transmission of consciousness.

In order to address memory from this broad and complex perspective, we involved scholars from different fields, such as philosophy, literary theory, biology, computer science, theory of perception, history, *etc.* Of course each of these areas contributed to the discourse with its research agenda and theoretical views, and our aim could not be to merge or reduce them to a common denominator. Perhaps the only justification for this experimental approach was that we all know that memory, as a fundamental element for the construction of consciousness and for the reproduction of the living being, can be many different things. It has different meanings, places, mediums, practices. So the techniques used to study the ways it manifests itself and acts in different spheres of knowledge are different but so too are the political uses we make of it. Therefore, it is crucial to elaborate a critical analysis of the interdependencies between external memory and subjective memory, archiving tools and techniques of the construction of the self, with a multiplicity of contexts and the discovery of invariances.

According to Giuseppe Longo [39,40] memory is constitutive of mathematics too, which can be defined as the science, which deals with the invariance of structures and establishes which transformations preserve it. Memory, as an essential part of anticipation, constitutes the maintenance of invariance of action. Anticipation extracts the invariant character of memory from a changing context with the aim of preserving the possibility of next action. Such a contextual meaning establishes the conceptual constructions of mathematics not in isolation with respect to other forms of consciousness but by attributing to the first a maximum practical and historical stability. The recognition of the invariance of mathematical structures in the fluidity of processes has therefore a mythopoeic nature. That is to say, mathematics can be associated with the myth in that it too is capable of bringing together the fact of being in this world (physical) and the capacity for human communication. The construction of invariances however requires the use of a particular type of memory.

The mathematical invariance exists only as an intentional construction. In this sense a perfect memory as a digital database cannot construct any invariant characteristics. The productive capacity of recall is the present reactivation of mnestic content, which Edelman [41] describes as a situation in which "the brain repositions itself in a living state" in the act of remembering [40]. The machine, with its perfect "memory" can, at most, help to engage in proof-checking but in no sense does it work on the activation of original demonstrations. Only animal memory and human deliberative capacity have the chance to construct proof which can demand the introduction of new concepts and structures which transcend the use of rules in a formal system. The only indispensable assumption to obtain interesting, creative responses is the active capacity to invent the present and construct connections between the structures of human memory [42,43].

Longo thus shows how memory is the basis of the construction of invariance in mathematics. In this perspective, even an abstract science like mathematics has a clearly historical consistency since knowledge is constructed via the intentional, creative, and deliberative acts of a community. Such are mnemonic acts too.

Therefore, we cannot avoid getting to grips with the reorganization of memory produced by the new use of this term in the sphere of the digital revolution. Human memory is multi-faceted and multiform [44] and cannot be compared to digital memory. However, it is clear that the use of the

same term to indicate two very distinct concepts has had an influence on the redefinition of the so-called "family similarities" which contribute to the construction of rules for the use of the term. So it seems also useful to reflect on the genealogical effects produced by the use of this term in the digital machines field and the role of a linguistic habit on the semantic transformations of the initial term [45].

Personal memory is associative and reconstructive, imaginary, constantly active and dynamic. Totally unlike the rigidity of electronic memory, which conserves every bit in an exact, inscrutable mapping. The concept of memory in the two devices has a clearly different significance. Human memory seems difficult to control, precisely because it is impenetrable, indeterminate, and at the same time extremely fragile. As Wendy Chun suggests, "the memory of the machine is at the same time incredibly precise and absolutely unstable from a technical point of view" ([46], p. 140). The opposite of human memory, extremely solid and tirelessly deceiving. In short, the differences could not be bigger, but we are by now used to considering digital memory as the best replacement of human memories. The desire to stabilize the hardware leads the project to construct digital memory, metaphorically, so that it can contain and reproduce that which it contains ([46], p. 139). The political idea behind the digital is the stabilization of the datum, the petrification of memory in data, which are represented as objective, neutral, elementary. "Raw data is an oxymoron" says the title of an interesting collection of essays [47] in which the fictional nature of the raw datum is stressed.

"Facebook's job is to improve how the world communicates", says Zuckerberg. Projects like Wikipedia or Google Books aim at restoring human knowledge conserved in books (Google Books), and in the heads of the experts (Wikipedia). Google Scholar sets out to organize scientific knowledge and make it universally accessible, and the scope of Google is "to organize the world's information and make it universally accessible and useful" [48].

In all these money-making projects, as in other public ones [49] it is possible to see the myth of exhaustiveness of knowledge and the archiving of information as a "total experience". But archives always exist as partial and violent institutions and the present constitutes itself in opposition to these, as Derrida sustains in *Archive Fever*: "The archive takes place at the place of originary and structural breakdown of the said memory. There is no archive without a place of consignation, without a technique of repetition, and without a certain exteriority. No archive without outside" ([50], p. 11).

It is therefore impossible to replace the function of recall and the reconstruction of the past in memory with that of archiving without losing the function itself of archiving. Without memory, without an outside, even the archive declines and above all loses its exteriority form, from which it should be able to escape, which gives sense and at the same time can be transformed and recomposed into an ever newer sense.

If libraries, archives, repositories of scientific articles, personal diaries and descriptions of collective adventures are all consigned and imprisoned in a cloud of data (never mind if open or closed), how do we subvert the archive and construct the history of society and knowledge? The Cloud, a shared space but also private, where collectively we save our contents, is a perfect example of the collapse of memory, archive and that set of rules which interpret the information, giving them a sense.

As if the theme of archiving policy did not exist, as if we might exteriorize the support and conserve intact the practices of reminiscence, strengthening them efficiently without transforming them.

If the operation of sorting out data becomes the interpretation *tout court* of sense, if no datum is able to escape the extraction of meaning activated by the algorithm thought up for the machine, then

the crucial political question is: how can we activate the dynamics of transformations in interpretation? No human interpreter can compete with the "interpretative" potential of the machine and no operation of extraction of meaning of data can ever be critically checked [51]. Google Glass is another example of the transformative perspective of memory and consequently of knowledge adopted by web companies. The promise (or the illusion) of a new form of perception, a new form of vision that will allow the "glasses" to see what the user sees, and to offer an interpretation or support for an understanding of the actual vision. The offer of a unique, coherent, effective interpretation of data by a proprietary and opaque device could change irreversibly the way we interpret and understand our present and anticipate our future. The risk of the device however is not just to fall short of user expectations—after all a minor problem. The real risk is that Google Glass will alter our perception and understanding of the idea of the interpretation of the world around us, even when it fails. In fact, the more it fails the more its influence can alter the human idea of understanding and interpreting signs, events, and objects around us.

But history and criticism originate with the polysemic dynamics and variability of concepts and texts, like the variability of genes which allow us a selection and conservation of the species, together with the variability of environments and reactions to them, which allows the epigenesis of those traits, which are more suitable for survival [20]. It is memory in its creativity and variability, which guarantees the process of history. Memory is saved only if it erases, only if it extracts its own pathway to sense from the sea of data in which it navigates. Human memory is very selective: it is capable of preserving and organizing memories, by forgetting.

If the archive is universal and the answers to every question are univocal, if there is no distance between private memory and public archive, if all we know we find in the same tested sources which distil overall shared knowledge, then the dream of variability and multiplicity at the heart of the hypertextuality becomes only an illusory myth and the net is lost in the delirium of omnipotence of algorithms of ranking and sorting out of data, the fruit of machine-learning techniques.

And yet, when memory becomes public practice it is always political, even though in managing the construction of objectivity there are now complex devices made up of the interaction between human beings and machines of which we lose awareness in a game of cross-references and reflections which never seem to have an end. In this assemblage—as visible as it is opaque—personal and collective traces are activated in the comings and goings of cross-references, which transform our relation with ourselves and with our machines for memory.

The question still awaiting a response concerns the possibility of effective action of empowerment produced by extroflection and then collectivization of memory. No mediatic device is ever neutral with respect to the organization and the content itself, which is traversed by them. Once more, this is a remediation [52], but what is alive and what is dead after the migration is accomplished.

The mediums determine and organize memory and its practices, the collective and even more so the personal. Each dominant medium with its codes imposes itself as a metaphor of memory. The ever-present danger is that a medium might restrain and regiment memory as imaginative capacity, which constructs knowledge about the past, necessary for the present. The danger is already to be seen in Plato's *Phaedrus,* which opposed memory understood as storehouse of data and memory as process of reminiscence, which is always creative [53]. Plato warned that external memories could work as

deactivators of the capacity for anamnesis. This is a reminiscence, which is accomplished through the activity of a subject interacting with another subject in a maieutic process.

It is not by chance that Plato formulated his critique of writing in a written text, mobilized the inter-textual vocation of literary writing against the fixity of the textual support to transform it into a stimulus, to the extent that it draws the reader towards a memory which is outside it, in the interaction—implicit or explicit—with other texts.

However, this implies a writing practice which awakens the awareness of its limits to make possible the anamnesis of what is inaccessible for the writing medium itself, its code, its possibility of representation.

Every medium has a potentially critical attitude and is capable of subverting the uses it is put to, the practices it is implied in. And yet the medium is never neutral. The uses of a medium are not free: they are determined, envisaged, directed by the technical structure of the medium itself. However, they are not fixed. There is a negotiation with the medium's technical possibilities. The medium becomes transcendible when the experience of its mediality is produced, *i.e.*, the limits which it imposes on the representation and that which it excludes. The experience of mediality is always experience of what is not graspable by the medium and by its code and this is why it does not become part of memory handed down. But every medium has within itself the potentiality of letting us know at least the lack of what it can no longer hold on to.

Today, this possibility seems more than ever threatened by digital media, which, in the exhibition of an ever-present, accessible totality, obscure every absence. Everything is consigned, also in the sense of immobilized, imprisoned in the registers of conservation and retransmitted as raw data. The capacity to forget and select the information to which we wish to attribute sense, is nullified. And yet the transience of the support constitutes a serious risk for the duration of this total conservation.

Therefore, more than ever we need to activate critical practices, which reveal the hidden gaps like the outside of the archive, necessary so that memory can construct vital variation. It is necessary to preserve the creative original action of the memory as a faculty of the imagination and the present, which, albeit in the sphere of regulated procedures and precise bonds, does not remain subordinate to the presumed neutrality and objectivity of the datum codified in the devices of conservation and transmission of consciousness.

In conclusion, the work of this cluster aimed at singling out, critically, the practices of obfuscation of memory policies in action in the use of certain devices and discovering how to escape from their totalizing nature. The objective is still to preserve the historical, temporal, and contingent nature of cognitive choices so as to protect their reversibility and variability. To this end, it would seem crucial to recognize memory as a selective faculty which acts in the present, erasing more than it conserves, maintaining the awareness of the ever-more precarious, unstable value of its outcomes.

## 5. Narrative Identity: Nature, Ontogeny, and Psychopathology

The aim of the research cluster "Narrative Identity: Nature, Ontogeny, and Psychopathology" was to critically re-examine the main concepts and theories concerning the nature, ontogeny, and pathologies of the construct of narrative identity, and in such a way, to provide researchers from different areas with a forum for exploring this many-sided subject. What follows is a theoretical and

empirical framework within which the interdisciplinary team of speakers, Gianluca Barbieri (University of Parma), Erica Cosentino (University of Calabria), Francesco Ferretti (University of Roma Tre), Pietro Perconti (University of Messina), Dolores Rollo (University of Parma), investigated these issues during a seminar we organized at the University of Roma Tre in December 2012. This framework consisted of a developmental story about how self-consciousness, conceived of as a cognitively demanding form of consciousness ("narrative identity"), emerges by drawing on literatures in cognitive sciences, dynamic psychology, text linguistics, and the philosophy of mind.

The ordinary term "consciousness" conflates two quite different kinds of psychological functions. First, consciousness is a state of vigilance, *i.e.*, the agent's being actively present to the world: this is a matter of forming first-order representations of states of affairs, which may function to guide the agent's behavior. Second, consciousness is self-consciousness, *i.e.*, the agent's being present to herself: this is a matter of being in a higher-order mental state, namely a representational state that has a first-order representation as its object. Studies in cognitive ethology and developmental psychology seem to show that animals and infants under one year of age are conscious in the first-order sense of being conscious: they are able to automatically and pre-reflexively form a series of representations of states of affairs and operational plans of action, and hence to interact with persons and things in a flexible but not self-conscious manner.

Only some species take a step beyond the basic interactive monitoring of the environment that characterizes the simple, primary consciousness of all animals. They attain self-consciousness, and this in at least two different senses.

Great apes like chimpanzees, and in our species infants from 15–18 months of age, can be said to reach a state in which they are able to make a clear distinction between their own physical bodies and the surrounding environment. More precisely, they first become capable of physical self-monitoring, *i.e.*, focusing attention on the material agent as the physical executor of actions; and then their bodily self-monitoring comes to completion as the objectification of their own bodies (Merleau-Ponty's *corps propre*), and thus as a full-fledged bodily self-awareness [54].

In its simplest form, then, the description of the self is a description of physical identity. At an early stage the bodily self-consciousness is likely to be structured by a non-verbal and analogic representation of the (physical) self; but very soon it begins to be mediated by the verbal exchange with the caregiver. In other words, in our species the "chimpanzee-style", purely bodily self-consciousness is almost immediately outstripped and encompassed by a form of descriptive self-consciousness that is strictly linked to linguistic tools and social cognition mechanisms. Here begins the process leading to self-consciousness as introspective recognition of the presence of the virtual inner space of the mind, separated from the other two primary experiential spaces (corporeal and extracorporeal). This is the foundation of human consciousness in the Lockean sense of the term: self-consciousness as personal identity.

This psychological and introspective self-description is likely to take shape in the act of turning on oneself the capacity to mind-read other people; and this is likely to occur around the age of 3–4 years and in an interpersonal context, viz. in a relationship with the caregiver that is made of words, descriptions, designations, evaluations of the person. Through the dialogue with the caregiver (and then with other social partners) the 3–4 year child constructs itself by constructing its own identity, both objective (for others) and subjective (for itself). And following G. H. Mead's well-known lesson, we are

able to say that the identity-for-itself largely derives from the identity-for-others; viz. we see ourselves, and define ourselves, in the first place introjecting the way in which others see and define us [55].

This transition from a bodily and social identity to an introspective one is not an all-or-nothing issue: it gradually takes place in an interplay of mind-reading [56] and linguistic-narrative capacities modulated by socio-cultural variables [57,58]. The child who at 3–4 years of age turns his third person mind-reading capacities upon himself under the influence of caregivers' mind-related talk, at around 4–5 years of age begins to grasp his subjective identity as rationalized in terms of autobiography. This is "narrative identity", *i.e.*, a cognitive structure that can provide the jumble of autobiographical memories "with some semblance of unity, purpose, and meaning" ([59], p. 527). Research findings show that the complexity and coherence of this structure increase during adolescence until early adulthood [60]. This raises the question of what kind of narrativism is involved here [61].

In this process of narrative self-construction there is an essential psychodynamic ingredient. Dynamic psychology and developmental psychology tell us that affective growth and the construction of identity cannot be separated; the description of the self that from 2–3 years of age the child feverishly pursues is an "accepting description", *i.e.*, a description that is indissolubly cognitive (as definition of self) and emotional-affective (as acceptance of self). In brief, the child needs a clear and consistent capacity to describe itself, fully legitimized by the caregiver and socially valid. On the other hand, this will continue to be the case during the entire cycle of life: the construction of an affective life will always be intimately connected to the construction of a well-defined and interpersonally valid identity [62].

We believe the main result of the research cluster, which is continuing to develop its ideas, was to highlight the need for a synthesis of different perspectives on self-consciousness as narrative self. In the current debate the theme of self-consciousness tends to be approached with a limited focus; and hence the different facets of self-consciousness (its non-conceptual *versus* higher-level forms, or its inter-subjective and temporal aspects) remain relatively isolated [63]. We, at the Rome seminar, made an effort to make up for this thematic isolation and achieve a more integrated view, putting together perspectives that are usually kept separate. So the contributions were informed by philosophy of mind, cognitive sciences, text linguistics, but were also receptive to some aspects of psychoanalysis in an attempt to get the most out of the psychodynamic notion of a defense mechanism.

## 6. The Contribution of Quantum Physics to the Idea of Consciousness: A Culturally In-Between Hypothesis [64]

We are presenting here a summary of the main contributions to the seminar which took place at Roma Tre on the 18 September 2103 with the participation of Emilio Del Gudice, quantum phycisist (Istituto di Fotonica e Nanotecnologie - Milan), Massimo Marraffa (Roma Tre), philosopher of science and historian of psychology, Mauro Bergonzi (University of Naples, "L'Orientale"), historian of Indian religions and philosophies, and Michele Lucantoni (Roma Tre), philosopher of biology. Unlike the other reports in this collection, the complex nature of the topic did not allow us to write an individual summary. The objective of the seminar was to initiate a dialogue, not to construct a consistent discourse which would necessarily have brought about an improper amalgamation of ideas and disciplines which are significantly different, as well as distant, over time and space. The intention

behind the project was to examine the idea of consciousness, which emerges from a number of Emilio del Giudice's writings. This idea was then associated with the model of consciousness elaborated by the quantum phycisist Amit Goswami (see Michele Lucantoni's conclusions) who explores in detail the links between quantum mechanics and ancient Indian sapiential thought, especially the advaita-vedānta school (one of the six *darshanas* or theoretical-interpretative systems which derive from the Veda, considered "orthodox" by Hinduism). The two physicists start off differently, but come to the same deep ontology: a unique universal consciousness. We have decided to connect Goswami and Del Giudice by involving Mauro Bergonzi, a scholar of the Vedanta philosophical tradition, in order to explore the connections between Quantum Physics and the Non-dualist Indian Thought [65].

So, where does consciousness reside? What does that which Francis Crick defined "the last great mystery of science" consist of [66]? And above all who will have the last word about that personal experience which seems to contain the whole universe? The basic assumption, shared by all the participants, is that since any appeal to quantitative criteria would inevitably fail, a plurality of voices might be the only plausible, desirable way to approach the "truth" concerning consciousness. In this exploration we will discover that the thousand-year old path, which unites the two parallel quantum edges is the non-dualist sapiential thought conserved in the vedic *Upaniṣads*. These ancient Indian spiritual, philosophical, and mystical writings seem to have foreseen, at the dawn of every gnosiology, the most profound aspects of the relation between consciousness and reality.

*6.1. Quantum Field Theory and the Physics of Living Matter: A Hypothesis on Physical Phenomena*

Let's start with a metaphor about the development of science in recent millennia. The metaphor consists of a comparison between this development and that of a child when someone gives him a toy. Science is the child and the toy is nature. At the beginning the child plays by following the instructions, then if he is smart enough, the child wants to know what it is like inside and breaks it. Once the toy has been smashed into hundreds of pieces, most of the time the child stays there looking at it. There is also the chance that the child will try to re-assemble it, giving him a toy, which is like the other one because it is made up of the same pieces. So there are three phases of approaching the toy, which correspond exactly to the three stages of science. At the beginning, human beings looked around nature and began to make catalogues, a list of all that exists—a gigantic challenge. It is necessary to establish correlations empirically, which is hardly a simple task. For example, the stroke of genius in understanding how babies are born: establish a correlation between a sexual act taking place one day and the birth of a baby nine months later is by no means a trivial matter—it means following a long distance concatenation of cause and effect.

The first stage in science is by no means a simple one and in fact it has taken millennia—just think of the time spent grasping the irregularities of all celestial motion. This phase lasted, at least in the western world, up to the Renaissance. After the Renaissance, another approach took shape, which consisted of chopping nature up into tiny pieces. Clearly, nature dismantled is no longer nature: dismantling nature is an act of death, you kill the living being to see what's inside—death as an essential part of life. We discovered that the living being is made up of cells, which are in turn made up of nucleus and cytoplasm. Then molecules arrived, atoms, protons and electrons, then quarks—no

longer to be broken down—in an organism formed as a "matrioshka". We now find ourselves on the threshold of the third phase, which involves recomposing it all and seeing how it holds together.

Quantum mechanics was born exactly 113 years ago. What is the difference between quantum physics and classical physics? How did we come to recognize that classical physics was not enough to explain certain phenomena? The criterion consists of taking the reasoning behind previous physics to extreme consequences. This is why theoretical physics is important: with rigorous logic we can derive all the consequences of principles. When we enter a blind alley we are forced to begin a conceptual revolution. Quantum mechanics thus originates with a logical crisis in classical physics. We see that it is wrong to consider bodies as inert and separate, that they can receive energy only, exclusively, from the interaction with other bodies. Therefore we have a spontaneous fluctuation of all bodies in connection with their interaction with the vacuum and since the vacuum is everywhere, this is an interaction we cannot avoid. Thus, if this is the case, it means we cannot make use of an isolated body, the principle, which is behind the conceptualization of classical physics.

Nobody can any longer be isolated because thanks to its fluctuations in the vacuum it is constantly communicating with other bodies, there is always an interaction. For almost a century, this result—which is a revolution in thinking—has gone unobserved and has been hidden behind the idea of the existence of paradoxes, interpretations, which attributed to the observer and his interaction, the reason behind the spontaneous fluctuability of bodies. The observer, perturbing: the atom is small, the observer is large, the latter cannot do otherwise—he perturbs. However, macroscopic quantum systems like superconductors have been discovered. I might have a superconductor cable a hundred miles long and the size ratios invert (the observer becomes microscopic). Thus, we do not have interaction with the observer, but rather an interaction with the vacuum in which the body is exposed to the fluctuations of all the other bodies of the universe. We are approaching our conclusion.

To sum up, from a formal point of view, the results of quantum mechanics we should recall Bell's theorem: he was a physicist who posited in terms of formal logic the outcomes of quantum mechanics. He maintains: "The following set of three statements is logically incompatible, so one of the three just has to go: (1) physical reality is described by quantum mechanics; (2) physical reality is susceptible to an objective description—in that it is independent of the observer; (3) physical reality is describable as a set of localized events in space and time. These three statements cannot, all three, stay together" [67].

Einstein, who is one of the fathers of quantum mechanics and predicted the connections formalized by Bell, was of course a brilliant scientist but he did not go that far ahead. For Einstein, reality had to be objective and at the same time localizable [68]. He was ironic about the fact that if, in order to understand an object it is also necessary to know what is happening in the constellation Andromeda, then science is over. Science becomes possible only when it can localize objects: he was solidly bound to objectivity. His statement implied the falsity of quantum mechanics, which becomes only an approximation to reality, while awaiting a truer theory.

So Einstein's party, which remains a minority, brings down the first of the three statements. Niels Bohr and the entire Copenhagen school, which dominated 20th century physics, brings down the second statement concerning objectivity. He argued that since quantum mechanics is true and remains a problem of localizability, one would say that objects, even before they are localized, produce these incredible fluctuations which lead to indeterminism [69]. Suppose I have a boat and I do not want to admit the relation with far-off maritime motions, I can declare that sometimes the boat itself produces

rash movements. This is a form of blindness because it takes account of apparent objectivity but does not go very far. It is David Bohm who drops the third statement. And he argued that it is not true that we can conceive of reality as a set of separate objects [70]. This is the most important point. Given the fluctuation of every body, the body produces an electromagnetic potential, which travels afar and connects the other bodies. The fluctuation of a body is immediately communicated to other bodies, which produce a sort of collective dance. Naturally the extent of these oscillations can vary in size so that the experimental consequences can also be small, because they are covered by environmental factors, which is why at times classical physics, especially when it works at high temperatures, clearly represents reality without appealing to quantum mechanics because the fluctuations produced by the thermal agitation impact are large enough to cover micro-fluctuation. If, however, one works at low temperatures, these micro-fluctuations re-emerge and are observable—the reason why quantum mechanics was discovered at low temperatures.

Once we understand the mechanism, we can make the following concluding statement. It is possible that the different fluctuations of the different bodies reach harmonization, so that a collective movement is created which magnifies the fluctuation as a whole. Just suppose I have a group of singers, each one produces a whisper in *phase* (*i.e.*, mutually synchronized) one with the other: in the end a huge concert emerges. The important thing is to put one's own fluctuations into phase.

Here, energy is of little importance. Energy exits as a final result. What is important is the rhythm, the phase, which does not have an energetic content. If the elements in a system are in phase, this can work with infinitesimal energy consumption. This is the principle difference between computer and brain. The computer is made of objects, which are not in phase so that every element of the computer, to do something, has to spend energy. However, if we used the game of spontaneous fluctuations—which cost nothing because they are produced naturally—and we managed to pilot them so as to produce a symphony in phase, what would emerge would be music and not the usual noise of discordance. This is what really happens. We have seen that liquid water naturally emits a sound, which has the structure of a musical score. This is the physical basis, which allows us to understand how the matter, at a certain degree of development, produces a psyche. What is a psyche if not a *logos*? And what is a *logos* if not a set of harmonized fluctuations which produce meaning?

*6.2. Indian Non-Dualist Thought and Philosophical Implications of Quantum Physics*

Indian non-dualism and some of the philosophical implications of Quantum Physics discussed in this cluster seem to share the view that reality is an *indivisible whole*, while the perception of *separate* entities is just a mental construct without any cogent ontological foundation (including the idea of an individual "ego" dwelling "within" a single body/mind).

On the other hand, *consciousness as such* (not to be confused with its incidental "contents", like perceptions, sensations or thoughts) is a basic principle which cannot be consistently explained as the end result of any physical or mental cause, since no "explanation" or "cause" could appear without consciousness *already* being there as a precondition. So consciousness is an irreducible reality *prior* to any perception, sensation or thought. Its evidence is doubtless, for at any time anybody can verify with absolute certainty (through one's own direct experience) that he/she exists and is aware.

Therefore, since all phenomena can be perceived, known or explained *if and only if* consciousness is already there, it is impossible to regard consciousness as the end product of any other phenomenon without bumping into an epistemological paradox.

Moreover, according to non-dualism, "consciousness" and "world" are just two different *descriptions* of one and the same indivisible reality (respectively in terms of the "first" or of the "third" person), while the alleged separation between "subject" and "object" is nothing but an illusory mental construct. This stance could encourage new perspectives in the current philosophical debate engendered by the amazing discoveries in the fields of Quantum Physics and Cognitive Sciences.

The Sanskrit word *advaita* means "non-dualism" and points to the simple fact that in reality separation does not exist: there are differences, endless differences, but no actual separation. If the universe is a consistent totality, how does the perception of separate entities arise?

In perception, through names and concepts, we organize sense data in patterns that we recognize as separate objects (houses, cars, trees, and so forth). According to philosophers like Kant and Wittgenstein, empirical data are mainly constructed by way of conceptual thought and language. Benjamin Lee Whorf pointed out how the grammatical structure of our mother tongue radically influences the act of perception itself: through the naming process we arbitrarily engender an illusory segmentation of the unified universe into a world of apparently separate entities [71]. On the basis of this view, every experience is an interpretation of bare sense data through language, so that we cannot perceive what we have not a word for. Moreover, all that is perceived through different names appears as a fragmented set of discrete entities.

In Indian thought, the ancient precursor of this constructivist perspective was the concept of *nāma-rūpa*. *Nāma* means "name" and *rūpa* means "perceptible form". They are joined together in one compound word just to emphasize that we can only perceive a form through a name. No name, no form; many names, many forms. So our perception of a multiplicity of separate entities comes from language, as stated in the *Bṛhadāraṇyaka Upaniṣad*.

Later on, Śaṅkara and advaita-vedānta maintained that the illusory perception of multiplicity arises by superimposing concepts (stocked in memory) on "what is" now, in such a way that the indivisible Whole appears as a mass of discrete entities limited by their names. Superimposition (*adhyāsa*) and limitation (*upādhi*) through names and concepts are the origin of *māyā*'s illusion.

Therefore, through language our thought assigns specific names to various aspects of this huge, indivisible process called "universe", giving rise to the perception of many different forms. Each word is like a "frame" that traces a conventional as well as arbitrary edge around some aspects of the Whole, differentiating an "inside" as opposed to an "outside" and thus creating the illusion that a specific form is independent and *separate* from all other forms identified by different names. Moreover, names are static, incapable of capturing actual movement, just like photography, which is obliged, for example, to show a man running by means of many different photos of men frozen in motion.

Thus, after creating an illusory multiplicity of fixed and separate entities through language, we mistake this inadequate description of reality for reality itself, whereas the universe is just one formless process, which appears as an amazing expanse of different, but *not* separate aspects.

In Indian non-dualist inquiry into our true identity (*ātmavicāra* or *ātmavidyā*), the core question is: "Who am I?" The response can already be found in the early vedic *Upaniṣads*, where our true self (*ātman*) is conceived as an impersonal and boundless awareness that coincides with the totality of

being (*brahman)*. Subject and object cannot be separated, as they are both emerging from one and the same source: being-awareness.

By inquiring into the foundation of individual identity, through a meticulous work of reduction of appearances, at the bottom of our immediate and direct experience we find (as both Śaṅkara and Cartesio remark) the undeniable and certain evidence of our being and awareness (*sat-cit)*. Without firstly existing and being aware, we can neither perceive nor assert anything. Dualistic perception forces an illusory gap between objects and consciousness that is deceptively considered an individual attribute. However, according to the non-dualist perspective, both the individual ego (identified with a single body-mind complex) and the so-called "external" objects are only different (but not separate) *contents* of one and the same universal consciousness, which encompasses all existence. No content can be perceived if primarily awareness is not there: any object appears always *in*, *to,* and *as* consciousness.

In Western philosophical tradition, the Reverend Berkeley [72] had already remarked that, according to the evidence of our direct experience, anything concerning external reality is primarily an object of perception appearing in and as consciousness. Therefore, it is impossible to prove the existence of a world apart from consciousness, given the inseparable and unavoidable coexistence of both: in fact, since they always appear together, they are not two separate entities, but rather *two different aspects* of the same reality.

So the boundary between subject and object is not real: the terms "consciousness" and "world" refer only to two different perspectives (in first or third person) describing one, indivisible reality, just as "ascent" and "descent" are two different words for the same slope, depending which way one is going.

For example, one single experience can be named either as "hearing" (if described in terms of the subject who hears something), or as "sound" (if described in terms of the object heard). However, in the *actual experience* of hearing, one cannot establish a precise boundary where sound ends "out there" and hearing begins "in here": in fact, there is just one, immediate experience and only later on, in order to describe it, the thinking mind says "*I heard a sound*", creating a deceptive subject/object duality.

Indian non-dualism can offer a critical contribution to the current mainstream of contemporary neurosciences that regards the origin of consciousness as a side-effect emerging from a certain degree of organization of a material device like the brain (*wet-ware)*.

Firstly, due to the lack of philosophical accuracy, neuroscientists often confuse "consciousness" with the "contents of consciousness", the *objects* of consciousness (thoughts, images, perceptions, memories) that can be observed and studied experimentally—as linked, it is true, to the functions of the brain—with the *very fact of being conscious* (consciousness as such)*,* which cannot be observed as an object by science, since it is the source itself of any observation.

Secondly, the stance of a cause/effect relation between brain and consciousness presumes a hierarchical causal order ranging from biological matter to consciousness: *y* (consciousness) depends on *x* (the brain) in order to exist. But how can we assert the pre-eminence of the brain over consciousness if it is only via the consciousness that it becomes possible to perceive and know the brain? To what extent should we regard as "scientific" a theory asserting that *y* depends on *x* when it is also true that *x* depends on *y*, unless we acknowledge that both of them are only two sides of the same coin?

This unsolvable epistemological loop should lead us to consider consciousness as a primary *datum* of reality [73]—on a par with the fundamental forces of physics. Max Plank considered consciousness

a fundamental principle from which matter derived [74], just as Erwin Schrödinger realized the impossibility of attributing consciousness to matter. The classical relation between subject and object emerged significantly renovated in Schrödinger's words: "The world is given to me only once, not one existing and one perceived. Subject and object are only one. The barrier between them cannot be said to have broken down as a result of recent experience in the physical sciences, for this barrier does not exist" ([75], p. 127).

Since we are able to observe the universe whilst we can never be apart from it, saying we observe the world would be the equivalent of asserting that the universe watches itself via our observation. So the universe can be regarded as a self-observing unified system: it sees itself through our eyes. However, as G. Spencer Brown [76] properly remarks, in order to observe itself, the universe must split itself up into at least two parts: the observer and the observed. Consequently, since the observer cannot be observed while observing, there is always a part of the totality that remains unseen, outside the field of observation: this unknowable remainder is consciousness itself. Here lies the paradoxical mystery of consciousness: *the very source of any knowledge is unknowable by itself.*

Therefore, according to Indian non-dualist traditions, any observation or theorizing about "objective" reality can never reach consciousness, which is the hidden background of any observing or theorizing process. But *prior* to consciousness, beyond the splitting duality of subject/object, there is the unknown Source of everything (*parabrahman*), the ineffable substratum of reality, which resonates deeply, to some extent, with the concept of "vacuum" in Quantum Physics.

### 6.3. Amit Goswami and Quantum Consciousness: A Summary

Goswami provides science and philosophy with a new way of conceiving the puzzle of consciousness. His proposal scourges the invisible confines of the imagination without renouncing to the support of a measured scientific argument, to which he entrusts the force of his intuitions and faith in universal consciousness. We use the word "faith" because Goswami seems little inclined to respect the cornerstone of the experimental implementation proper to western science. In fact, the way in which this revolutionary architecture of reality is presented to us provides subjectivity with a role transcending our personality (our ego?) as to embrace that infinite coexistence of consciousness in which the singularity embodied in individuals acts as synolon.

The monopoly of studies concerning consciousness is held by the neurosciences and the sciences of artificial cognition [66–77]. Leaving aside for now the latter, the peak that an erudite neuroscience can reach is a correlation between the neuronal activities and the phenomenology of experience in the first person [78].

In the most trivial versions of the discipline, the problem of the correlation does not even present itself since consciousness is perceived as an unwelcome guest: evolutionary tinsel qualified as epiphenomenon—an appendix stripped of causal power—which emerges mysteriously from the work patterns of the brain [79]. We are convinced that every epiphenomenalism is nourished by an enigmatic paradoxality: as we fear that reality is not reflected and resolved by the system of knowledge pleaded by a certain physics (as to save the certainty of a manageable universe), we appeal to the last stage of magic art which is epiphenomenalism.

The magic is in accepting that a phenomenon (consciousness/immaterial)—without a clear definition of "phenomenon" in physics—supervenes [80] to another phenomenon (biological activity of the brain/material) without causal prosecution or retroaction. How can a causal chain of corporeal happenings culminate in an event, which violates the fabric of causal relations and connections inscribed in space-time? Here we see the paradox reasserted and unveiled. To avoid asserting directly the insufficiency of a physicalist vision, we appeal to an obvious metaphysics, which undermines the principles of the physicalism itself! Goswami is shrewd in grasping that a vision of the world crushed against a raw and naïve materialism ends up generating sclerotic and indirectly obscurantist propositions, incapable of explaining the phenomena it pretends to observe. According to quantum mechanics there are six dogmas, which mark scientific thought and which impede a clear vision of things [81]:

1. Causal determinism
2. The continuity of events
3. The locality of all objects
4. Clear objectivity
5. Monism and materialistic reductionism
6. Epiphenomenalism

The fact that consciousness remains tangled up in the net of these six assumptions is clear, indisputable: where is consciousness supposed to be? If I observed my brain caught up in listening to Miles Davis, I wouldn't find trumpets flooding the imagination, but strips of neurons busy with a continuous release of electro-chemicals. In this case we do not have objects of thought to be measured and positioned in the space-temporal plot. This last observation interposes itself on the path to consciousness like a threshold to cross. Beyond this threshold an unknown universe is waiting to be discovered and understood. Amit Goswami builds a bridge between the old and the new: the quantum principle of non-locality [81] seems a compulsory stage in sparking off a revolution, the protagonist being the inseparable unity of consciousness and material, both resting upon the fullness of the vacuum.

Our question is if we will ever be ready to embrace a reality so solidly dependent on the human presence; a reality where the abode of daily routine will be definitively assigned to the marvelous lands of the spirit.

## 7. Conclusions

The aim of this work was to initiate a dialogue between disconnected areas of knowledge because of the persistent disciplinary fragmentation inherited by educational and research institutions based on the model established in 19th century Europe [82]. Of course this attempt, for obvious reasons, can only be partial and epistemologically incomplete. However, we should at least trying to remedy the damage produced by this separation on our university system and at the same time seek out for a new model. And if a third way exists, it will be inevitably be founded on a "virtuous incompleteness" of all epistemological models. The task of the New Humanities researcher will be to transform the isolation of competences into a stable alliance for opening new scenarios.

The present contribution has only begun the work in this direction. Placing studies like "Protocols of Vision" side by side with spiritual and scientific exploration like "Contribution of Quantum Physics to the Idea of Consciousness", or intersect the naturalistic scenarios of "Narrative Identity: Nature, Ontogeny and Psychopathology" with the radically different perspectives like those proposed by "Signs and Bodies Between Digital and Gendering", has been a healthy critical exercise for challenging and deconstructing the old disciplinary boundaries. We think that insisting on this work of synthesis is the only way to avoid regression to a sort of unwary society, unable to express, transmit and criticize the complex and interconnected structure of today's knowledge and culture.

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## Author Contributions

Domenico Fiormonte is first author and was responsible for editing and revising all the contributions. Francesco Fiorentino and Domenico Fiormonte authored the "Introduction"; Ugo Fracassa edited the Section 2 "Seeing, Knowing, Recognizing: Protocols of Vision in Science, Art and Life"; Teresa Numerico and Francesco Fiorentino authored the Section 3 "Memory Construction: Invariants, Variability and Media"; Massimo Marraffa wrote the Section 4 "Narrative Identity: Nature, Ontogeny and Psychopathology"; Laura Fortini authored the Section 5 "Signs and Bodies Between Digital and Gendering"; Domenico Fiormonte and Michele Lucantoni edited the Section 6 "The Contribution of Quantum Physics to the Idea of Consciousness: a Culturally In-Between Hypothesis" (except for Section 6.2 which was authored by Mauro Bergonzi).

## Conflicts of Interest

The authors declare no conflict of interest.

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6.  "The Western Universities give their students an opportunity to learn what all the European peoples have contributed to their Western culture. Thus the intellectual mind of the West has been luminously revealed to the world. What is needed to complete this illumination is for the East to collect its own scattered lamps and offer them to the enlightenment of the world. (…) The Western universities have not yet truly recognized that fullness of expression is fullness of life. And a large part of man can never find its expression in the mere language of words. It must therefore seek for its other languages,—lines and colors, sounds and movements. Through our mastery of these we not only make our whole nature articulate, but also understand man in all his attempts to reveal his innermost being in every age and clime." Rabindranath Tagore. "An Eastern University." In *Creative Unity*. New York: Macmillan, 1922. Avaliable online: http://bichitra. jdvu.ac.in/search/english_search.php (accessed on 25 July 2014).

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