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**References**

Nyiri, JC 1997, 'The concept of knowledge in the context of electronic networking', *Monist*, 80, 3, p. 405, Humanities International Complete, EBSCO*host*, viewed 15 February 2013.

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**THE CONCEPT OF KNOWLEDGE IN THE CONTEXT OF ELECTRONIC NETWORKING**

We know a lot more about the epistemology of the net at the time the present summary is being written (January 1997) than we did two years ago when the topic of this collaboration was decided upon. In part, this increase in knowledge is a consequence of the tremendous development of the net itself; in part, however, it is a consequence of our own series of exchanges. I would like, therefore, to say that the project had a positive outcome; but to say this would be misleading.

It would be misleading, first, because in conceptual terms our results are mainly negative. We have reached important results as to how not to address the problem of knowledge on the net; and as to what that problem is not. But we were not successful in finding new, positive, concepts. And I think I know now that here we were condemned from the start to failure.

Secondly, the outcome was negative in the sense that an electronic discussion did not actually emerge. This is the reason for my using the circumlocution "a series of exchanges." Of course we employed e-mail and mailing lists; of course texts were there in a digitized form, and available instantaneously. But the topic for discussion I had originally proposed - a conventional philosophical topic was just not fit to be discussed in a networked environment. Certainly there is room - or should we say time? - for philosophy on the net. Indeed the net needs its philosophers. But they, and their problems, belong to a world entirely different from the world of philosophy as we knew it. This, I suggest, is the main lesson we have learned from this project.

And here is how it began, with a text I mailed to the "mii-ckcn" list in January 1996:

Dear Colleagues:

It was agreed that our discussion - like all other discussions envisaged for the "Monist Interactive Issue" - should begin with the moderator mailing what is usually called a "target paper." The moderator (that is, me) should have done this long ago - by the end of October last, in fact. Now the present text, I am afraid, is still not the paper you were promised. Perhaps there will be no such paper at all - perhaps the discussion will have to emerge from more spontaneous beginnings. The reason: As time goes on, I find it increasingly difficult to adhere to the views I have held for the past few years - without, however, having arrived at some settled, alternative, position. In particular the views I had defended in my 1994 paper "Electronic Networking and the Unity of Knowledge" have ceased to satisfy me. (For bibliographical references see below.) I have come to feel disturbed by the typographical bias of those views - especially after having read Talbott's The Future Does Not Compute. Talbott entertains an obsolete notion of what it means to have meaningful knowledge; his philosophical anthropology is quite ahistorical; so ahistorical it made me take issue with what I now recognize to be a latent ahistoricity in my own former approach. I am not saying everything in "Electronic Networking and the Unity of Knowledge" was wrong (indeed I would be pleased if some of you would want, at some stage, to have a look at it - I am mailing the text to you simultaneously with this one); but its argument had presupposed a timeless validity of certain ideals which in fact, as I now see, are bound up with the age of the printed book.

If my own views, then, are in flux, the adequate way to convey them is, I would say, not by making statements at all, but by formulating questions. And so here are some questions - I invite you to react to them:

Assuming that the term "knowledge" has a whole cluster of meanings, most of them fuzzy, how should one proceed when inquiring about what the notion of knowledge in the context of electronic networking amounts to? Should one apply the methods of a non-ethnocentric cultural anthropology so to speak, i.e. describe specific cognitive attitudes as manifested in the linguistic habits of specific networking populations? Should one describe, that is, some emerging new language games, or forms of life, in the Wittgensteinian sense - describe new conceptual patterns, without paying attention to older ones? Or should one, rather, begin precisely with an articulation and analysis of those older patterns, and examine new usages in the framework of the former? My own choice would still be the latter.

Assuming you accept this choice, what would an articulation of the hitherto established meanings of the term "knowledge" look like? The first distinction perhaps could be that between "knowing that" and "knowing how": that is, verbal or theoretical knowledge on the one hand, and practical knowledge (skills, techniques) on the other. But then one would immediately have to ask: how clearcut is this distinction? What is to be said, for example, of knowledge conveyed by pictures (images, diagrams, graphs, maps)? A second -

related, but hardly identical -distinction is that between operative and contemplative knowledge. A third distinction is that between personal knowledge (in the sense of knowledge possessed by some individual) and collective knowledge (knowledge possessed by a community, or by a culture). A fourth distinction could be made between personal knowledge (in the sense of evaluative, normative knowledge) and objective knowledge (in the sense of knowledge that is purely descriptive, factual). Are these useful distinctions? What other distinctions would be relevant? And should one also distinguish between knowledge and "information?" Is knowledge entirely different from information, or is the former a special case of the latter?

Am I right in believing that the nature of knowledge - or if you prefer: the way in which different notions of knowledge emerge, flourish, and become obscure - is not independent of the technologies by which knowledge is communicated and preserved? What connections do obtain here?

And what effect, then, has the technology of electronic networking on the nature of knowledge? What are the relevant dimensions of changes in the communication and preservation of knowledge when computer networking supplants the printed text? (And what is the correct expression here: "supplanting" or "complementing"?)

It seems obvious to me that one such relevant dimension of change pertains to our experience, and concept, of time; to the temporal context within which we conceive of present contents of communication; to the mode, in particular, in which we experience and handle the past. Important observations have been made, for instance, about the changing notion of archiving (Hedstrom; Bearman). And at the time I read it I was deeply impressed by Birkerts' book Gutenberg Elegies, bewailing our "fragmented sense of time" and our "divorce from the past, from a vital sense of history as a cumulative or organic process." I am still impressed; but I am not convinced anymore.

The point Birkerts is making is that we are losing the historical consciousness that for many centuries distinguished the Western mind. But are we really losing something? At the time I wrote my paper "Historical Consciousness in the Computer Age" (1990) I certainly believed that we are. Today I think that what we lose is perhaps just an obsolete ideal. Perhaps we are gaining, as Nietzsche had thought, a new freedom to deal with the present in a practical spirit.

And historical consciousness of course is just one among the many contestable ideals: the ideals of originality, individuality, privacy, unity of knowledge, objectivity, and absolute truth. I think these ideals should not be interpreted and evaluated independently of the social fabric from which they emerged and with which they were, and are, bound up. A discussion about the concept of knowledge in the context of electronic networking should at all times also be a discussion about the kind of society electronic networking is enabling, or not enabling, us to build; the kind of life it furthers, or excludes.

Wishing us all a fruitful exchange,

J. C. Nyiri

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The "mii-ckcn" list was by this time widely publicized on the net, there had been inquiries, people had subscribed - the above text must have reached many a screen. But it did not elicit a single response. So on April 14, 1996, I decided on a new beginning. I re-mailed the target paper, along with the text of my "Unity of Knowledge" paper, to a circle of some twenty colleagues. Two of them I had become acquainted with via e-mail; the rest were personal acquaintances - colleagues and students, from Hungary and from abroad. I had asked them to reply to me directly, indicating that the mii-ckcn list had been for the time being frozen.

In the course of the next four weeks two of the addressees replied. One was Dr. Michael Biggs of the School of Art and Design, University of Hertfordshire, UK. Michael in fact commented on a passage in the "Unity of Knowledge" paper; so let me first quote that passage from the Networking in the Humanities volume (pp. 261ff.):

Before the age of printing, pictures and diagrams played only a limited role. ... The Romans used simple pictures, called emblems, to help them overcome the inherent visual deficiency of their scripts:[ 1] they recalled specific parts of a text by remembering the particular emblem placed against it in the margin. In early medieval manuscripts illustrations helped readers to find the part of the text they were looking for. Applied in this manner, pictures had a merely auxiliary function; and even that was lost with the introduction of word-separation. As Saenger points out, this invention gave written Latin an ideographic value without sacrificing the inherent pedagogic advantages of a phonetic alphabet? Pictures now ceased to be needed as visual aids. And prior to printing they could not become aids to the communication of knowledge. Since they were inevitably

distorted in the copying process, information could not be preserved by them. With the advent of printing this changed. But even then, texts could be manipulated with much greater ease, both by the author and especially by the printer, than could pictures .... Illustrations played, on the whole, a subordinate role; and pictures as vehicles of thinking played almost no role at all. Sometimes this was felt to be a possible loss. Thus Bacon wrote: "Aristotle saith well, 'Words are the images of cogitations, and letters are the images of words.' But yet it is not of necessity that cogitations be expressed by the medium of words. For whatsoever is capable of sufficient differences, and those perceptible by the sense, is in nature competent to express cogitations."[ 3]

This is the issue Richard Lanham today confronts when he says that scholarly argument should use images "to think through, conceptualize, problems rather than simply to illustrate solutions arrived at through other means;"4 or the issue Michael Ester addresses when he speaks about "arrangements of images as a way to think."5 The Lanham reference is to the perspectives opened up by the possibility of manipulating images on the screen. But already in the late age of print the programme of a better integration of text and images appeared as a conceivable aim, say, to Otto Neurath. "Frequently it is very hard," he wrote, "to say in words what is clear straight away to the eye. It is unnecessary to say in words what we are able to make clear by pictures."[ 6] Neurath was working towards an "International System of Typographic Picture Education," abbreviated as isotype, an interdependent and interconnected system of images, to be used together with word languages, yet having a visual logic of its own. Isotype would be two-dimensional, using distinctive conventions, shapes, colours, and so on. Neurath particularly stressed that the elaboration of this picture language was meant to serve a broader aim, that of establishing an international encyclopaedia of common, united knowledge - the "work of our time," he said - and in this connection he specifically referred to the French Encyclopaedia which "gave a great amount of material and a great number of pictures, but there was only a loose connection between them."7

And this is what Michael Biggs wrote:

In support of the importance of the re-emergence of imagery in thinking we have several levels of use. The most passive use is non-integrated illustrations which simply repeat what is said in the text. This is the case with Diderot and the French Encyclopedie. Then we have Neurath who for efficiency's sake does not wish to say in words what can be better, more persuasively or more easily said in pictures.8 There is not necessarily an implication here that there are some things which can ONLY be said in illustrations. Then there is a functionalist argument by Lanham and Ester[ 9] to the effect that visual thinking offers tools that textual thinking does not. Such an observation is more than an efficiency argument. In a similar manner, Wittgenstein contrasts the case of being persuaded by words with our inability to then argue the contrary with images.[ 10] This is not to be confused with Wittgenstein's distinction between "saying" and "showing" in the Tractatus.[ 11] This distinction in the Tractatus is a structural matter, where what is "shown" underlies

what is "said." What is shown is ineffable? but not because it refers to visual practice, e.g. ostensive definition. That ineffability belongs to Wittgenstein's later work which emphasises practice[ 13] and in which "mental pictures" are unnecessary constructs. The emerging dominance of visual reasoning leads on to the idea that words such as "proof" can be described as "a single picture."14 That is important, not because picturing and proof are synonymous, but because it leads us away from the temptation to think that a proof is telling us something about essences in contrast to a pictorial diagram which is a paradigm but not necessarily an essence.[ 15]

The issue for electronic text is, then, that concepts are underpinned by nonlinguistic practice. This has been hindered by the dominance of textual communication and is likely to be overcome by the visual opportunities of forms on the Internet which have advantages over straightforward text and text-string (e-mail) communication. The limit is a conceptual one, that we do not have a set of analytical tools for graphics which are comparable to those for text. For example, we can organise and structure texts in conventional ways based on practice, but no such corresponding uniformity of practice and hence of analysis can be applied to images. Thus Wittgenstein can express surprise in recognition of a likeness? and of the changes undergone when an image is accompanied by an expression of intention? This correspondence could be made explicit via analytical tools comparable to those available to us with text. We cannot analyse the physiognomy of pictures? There is therefore a fundamental disunity between visual knowledge and textual/linguistic knowledge.

The relation between the logic of written text and the logic of pictures is clearly one of the fundamental issues pertaining to the problem of knowledge on the Net. And here philosophical progress will of course hardly occur as long as the investigations proceed in merely one of the two domains involved - namely the verbal one. We will return to this issue towards the conclusion of the present summary by way of reference to a paper by Phil Mullins.

The second comment in this round came from Dr. Margit Pohl, Institute of Design and Assessment of Technology, Social Cybernetics Group, Department of Computer Science, Vienna University of Technology. (Margit addresses me as "Krist6f", which is the Hungarian version for "Christoph." Bear with me, dear reader: I was born and raised in Hungary, but in a German-speaking family, and especially when writing in German or English I often sign my messages as "Christoph" - hence the "C." in "J. C.") And here is Margit's (very slightly edited) text:

Kristof Nyiri sent us two papers as a starting point for a discussion. I want to make two comments referring to those papers. The first comment deals with the relationship between the technology of writing and knowledge representation in general, and the second one with hypertext (as an example of a technology of writing) in particular.

1. The Target Paper. Here I will comment on points ( 3) and ( 4).

I think it is quite obvious that the technology of writing influences human forms of knowledge representation. On the other hand this relationship seems to be rather complex. Many features of knowledge representation which are supposed to be typical for the electronic age already existed before the introduction of computer technology. Krist6f himself often quotes Musil or Wittgenstein as early examples for networked, distributed thinking and writing. Apparently, the influence of technology on the process of writing is not direct and one-dimensional. There might be something like a philosophy of networking influencing both the technology of writing and the forms of knowledge representation. Rand Spiro, a well-known scientist in the hypertext community, argues that hypertext technology is a method for coping with the complexity of modern life. In the context of his theory, complexity, and not technology as such, is the reason for changes in knowledge representation. Complexity is, then, regarded here as a sort of philosophical idea which brings about technological and intellectual changes at the same time.

2. In his paper "Electronic Networking and the Unity of Knowledge" Krist6f writes: "The now fashionable idea of treating all retrievable information as mere raw material out of which users might freely establish their own preferred hypertext structures is an acceptance of the fragmented state of knowledge, not a solution to the problems it creates."

I agree with Krist6f insofar as it is one feature of Hypertext that it enables readers to find their own paths through the jungle of knowledge. In some situations, this can be very confusing. Nevertheless, Hypertext is more than that. Hypertext also enables its authors to represent the structure of a text more explicitly. Overview cards in a graphical form can fulfill this function. If authors use typed links they have to consider very carefully the exact nature of the links they want to create. If a hypertext document is well structured, such a form of representation can give the reader an overview of the material presented that is much better than that provided by traditional books. Additionally, such an approach forces authors to consider the overall organization of their text to a greater extent than is the case with traditional linear text, where relationships between different parts of the text are very often represented merely implicitly.

Hypertext is still a very "young" medium, therefore it remains to be seen if future hypertext documents will be a fragmented and disordered mess or a wellstructured but flexible object. It seems quite plausible that the two kinds of development will each affect human reasoning in a different manner. I think this shows another major problem when talking about the influence of electronic networking on knowledge representation - there are many different ways of using a computer.

On May 14, 1996, I again addressed the above-mentioned circle of twenty, sending them Michael's and Margit's comments.

In my message I also included the text - in German, I am afraid - of an essay Herbert Hrachovec had recently written, an essay I found highly pertinent. Its title was: "Zweimal

funf Prognosen zur Forschung in Computernetzen," i.e. "two times five forecasts concerning research through computer networks." The essay contained a direct reference to the Monist Interactive Issue project. I took up that reference in a talk I had given at MUnster some days earlier; and closed my message of May 14 by quoting from the talk:

Hrachovec refers to the disturbing experiences he and I have had in the course of a joint experiment which is still in progress. The Monist Interactive Issue Project is an attempt to compile a special issue of this venerable American philosophical periodical by using discussions initiated and conducted on the Internet. I myself planned to direct a discussion under the title "The Concept of Knowledge in the Context of Electronic Networking" and have, in the course of the last few months, sent out into the great wide world an extensive list of questions to be considered, as well as a lengthy document to accompany that list. I have not received a single reply. At first, I was bewildered; today I think I understand. There is no such thing as a concept of knowledge in the context of electronic networking. All there is are procedures which one knows or does not know, or is not informed about; or locations in the global hypertext one finds or does not find. The humanities of the future will not have a Platonistic outlook; rather, a Wittgensteinian one, asking not for the meaning but for the use; or even a Heraclitean one - it is no accident that Wittgenstein, in the 1930s, was so intensely interested in the Heraclitean question. It is the multimedia flux of communication the humanities of the future will be striving to understand- to understand and, perhaps, to even bring to a halt, if, as I believe, the conventional text retains a measure of functionality?

My Heraclitean fantasies were not without impact. Lasz1o Turi, Junior Research Fellow at the Institute of Philosophy of the Hungarian Academy of Sciences - the Institute where I, too, happen to work - was so encouraged by them that he decided to join the discussion. Turi is of course the author of one of the introductory essays to the present Monist issue, so the reader will by now have the opportunity to become acquainted with some of his views; here follow his slightly abridged -comments on my target paper. I received them on May 20, 1996.

I recommend a threefold categorization of knowledge involved in digital technologies and networking: ( 1) knowledge of how to acquire and use digital technologies, ( 2) knowledge and experience of the past, ( 3) knowledge in use, that is the access to, and communication of, knowledge.

It is a common experience these days that people who consider themselves "the older generation" find it more difficult to learn the use of a new technology than do the "young folk." However, we have to admit that individual differences here are far more significant than those related to age-groups: some older persons are more successful in learning and using new technologies than others. I believe that instead of overemphasizing the importance of age, we should focus on analogy: those who can find analogies easily are able to acquire new technologies faster; and those technologies that offer analogies with their predecessors can be learned more easily than those that claim to be radically new. In

other words the knowledge that is most urgently required in the age of digital technologies is neither theoretical nor practical: it is in fact analogical- both on the designers' and on the users' side.

I agree that the experience of the past is changing these days. I can also understand the archivists' fear when finding that with digital(ized) documents there is no "here-and-now" feeling any more: bits and bytes are eternal, they hardly need conservation. But let us recall that this experience is not new: it has been known at least since the invention of printing: already the "traditional" printed edition of a manuscript text creates a radical distance in comparison with the "archived" feeling of original manuscripts. Moreover, writing itself is a technology for freezing an oral tradition into an eternal presence -in other words what we are facing here is perhaps an impact inherent in communication technologies as such.

However, digitalized texts do have a feature that has not been experienced earlier and that I am worried about: present-day digitalized texts are based on the same quasi-phonemic writing systems that were developed before the age of silent reading and writing. The system successfully survived the period when the interpretations of signs were no longer assisted by the ear, because additional markers were introduced to assist the eye: spaces between word-units, punctuation marks, etc. However it can hardly survive the digital period, when the interpretation of signs is assisted neither by the ear nor by the eye, but is assigned to automated processes working simply on the linear sequence of signs. Human languages are systems so complex that they cannot be represented in a one-level linear structure: human readers employ their three-dimensional sight and vast personal "lexicon" to understand the complex linguistic systems behind the simple writing system, but sequence-operated machines are not able to do this. Since present-day text retrieval tools are simply incapable of reliably navigating in huge digitalized text archives, what we may lose is not the experience of the past, but in fact the knowledge of the past.

3. From what I said about the accessibility of machine-readable quasiphonemic texts it follows that the technology of writing faces serious problems these days; it could even be said perhaps that the technology of written communication is in a crisis. Meanwhile, however, the technology of audiovisual communication is getting more and more sophisticated: new storage and transmission systems offer higher quality, more interactivity, and more precise access through better segmentation. Just to mention a few promising systems: the interactive compact disk (CD-I), the high capacity digital video disk (DVD), real-time digitalized sound through the network (RealAudio), and hyperlinked images and videos on CD-ROMs or on the World Wide Web, etc. In other words, while the traditional technology of written communication seems to be in a crisis, the development of audiovisual communication is unlimited. No doubt, audiovisual communication can be just as concise or complex as its written counterpart, and it can be a narrative medium as well (compare: traffic signs, great paintings and movies respectively): however, it is not suited for conveying the type of abstract, theoretical knowledge that we usually call European science.

Commenting on Laci Turi's comments ("Laci" being the colloquial form of "Lasz1o" in Hungarian), I would like to remark, first, that I find the concept of analogical knowledge to be quite illuminating here. After all, this concept played an eminent role in European medieval philosophy, a philosophy of manuscript culture and intertextuality; it might well play such a role again in the philosophy of a post-typographical age.

Secondly: I think what Laci says about the new conditions in archiving not being really new is only partly convincing. Here I would still side with Margaret Hedstrom. As she has so admirably put it: "Many current institutional practices undermine retention, preservation, and secondary use of electronic records ...

Even the word archive has lost much of its traditional meaning and associations. In the vernacular of data processing professionals, `archive' means to store data off-line. A 'permanent medium' is one that cannot be erased or altered even if it only lasts a few years. These new definitions do not incorporate any of the concepts that archivists normally associate with the term "archive;" to understand information in its context, to identify what is valuable, or to retain records and make them accessible as long as they have value .... some archivists are beginning to question whether fundamental archival practices, such as provenance and original order, are applicable to the administration of electronic records. The concepts of original order and provenance derive from the basic archival principle ... that much of the meaning and value of records derives from knowledge of the context in which the records were created. Knowledge of the context of creation in turn can be ascertained by examining records in their original order and by studying the administrative history, organizational structure, and functions of organizations and the life history ... of individuals." However, "[e]xcept for the simplest data file structures, the physical ordering of data is controlled by software and is distinct from its logical 0rder".[ 20]

Thirdly, I agree that not just historical consciousness, but, in part, historical knowledge, too, could be submerged in the ocean of digitalized texts. The loss of historical consciousness, as I suggested in my target paper, might in the end not be a loss at all. But of course we would not want to lose sight of relevant historical facts. Here I see dangers on at least three levels. At the first level we have to realize that digitalized libraries do indeed have a crippling effect on conventional humanities studies. Online public access catalogues tend to focus on recent material, both for monographs and serial titles. However, as has been repeatedly pointed out, in the humanities new developments had always been based upon a random survey of the entire corpus of the literature rather than upon a small selection of recent contributions?[ 21] At a second level, there is a real danger that virtual library holdings - with magnetic and optical storage media relatively unenduring, and hardware and software rapidly becoming obsolete - might in a relatively short time become irretrievable, or else prohibitively expensive to preserve? Here the programme of the new Bibliotheque Nationale de France certainly merits attention. The BNF, to be in full operation by 1998, is meant to be both a giant physical library, and a

digital on-line library. It is meant, as two of its spiritual architects put it, to "consummate the marriage of the universe of Gutenberg with that of McLuhan .... it will be open, democratic, innovative, but all of those things within a perspective ensuring the greatest respect for the past."[ 23] And at a third level there is the danger Laci points out: that even knowledge that is preserved digitally might get lost, possibly for ever, if the electronic search mechanisms employed do not happen to be appropriate ones. Lastly, I agree that in the new communication media western science necessarily loses its abstract character. The humanities of the future will not have a Platonistic outlook - and the same holds, I believe, for the science of the future.

After May 20, 1996, the discussion came to a standstill. I had to wait until November 7 to receive another message. It came from Gergely Kovesd, a student of mine at the University of Budapest, a psychology and mathematics major. I am here reproducing his comments on interactivity and the World Wide Web:

We can provide quite an adequate analysis of e-mail by approaching it from the point of view of its similarity to primary orality. However, radical changes have occurred with the extensive spread of WWW.In order to examine these changes it is expedient to use a kind of continuum-approach to interactivity. It is not enough to take into consideration whether the communication is two-way or not; we can also speak about a level of lower or higher interactivity. Two-way communication can be more or less well-balanced and symmetrical. WWW is situated between face to face interaction and e-mail on the one hand, and the printed book on the other. Although it is true that e-mail can be sent to the creators of the hypertext pages, the majority of users only read these pages, seldom comment on them, and can only rarely influence them.

WWW has brought back the liveliness of face to face interaction, but the character of the context has changed:

With face to face interaction the direct communicational context is constituted by the physical environment. With WWW it is the result of the designers' rational planning. Since such planning consumes time and energy, it is necessary to construct web-pages for encounters as generally conceived as possible. Unless there are considerable editorial resources, the pages cannot often be changed. As a result, interactivity decreases, and the stability of the text is much greater than in the case of e-mail.

A few days after I received Gergely's comments, Phil Mullins joined the discussion. This came about, I am afraid, in an almost old-fashioned way. Herbert Hrachovec had called my attention to the Ess volume (see note 24), and I started to read the essay by Mullins. I thought it was excellent; and there was a passage I found particularly relevant:

The word "information" and its soulmate "data" are rather neutral, technical terms that often have superseded the term "knowledge" as referents for our preserved cultural lore in the contemporary era. These terms also suggest our ambivalent attitude toward many of

the symbolic artifacts produced in the late twentieth century. "Information" and "data" imply symbolic artifacts without mooring; such uncontextualized material seemingly floats and accumulates and serves as a reservoir (largely untapped) for the individual inhabitants of electronic culture. Of course, human beings remain knowers in much the same fashion they have in earlier eras. To be a knower is a social endeavor that involves contextualizing such that one becomes an effective agent. A knower recognizes significant relationships among domains of information. Nevertheless, individuals in electronic culture perceive a certain distance between personal life and the larger environment; they sense a disconnectedness within the larger framework of expanding information. In part, this is to say no more than that the suppositions about reason and the edifice of knowledge developed in book culture seem to be collapsing. We have at least imagined that there were a finite number of appropriate classificatory schemes within which to locate ourselves and our experience; but now we seem to be relinquishing this hope for at least a map of maps. The world of information seems to have lost its human scale; its vastness leaves us unsteady even if we remain excited about its prospects?[ 4]

In the essay Mullins makes a reference to an earlier paper of his: "Multimedia as a Theoretical Tool." Paper presented at the annual meeting of the Society for Biblical Literature, 23 November 1993, Washington DC. [Electronic document available from <mullins@griffon.mwsc.edu>.] So I wrote to <mullins@griffon.mwsc.edu>, requesting the document. A lively correspondence began (the document, too, arrived), and soon I found myself informing Phil about my Monist discussion. I sent him the materials (the "Unity of Knowledge" paper, referred to as "paper," and the target paper, referred to as "Fragment 2," in the message below). On November 19 he commented on them:

Christoph - I decided to take a night off work and read and think about your paper and other materials you sent to me. I thoroughly enjoyed your paper. I can also understand your present unease about the paper's presuppositions about knowledge. I am generally of the opinion that what counts as "knowledge" and how we think about "unifying knowledge" is shaped rather decisively by the technology which we develop and use to acquire and promulgate knowledge. Clearly, we now are in a transitional place as we shift rapidly into a culture more dependent on digital technology. Our former images of/understanding of knowledge, and the "unity of knowledge" (its constitution and possibility) are shifting under our very feet. This, I take it, is what you suggest also in point 3 in Fragment 2.

You mention certain concerns in digital culture about the matter of "historical consciousness." I suspect that in part the historical consciousness of print culture grew out of the proliferation of texts and the seemingly natural link between text and social context. I think digital culture will not be so historically minded about texts. I am not sure whether this is a positive or negative development; it seems likely to be both. I have argued that much of the historical study of the Bible has turned out to be simply another form of naivete as far as the function of sacred texts in cultures is concerned.

I am puzzled also about the connection between "knowledge" and "information." I think that the image of information as floating somewhere in the global network is an increasingly important cultural image. The network world is in a certain sense beyond the human scale.

Recently, I have been preoccupied with trying to somehow reclaim the notion of truth in digital culture. I like the Roycian notion of "being true" or loyal as in some senses an apt notion worth exploring. I also am more and more drawn to C. S. Peirce's semiotic perspective. He is a realist and I wonder if being a realist is possible in the digital world. I think Peirce may have been correct in saying that philosophy since the middle ages and particularly modern philosophy is extraordinarily nominalistic. In other words, I wonder if digital pluralism can be redeemed from nihilism by some form of realism.

Finally, your reflections on knowledge in digital culture provoked in me some further thoughts about the nature of "meaning" in digital culture. When I send my most recent paper, you will see that I have become a bit obsessed with questions about "meaning." It seems to me that in the culture of print it was possible to think about texts as "containing" meaning but that is less possible in digital culture. "Meaning" always lies ahead in electronic texts. One thing inevitably leads to the next in an electronic network. That is, only a rather strictly pragmatic view of "meaning" is plausible: the meaning of a sign is the interpretant which itself immediately becomes a new sign, to use Peirce's language.

Phil's reference to his "most recent paper" is to the talk "Making Religious Meaning in Electronic Culture" he gave at the AAR-Midwest Annual Meeting, March 24, 1996. And this is, in my reading, from the point of view of the present analysis, the central passage of the talk:

... in an electronic environment, the meaningful is clearly marked by its fluidity; what is meaningful appears and disappears and shifts. Nothing stands still in the interactive digital world; those socialized by the computer regard visible signs as ephemeral and unstable - as on the way to transformation - rather than fixed. Meaning in an electronic environment thus seems most naturally to be regarded as a relation between elements which an interested party brings together at a particular time.

However, the passage I am most eager to quote comes from the paper I asked Phil for in the first place - his paper "Multimedia as a Theoretical Tool," read at the AAR/SBL Meeting Nov. 23, 1993. This is the passage:

We are now beginning to understand that you can write with anything which can be digitized. Linguistic signs no longer have priority in communication. You can now write by stringing together provocative images, audio, and conventional written language. Each medium may have its special grammar and rhetoric but now hybrid grammars and rhetorics are imaginable. Of course, you cannot necessarily spin out syllogisms in audio or video or a mixture thereof. But you can make or design unfolding meaning.

We are back at the issue of the logic of pictures versus verbal logic -the issue that so soon gained primary significance in the course of these exchanges.

The other main issues were, I think: interactivity and simultaneity. And, philosophically speaking, the three paramount phenomena bound up with the rise of electronic communications in general, and multimedia computer networking in particular, are in fact these: the diminishing importance of the text as opposed to pictures and sounds - the collapse of Platonic meanings; the collapse of the writer/reader distinction; and the collapse of distance, both spatial and temporal.

"The work of the philosopher," Wittgenstein wrote, "consists in assembling reminders for a particular purpose."[25] I have here assembled reminders pertaining to the world of computer networking we are all about to enter - assembled them for a particular purpose. A particular purpose which is, I believe, quite momentous. What this series of exchanges has shown, I think, is that the nature of the philosophical enterprise has radically changed. At the time I wrote my paper "Electronic Networking and the Unity of Knowledge" I did not yet realize this. I thought the task of philosophy was unmodified - even though the phenomena to be analyzed have become so very different. Today I believe that the task itself is an entirely new one.

Editor: J. C. Nyiri University of Budapest

## NOTES

*1. Saenger, P., 1982. "Silent Reading: Its Impact on Late Medieval Script and Society" in: Viator 13, 37.*

*2. Ibid., 37.*

*3. Bacon, F., 1974. The Advancement of Learning. Oxford: Clarendon Press, p. 131.*

*4. Lanham, R.A., 1992. "The Implications of Electronic Information for the Sociology of Knowledge," in: Technology, Scholarship, and the Humanities: The Implications of Electronic Information (Irvine, California, Sept. 30 - Oct. 2, 1992).*

*5. Ester, M., 1994. "Issues in the Use of Electronic Images for Scholarship in the Arts and the Humanities." in: Networking in the Humanities, ed. by Kenna S. and Ross, S., p. 120.*

*6. Neurath, O., 1980. International Picture Language (Department of Typography and Graphic Communication, University of Reading), p. 26.*

*7. Ibid., pp. 65 and 109.*

*8. Cf. also Wittgenstein, L., Remarks on the Foundations of Mathematics, 1-50.*

*9. I (i.e. Michael Biggs) infer Lanham and Ester's argument from Nyiri's citation.*

*10. Wittgenstein, L., Remarks on the Foundations of Mathematics, 1-34.*

*11. Tractatus Logico-Philosophicus, 4.1212.*

*12. Hintikka, J., 1986. Investigating Wittgenstein, London: Blackwell, pp. 6ff.*

*13. E.g "fetch six apples" in: Wittgenstein, L., Blue Book, p. 16.*

*14. Wittgenstein, L., Remarks on the Foundations of Mathematics, 1-28.*

*15. Ibid., 1-74 and 75.*

*16. Wittgenstein, L., Philosophical Investigations, II-xi, p.210.*

*17. Ibid., 1-683.*

*18. Wittgenstein, L., Remarks on the Foundations of Mathematics, 1-78.*

*19. The talk is now published as Nyiri, J.C., "The Humanities in the Age of Post-Literacy" in: Budapest Review of Books, 6/3 (1996). For a summary see http://www.hungary.com /books.*

*20. Hedstrom, M., "Understanding Electronic Incunabula;' pp. 336 and 349.*

*21. Cf. Crane, D., 1972. Invisible Colleges: Diffusion of Knowledge in Scientific Communities, Chicago: University of Chicago Press, p. 94. Similarly Lynne Brindley, in her recent study "Research Library Directions in the 1990s," in: Electronic Information Resources and Historians: European Perspectives, ed. by Ross, S., and Higgs, E., (St. Katharinen: Scripta Mercaturae Verlag, 1993), p. 178: "citation studies in the humanities ... show that well over 50% of books cited have imprint dates up to 35 years ago and earlier."*

*22. Cf. Ross, "Introduction: Historians, Machine-Readable Information, and the Past's Future" in: Electronic Information Resources and Historians: European Perspectives ed. by Seamus Ross and Edward Higgs.*

*23. Jamet, D. and Waysbord, H., 1993. "History, Philosophy, and Ambitions of the Bibliotheque de France" in: Representations 42. Special issue: Future Libraries. Ed. by R. Howard Bloch and Carla Hesse. On the topic of knowledge and digital libraries see also Peter Lyman's excellent "What is a Digital Library? Technology, Intellectual Property, and the Public Interest," in: Daedalus 125 (1996) (Books, Bricks, and Bytes: Vo1.125, Nr.4 of the Proceedings of the American Academy of Arts and Sciences). As Lyman puts it: "The characteristic facticity of knowledge artifacts" - that is, of physical bearers of knowledge -"brings continuity and structure to ideas, making possible the authoritative voice of the author, the structure and continuity of a literature, and ultimately institutional life itself. ... Print and the computer screen seem to be similar because both contain alphanumeric symbols, but text and information constitute very different kinds of public knowledge"*

*(ibid., pp. 6f.).*

*24. Mullins, P., 1996. "Sacred Text in the Sea of Texts: The Bible in North American Electronic Culture," in Ess, Ch., (ed.) Philosophical Perspectives on Computer-Mediated Communication, Albany: State University of New York Press 1996, pp. 284f. 25. Wittgenstein, L., Philosophical Investigations, I-127.*

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Michael A.R. Biggs, Gergely Kovesd, Phil Mullins, Margit Pohl and Laszlo Turi

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