

From the Information Society
to Knowledge Communities

One of the leading philosophers of the twentieth century, Martin Heidegger, introduced in his major work *Being and Time* the concept of “readiness-to-hand” (*Zuhandenheit*). The things that surround us in a serviceable and manipulable manner, things to which we relate “by using them and manipulating them” – Heidegger calls them *equipment* – are “ready-to-hand”.¹ Readiness-to-hand means unobtrusive usability; equipment – say a damaged tool – becomes conspicuous only when it ceases to be “handy”, or indeed is not “to hand” at all.² Mobile phones are at hand to an ever-increasing degree. (Colloquial German, curiously, uses the imported English term *Handy* to refer to mobiles.) One can however hardly assume that Heidegger would have found them to his liking.³ For, first, the mobile telephone is a machine, a product of high technology, and Heidegger posits a sharp opposition between tools and crafts on the one hand (good), and machines and technology on the other (bad). He has reservations even about the typewriter, “which is not quite a machine in the strict sense of machine technology, but rather something ‘in between’ a tool and a machine, a mechanism”. Word, writing, and the hand, stresses Heidegger, stand in an “original essential relationship” to each other, which is “veiled by the type-writer”.⁴ Secondly, Heidegger had no time for mobility, especially for the mobile scientist accommodating himself to the technological age. “The scholar disappears”, writes

¹ Martin Heidegger, *Sein und Zeit* (1927). I am quoting from the English translation by John Macquarrie and Edward Robinson, Oxford: Basil Blackwell, 1962, pp. 97 f.

² *Being and Time*, p. 103.

³ See the excellent analyses by Alexander Roesler, in his essay “Das Telefon in der Philosophie: Sokrates, Heidegger, Derrida”, in Stefan Münker and Alexander Roesler (eds.), *Telefonbuch: Beiträge zu einer Kulturgeschichte des Telefons* (Frankfurt/M.: Suhrkamp, 2000). George Myerson's booklet *Heidegger, Habermas and the Mobile Phone* (Cambridge: Icon Books, 2001) is informative on some aspects of German philosophy, but unperceptive when it comes to the miracle of mobile telephony.

⁴ Martin Heidegger, *Parmenides*, Frankfurt/M.: Vittorio Klostermann, 1982, pp. 127 and 125 f.

Heidegger. “He is succeeded by the research man who is engaged in research projects. The research man no longer needs a library at home. Moreover, he is constantly on the move. He negotiates at meetings and collects information at congresses.”⁵

Still, the mobile telephone need not necessarily be anathema to the spirit of Heideggerian romanticism. For the mobile phone is not just the most successful machine ever invented, spreading with unheard-of speed;⁶ it is also a machine which corresponds to deep, primordial human communicational urges. The phenomenon of the mobile phone constitutes an obvious challenge to philosophy, and indeed to the humanities.⁷ In Hungary the interdisciplinary research program “Communications in the 21st Century” was launched in January 2001. The program is conducted, in collaboration with Westel Mobile Telecommunications (Hungary), by the Institute for Philosophical Research of the Hungarian Academy of Sciences.⁸ The first results of the program were published in two volumes in 2001.⁹ In May 2002 there followed an international conference in Budapest; the papers in the present volume originate in the talks given at this conference.¹⁰

⁵ Martin Heidegger, “The Age of the World Picture” (1938), in Heidegger, *The Question Concerning Technology and Other Essays*, New York: Garland Publishing, 1977, p. 125.

⁶ Cf. esp. pp. 2–6 of the editors’ introduction in James E. Katz and Mark Aakhus (eds.), *Perpetual Contact: Mobile Communication, Private Talk, Public Performance*, Cambridge: Cambridge University Press, 2002.

⁷ For some first responses to this challenge see, besides the outstanding volume edited by Katz and Aakhus, Roesler’s essay mentioned above; further James E. Katz, *Connections: Social and Cultural Studies of the Telephone in American Life*, New Brunswick, NJ: Transaction Publishers, 1999; Timo Kopomaa, *The City in Your Pocket: Birth of the Mobile Information Society*, Helsinki: Gaudeamus, 2000; Barry Brown, Nicola Green and Richard Harper (eds.), *Wireless World: Social and Interactional Aspects of the Mobile Age*, London: Springer, 2002. Howard Rheingold’s *Smart Mobs*, Cambridge, MA: Perseus, 2002, published at the time the present volume was about to go to press, represents a useful compilation of quotes and interviews.

⁸ For a regularly updated overview of the program see the website <http://21st.century.phil-inst.hu>.

⁹ See Kristóf Nyíri (ed.), *Mobil információs társadalom: Tanulmányok* [The Mobile Information Society: Essays], Budapest: MTA Filozófiai Kutatóintézete, 2001, and Kristóf Nyíri (ed.), *A 21. századi kommunikáció új útjai: Tanulmányok* [New Perspectives on 21st-Century Communications: Essays], Budapest: MTA Filozófiai Kutatóintézete, 2001.

¹⁰ The German translation of the present volume was published as Kristóf Nyíri (ed.), *Allzeit zuhanden: Gemeinschaft und Erkenntnis im Mobilzeitalter* (Vienna: Passagen Verlag, 2002). An extended Hungarian version appeared as Kristóf Nyíri (ed.), *Mobilközösség – mobilmegismerés: Tanulmányok*, Budapest: MTA Filozófiai Kutatóintézete, 2002. I am indebted to Warwick Luttrell for his assistance in revising the text of the present volume.

Communication and Community

The early phase of the research program went under the title “The Mobile Information Society”, a phrase that has been current since 1999 or so. The phrase still figures on our project website; but we have increasingly come to realize that it is somewhat misleading. Mobile communications point to a future which offers a wealth of knowledge, not just of information, and promises to re-establish, within the life of modern society, some of the features formerly enjoyed by genuine local communities. “Community” on the one hand, “society” on the other, clearly differ in their connotations; and it was Tönnies who, towards the end of the nineteenth century, crystallized this difference into a conceptual contrast.¹¹ As Tönnies sees it, community involves “real”, “organic”, *continuous* associations. While the members of societies “are essentially separated in spite of all connecting factors”, the members of a community “remain essentially connected in spite of all separating factors”. As Tönnies of course states, “community is old, society is new, as a phenomenon and as a name”;¹² however, the striking observation in the recent literature on mobile telephony is that through constant communicative connectedness a kind of turning back to the living, personal interactions of earlier communities is brought about.¹³ In the present volume Tönnies’ notion of a community is discussed by Nicola Green. Green pleads

¹¹ Ferdinand Tönnies, *Gemeinschaft und Gesellschaft*, 1887.

¹² Compare Ferdinand Tönnies, *Community and Society*, East Lansing, MI: Michigan State University Press, 1957, pp. 33 ff. and 65. I had to modify the Loomis translation at a number of points.

¹³ Certainly this is the message of the formula “perpetual contact” in the Katz–Aakhus volume. The “socio-logic”, indeed the “ontologies”, of perpetual contact receive here (*op. cit.*, pp. 305–309) – not without a sidelong glance at Heidegger, incidentally – an especially profound analysis in the editors’ closing essay: “Conclusion: Making Meaning of Mobiles – a Theory of *Apparatgeist*”. Writing about fixed line telephone networks Claude S. Fischer had already in 1994 marshalled arguments against the view that “the telephone is yet another of modernity’s blows against local *Gemeinschaft*, the close community” (Fischer, *America Calling: A Social History of the Telephone to 1940*, Berkeley: University of California Press, 1994, p. 25). Barry Wellman advocates in a series of publications the thesis that as a consequence of the internet and especially of the mobile telephone the nature of communities changes “from door-to-door and place-to-place communities to person-to-person and role-to-role communities... .. mobile phones afford a fundamental liberation from place... Their use shifts community ties from linking people-in-places to linking people wherever they are.” (Barry Wellman, “Physical Place and CyberPlace”, *International Journal of Urban and Regional Research*, 25, 2001.)

for a new view of community, in which the significance of localities recedes to the benefit of *symbolic processes*, in particular the negotiation of reciprocal *trust relations*. The concept of trust is at the centre also of Péter Gedeon's paper on issues of the mobile market economy, the first chapter of this volume.

Cleaving to a fundamental idea of the German Romantic philosophy of language, Tönnies propounds the view that it is not individual consciousness, but rather *communication within the community*, that is the agent of human thinking. "Mental life", writes Tönnies, "manifests itself through communication, that is through the effect on kindred beings through signs, especially words pronounced by the use of vocal organs. From this develops thinking, i.e., the communication to oneself through audible or inaudible speech."¹⁴ In the introductory chapter "The Theory of Community" Tönnies emphasizes that language, which "by means of gestures and sounds, enables expressions", is not "a means and tool by which one *makes* oneself understood", but it is "itself the living understanding".¹⁵ The same idea of course plays a major role also in Heidegger's views, for whom "understanding" and "being together" (*Mitsein*) are intrinsically related to each other. As he puts it in the famous § 34 of *Being and Time*, making assertions or giving information is just a special case of "communication". In its most general sense, communication is the relationship in which "being with one another is understandingly constituted"; "communication is never anything like a conveying of experiences ... from the interior of one subject into the interior of another."

John Dewey already in 1915 formulated the thesis that social life is not just maintained by communication, but indeed constituted by it. As his oft-quoted lines run:

Society not only continues to exist *by* transmission, *by* communication, but it may fairly be said to exist *in* transmission, *in* communication. There is more than a verbal tie between the words common, community, and communication. Men live in a community in virtue of the things they have in common; and communication is the way in which they come to possess things in common.¹⁶

Dewey's thesis is corroborated by contemporary research in evolutionary psychology. The essay by Robin Dunbar in the present volume

¹⁴ *Op. cit.*, p. 107.

¹⁵ *Ibid.*, p. 47.

¹⁶ John Dewey, *Democracy and Education*, New York: Macmillan Co., 1915, p. 4.

propounds the view that language emerged in order to ensure social cohesion within primate groups at a stage where pre-verbal means of mutual attention had ceased to be effective due to growing group size. However, not even the potentials of verbal – and hence of digital, networked – communication will allow, according to Dunbar, a significant increase in the number of those with whom one can entertain cognitively transparent relationships. Dunbar’s thesis is taken up by Klára Sándor’s paper. Language creates social cohesion and group identity; linguistic differences serve the isolating of groups from each other. With the increasing influence of *literacy* however there arises a functional disorder: written language appears as the “correct” one in contrast to the merely spoken dialects. The new technologies of communication – the rise of *secondary orality*,¹⁷ especially in the form of mobile telephony – now promise to heal that disorder.

There is an occasion here to refer once more to Heidegger. For Heidegger was – just like Wittgenstein by the way – a philosopher of secondary orality.¹⁸ Language, for Heidegger, is always “discourse or talk”, *Rede*; the spoken, *resounding*, heard language constitutes the primary environment of the individual human being. “Hearing”, writes Heidegger, “is constitutive for discourse.” Language is “intonation, modulation, the tempo of talk”.¹⁹ This view goes back at least to Rousseau and Herder – and receives a particularly impressive formulation in Richard Wagner’s famous essay “Beethoven”, published in 1870. “If we would conjure up a paradise of the human spirit’s productivity”, he writes,

we must transfer ourselves to the days before the invention of Writing and its preservation on parchment or paper. We cannot but hold that here was born the whole of [our inherited] Culture... Here Poesis was nothing other than the actual invention of Myths... This faculty we see innate in every Folk of noble blood, down to the point when the use of written letters reached it. From then it loses its poetic force; Speech, theretofore in a living flux of natural evolution, now falls into the crystallising stage and stiffens...²⁰

¹⁷ The term “secondary orality” was coined by Walter J. Ong, on whose work I shall touch upon later in this introduction.

¹⁸ See my papers “Heidegger and Wittgenstein” (in J. C. Nyiri, *Tradition and Individuality: Essays*, Dordrecht: Kluwer, 1992) and “Wittgenstein as a Philosopher of Secondary Orality”, *Grazer Philosophische Studien* 52 (1996/97), also accessible digitally: <http://www.fil.hu/uniworld/nyiri/gps97/gps.htm>.

¹⁹ Heidegger, *Being and Time*, pp. 205 f.

²⁰ *Richard Wagner’s Prose Works*, vol. 5 (1896), transl. by William Ashton Ellis, here quoted from the webpage <http://users.belgacom.net/wagnerlibrary/prose/wlpr0133.htm>.

Similar views were then of course held by Nietzsche. “The German does not read aloud, he does not read for the ear”, runs an oft-quoted passage from *Beyond Good and Evil*,

but only with his eyes... In antiquity when a man read – which was seldom enough – he read something to himself, and in a loud voice... In a loud voice: that is to say, with all the swellings, inflections, and variations of key and changes of TEMPO, in which the ancient PUBLIC world took delight. The laws of the written style were then the same as those of the spoken style.²¹

Nietzsche, who had very weak eyes and later became almost blind, liked to draw special attention to the pitfalls of written – visible – language. His short-sightedness soon drove him to limit himself to jotting down aphorisms, which he thought up by reciting to himself during long walks and then tried to memorize. He curses this imposed “telegraphic style”²², he hates the way written language becomes abridged and flat through the telegraph, but at the same time he quite clearly feels a sense of liberation at the idea that the rise of telegraphic culture could spell the end of the age of the book. Nietzsche had no high regard for the logic and the world of abstract concepts made possible by written language – an attitude which today is of course widely shared in philosophical discourses on communication, and is taken issue with by Wolfgang Coy in the present volume.

Everyday communication in Nietzsche’s age was already strongly dependent on telegraphy – by the early 1870s there was hardly a big city not wired. And the invention of the telegraph led to almost chiliastic expectations. Samuel Morse himself opened in 1844 the first telegraph line between Baltimore and Washington with the biblical words *What hath God wrought* (Num 23:23). An invention of such significance, he presumably wanted to indicate, could only have been engineered by divine providence. Soon, he wrote, the whole surface of America “would be channelled for those nerves which are to diffuse, with the speed of thought, a knowledge of all that is occurring throughout the land; making, in fact, one *neighborhood* of the whole country”.²³ Innumerable com-

²¹ Transl. by Helen Zimmern, as published in *The Complete Works of Friedrich Nietzsche* (1909–1913), here quoted from the webpage <http://ibiblio.org/gutenberg/etext03/bygdv10.txt>.

²² Letter to Köselitz, Nov. 5, 1879.

²³ Quoted from Daniel J. Czitrom, *Media and the American Mind: From Morse to McLuhan*, Chapel Hill: University of North Carolina Press, 1982, pp. 11 f.

mentaries by his fellow-countrymen spoke of the promise of “a unity of interest, men linked by a single mind, and the worldwide victory of Christianity”, of the coming of universal peace and harmony.²⁴ Expectations – and disappointments – the echoes of which are still resounding today. Their background and contemporary variations are discussed in the present volume by Péter György.

After the spread of the telegraph there followed that of the telephone beginning in the 1880s, radio broadcasting in the 1920s, and television in the 1940s – events that of course profoundly changed the meanings of direct communication and personal presence, topics analyzed by Herbert Hrachovec in this volume.²⁵ Philosophical reflection on changes in communications technology in the late-nineteenth century began with Dewey and his circle. It was Dewey’s student Charles Horton Cooley who introduced the concept of *primary groups*, which is to say groups characterized by intimate face-to-face association and cooperation. Cooley’s hypothesis was that what gesture and speech ensured in primary groups, modern means of communication would guarantee for the whole of society.²⁶ Dewey was rather skeptical of this hypothesis. He doubted if the face-to-face intimacy of smaller communities could be transplanted to the broader society. As he put it: “The Great Community, in the sense of free and full intercommunication, is conceivable. But it can never possess all the qualities which mark the local community.”²⁷ It is local neighbourhoods that constitute those sorts of environments in which direct spoken intercourse coalesces with social communication as mediated via

²⁴ Cf. Czitrom, *op. cit.*, p. 10. See also Carolyn Marvin, *When Old Technologies Were New: Thinking About Electric Communication in the Late Nineteenth Century*, New York: Oxford University Press, 1988.

²⁵ On these issues see also Kenneth J. Gergen, “The challenge of absent presence”, in Katz and Aakhus (eds.), *Perpetual Contact*. The phenomenon of “absent presence”, as Gergen stresses, emerged already with printing: “the development of print technology harbors the potential for pandemic revolution: myriad voices from far-flung locales may enter without detection at any time to challenge the cherished realities of one’s immediate community. ... In print, the absent voices are now present and, as they are absorbed, the claims of the local community are diminished” (*op. cit.*, p. 228). Gergen’s contention is that while the development of communications technology brings ever stronger intrusions of “absent presence” into the life of face-to-face communities, by the rise of telephony, and especially of mobile telephony, this tendency is reversed: “The realities and moralities of the face-to-face relationship are revitalized”, *ibid.*, p. 237.

²⁶ I am here following Czitrom, *Media and the American Mind*, pp. 93 ff.

²⁷ John Dewey, *The Public and Its Problems*, here quoted from Dewey, *The Later Works*, vol. 2, ed. by J. A. Boydston, Carbondale: Southern Illinois University Press, 1988, p. 367.

newspapers and books.

A different strand in philosophical reflexion on the effects of communications technologies emerged in Vienna after the first world war. It was here that Robert Musil in 1923 published his review of Spengler's *The Decline of the West*. Spengler proposed a contrast between the two concepts of what he called culture and civilisation; this contrast formed a parallel to the earlier distinction between community and society. Musil thought that when seen from the perspective of communications technology the contrast between culture and civilisation was not a sharp one. As he put it:

The increase in the numbers of people participating in the process is the main reason for the transition from culture to civilization. It is clear that reaching hundreds of millions of people poses very different tasks from reaching a hundred thousand. The negative sides of civilization in the main hang together with the fact that the volume of the social body has become too immense; thus its susceptibility to influences no longer survives. ... Intellectual organization does not keep pace with the increase in numbers... No initiative is able to penetrate the body of society across broad fronts, and to receive feedback from its totality.²⁸

Musil's circle included the Hungarian poet and playwright Béla Balázs, whose influential book *Der sichtbare Mensch* ("The visible person"), a book dealing with the aesthetics of the film, was published in 1924. For Balázs film was the *folk art* of the 20th century. He believed that it is actually "the language of gestures" that is the "mother tongue of mankind", and, as he wrote:

It is not the same spirit that is expressed now in words, now in gestures. ... For the possibility of expressing ourselves conditions in advance our thoughts and feelings. ... Psychological and logical analyses have proven that our words are not subsequent representations of our thoughts, but forms which will from the beginning determine the latter.²⁹

²⁸ Robert Musil, "Geist und Erfahrung. Anmerkungen für Leser, welche dem Untergang des Abendlandes entronnen sind", in Musil, *Gesammelte Werke in neun Bänden*, Reinbek bei Hamburg: Rowohlt, 1978, vol. 8, pp. 1057 f.

²⁹ Béla Balázs, *Schriften zum Film I-II*, vol. I: *Der sichtbare Mensch. Kritiken und Aufsätze 1922-1926*, Budapest: Akadémiai Kiadó, 1982, pp. 46 ff.

Balázs associates the view that words are mere carriers of thoughts from person to person with the emergence of *printing*; and he observes that as a consequence of printing all forms of communication other than reading and writing have receded into the background.

Balázs's work exerted an influence, among others, on Marshall McLuhan and his Toronto circle. This was the circle from which, in the 1950s and 1960s, the great attack on the printed book was launched. In 1963 the ground-breaking study "The Consequences of Literacy" by Goody and Watt appeared.³⁰ Here the authors could point out that it is of course no longer the book, but rather, and ever-increasingly, the new communications media – they mention radio, film, and television – by which our age is dominated. These, Goody and Watt stress, "do not have the abstract and solitary quality of reading and writing", but on the contrary bring back, to some extent, the "direct personal interaction which obtains in oral cultures". As Goody and Watt write:

It may even be that these new modes of communicating sight and sound without any limit of time or place will lead to a new kind of culture: less inward and individualistic than literate culture, probably, and sharing some of the relative homogeneity, though not the mutuality, of oral society.³¹

McLuhan, Goody–Watt, Parry³² (and Lord³³, who continued Parry's endeavours), as well as the classic scholar Eric Havelock³⁴ form the background, finally, of the work of Walter J. Ong. It is Ong's merit to have created a *synthesis* between the theories of post-literary, literary, and pre-literary communication. As he writes:

with telephone, radio, television and various kinds of sound tape, electronic technology has brought us into the age of "secondary orality". This new orality has striking resemblances to the old in its participatory mystique, its fostering of a communal sense, its concentration on the

³⁰ Jack Goody and Ian Watt, "The Consequences of Literacy", *Comparative Studies in Society and History* 5/3 (April 1963).

³¹ Jack Goody (ed.), *Literacy in Traditional Societies*, Cambridge: Cambridge University Press, 1968, p. 63.

³² Milman Parry, "Studies in the Epic Technique of Oral Verse-making", I–II, *Harvard Stud. in Class. Phil.* 41 and 43 (1930 and 1932).

³³ Albert B. Lord, *The Singer of Tales*, Cambridge, MA: Harvard University Press, 1960.

³⁴ See especially Eric A. Havelock, *Preface to Plato*, Cambridge, MA: Harvard University Press, 1963.

present moment... But it is essentially a more deliberate and self-conscious orality, based permanently on the use of writing and print, which are essential for the manufacture and operation of the equipment and for its use as well. ... secondary orality generates a sense for groups immeasurably larger than those of primary oral culture...³⁵

Even the most cursory survey of the topic of communication and community would be one-sided without a reference to the book *Nationalism and Social Communication* by Karl W. Deutsch,³⁶ a book it is imperative for contemporary philosophical research on communication to re-discover. Like Tönnies, Deutsch postulates a conceptual contrast between community and society, but in his case the dimension of communication plays a rather more explicit role than it did in Tönnies' work.³⁷ Deutsch applies the notion of *complementarity*, originally a concept in communications theory, to the issues of social communication, and defines communities as characterized by patterns of communication that display a high level of complementarity between information conveyed through various channels.³⁸ It is because of the drive to *multimedia* inherent in networked and mobile communication that the approach of Deutsch today again appears as especially timely.

Information and Knowledge

Echoing T.S. Eliot's famous lines from the early 1930s – “Where is the wisdom we have lost in knowledge? Where is the knowledge we have lost in information?” – John Naisbitt in his popular book *Megatrends*, published in 1982, bemoans the phenomenon that the world is “drown-

³⁵ Walter J. Ong, *Orality and Literacy: The Technologizing of the Word*, London: Methuen, 1982, p. 136.

³⁶ Karl W. Deutsch, *Nationalism and Social Communication: An Inquiry into the Foundations of Nationality*, New York: John Wiley & Sons, 1953.

³⁷ As a third element Deutsch here introduces the concept of *culture*. As he writes: “‘Culture’ and ‘community’ can be used interchangeably because they describe a single complex of processes. When we say ‘culture’, we stress the configuration of preferences or values; when we say ‘community’ we stress the aspects of communication... ... There is no community nor culture without society. And there can be no society, no division of labour, without a minimum of transfer of information, without communication. Yet the difference between society and community is crucial.” (*Nationalism and Social Communication*, pp. 63 and 69.)

³⁸ *Ibid.*, pp. 69 ff.

ing in information, but is starved for knowledge”. Naisbitt’s formulation is taken up by Vartan Gregorian among many others, in an address given in 1992.³⁹ Gregorian – at that time President of Brown University – there also refers to Carlos Fuentes as saying that “one of the greatest challenges facing modern society and contemporary civilization is how to transform information into knowledge”. The conclusion Gregorian reaches is that today’s educational institutions must be careful to “provide not just information, but its distillation, namely knowledge”.

The notion that “information” is somehow inferior to “knowledge” is not of recent origin. Although the Latin word *informare*, meaning the action of forming matter, such as stone, wood, leather, etc., also took on the senses “to instruct”, “to educate”, “to form an idea”⁴⁰ – Cicero’s *informare deos coniectura* was explained as “imaginer en son esprit et conjecturer quels sont les dieux” by Robert Estienne in his *Dictionarium Latinogallicum* (1552) – “informare” in Italian, “informer” in French, and “to inform” in English from the beginning had the connotation of conveying knowledge that is merely particular. Perhaps another Latin word, *informis* – meaning unshapen, formless – had, with its French and English derivatives (“informe”, “inform”), a certain coincidental effect here. To have information amounted to knowing details, possibly unconnected. Hence the use of the word “information” in the contexts of criminal accusation, charge, legal process. John Locke, in his *Essay Concerning Human Understanding* (1690), might have thought that “information” had to do with “truth and real knowledge”;⁴¹ however, what the OED refers to as the “prevailing mod. sense” of *inform*, namely “to impart knowledge of some particular fact or occurrence”, or the *Larousse* phrase “informer quel-qu’un de quelque chose”, indeed appear to capture the essentials of the concept.

Thus Roszak can correctly point out, in his *The Cult of Information* (1986), that in the days of his childhood, shortly before the outbreak of World War II, “information” was a dull word, referring to answers to concrete questions, having the form of names, numbers, dates, etc. With Shannon’s and Weaver’s technical concept of information, put forward in *The Mathematical Theory of Communication* (1949), and with the emergence of computers, it also became a misleading – and glorious – word. Attempts at clarification of course abound. Daniel Bell made such an

³⁹ See <http://www.cni.org/docs/tsh/Keynote.html>.

⁴⁰ Recall, also, the original meaning of the Greek words *eidōs* or *idea*: “pattern”, “visual form”.

⁴¹ Cf. book 3, chapter 10, sect. 34.

attempt in 1979, writing: “By information I mean data processing in the broadest sense; the storage, retrieval, and processing of data becomes the essential resource for all economic and social exchanges. ... By knowledge, I mean an organized set of statements of facts or ideas, presenting a reasoned judgment or an experimental result, which is transmitted to others through some communication medium in some systematic form.”⁴²

Let me sum up the foregoing by saying that knowledge can be usefully regarded as information in context.⁴³ Now it is a standard observation that information sought through mobile phones is, characteristically, location-specific and situation-specific. It seems, then, that mobile communication tends to engender not just information, but information in context: that is, knowledge per se. Five papers in the present volume focus on issues of cognition and knowledge. Valéria Csépe examines the way *children* handle mobile phones, and shows that in their case *procedural* – practical – learning and memory play the major role, in contrast to adults, who learn and apply explicit rules. Csépe’s argument relates not just to some particular divergence as regards the mode of knowledge processing of the different generations, but also to the fundamental question whether there is to be expected, in the near future, a general mod-

⁴² Daniel Bell, “The Social Framework of the Information Society”, in M. L. Dertouzos and Joel Moses, eds., *The Computer Age: A Twenty-Year View*, Cambridge, MA: MIT Press, 1979, p. 168. – Compare Alvin Toffler, *Powershift: Knowledge, Wealth, and Violence at the Edge of the 21st Century*, New York: Bantam Books, 1990: “There are, of course, as many definitions of knowledge as there are people who regard themselves as knowledgeable. Matters grow worse when words like *signs*, *symbols*, and *imagery* are given highly technical meanings. And the confusion is heightened when we discover that the famous definition of *information* by Claude Shannon and Warren Weaver, who helped found information science, while useful for technological purposes, has no bearing on semantic meaning or the ‘content’ of communication. – In general, in the pages ahead, *data* will mean more or less unconnected ‘facts’; *information* will refer to data that have been fitted into categories and classification schemes or other patterns; and *knowledge* will mean information that has been further refined into more general statements. But to avoid tedious repetition, all three terms may sometimes be used interchangeably” (p. 18). – Less useful, for our present purposes, is Dretske’s well-known distinction: “Roughly speaking, information is that commodity capable of yielding knowledge, and what information a signal carries is what we can learn from it” (Fred I. Dretske, *Knowledge and the Flow of Information*, Oxford: Basil Blackwell, 1981, p. 44).

⁴³ For inspiring discussions on the topic of information and knowledge I am indebted to Dr. Ferenc Tompa, Executive Director for Telecom Policy, Westel Mobile Telecommunications.

ification in learning and recalling patterns. Pléh's paper, taking its point of departure from Merlin Donald's theory of an *external memory*, formulates the hypothesis that the new cognitive environment created by mobile communication might well lead to changes in our mental architecture, introducing, as it were, a new phase in human cognitive evolution. Barbara Tversky analyzes the fascinating interactions, within our mental architecture, between verbal and graphic communication, and refers to the role graphics play as cognitive instruments in the collective thinking of communities. The paper of the present editor accepts the assumption that human cognition is initially of a markedly pictorial character, and examines the question to what extent pictorial thinking can be mediated in a multimedia and mobile communication environment. János Laki and Gábor Palló in their contribution investigate a crucial issue in the philosophy of science, namely the connection between technologies of communication on the one hand, and scientific content on the other. They conclude that with the emergence of mobile telephony in scientific communication, a revision of some basic views in the philosophy of science, too, will become inevitable.

The volume ends with a paper on some recent developments in the domains of *political communities* and *political insight*. The Hungarian parliamentary election campaign in 2002 has for the first time shown that with mobile telephony becoming widespread, the European political scene will experience some very new phenomena. The study by Miklós Sükösd and Endre Dányi is both empirical and theoretical, and provides a subtly nuanced and essential contribution to the picture we here attempted to draw of the coming mobile knowledge communities.

