

Time & Society

<http://tas.sagepub.com>

An Aristotelian Human Time-Space Manifold: from chronochora to kairotopos

Hans Ramo

Time Society 1999; 8; 309

The online version of this article can be found at:
<http://tas.sagepub.com/cgi/content/abstract/8/2-3/309>

Published by:

 SAGE Publications

<http://www.sagepublications.com>

Additional services and information for *Time & Society* can be found at:

Email Alerts: <http://tas.sagepub.com/cgi/alerts>

Subscriptions: <http://tas.sagepub.com/subscriptions>

Reprints: <http://www.sagepub.com/journalsReprints.nav>

Permissions: <http://www.sagepub.com/journalsPermissions.nav>

An Aristotelian Human Time–Space Manifold From *chronochora* to *kairotopos*

Hans Rämö

ABSTRACT. The two Greek notions of time, *chronos* and *kairos*, and their spatial counterparts, *chora* and *topos*, are discussed in conjunction with some Aristotelian notions of human action, namely, *theoria/episteme*, *poiesis/techne*, and *praxis/phronesis*. From this discussion follows a unification of these Greek spatio-temporal notions into *chronochora*, *chronotopos*, *kairochora*, and *kairotopos*, which correspond to a move from abstract scientific time–space towards a concrete and meaningful time and place. Finally, these time and space notions are discussed in the contemporary organizational settings of time management (e.g. Just-In-Time) and virtual organizations, and their different forms of abstraction are alluded to.

KEY WORDS • Aristotle • chora • kairos • phronesis • trust

The ancient Greek division of time into an abstract *chronos*-time and a meaningful *kairos*-time is relatively well known among today's scholars. Far less well-known, however, are their spatial counterparts, *topos* and particularly *chora*, terms that roughly correspond to a division between concrete place and abstract space. The aim of this paper is to bring together these temporal and spatial notions into a different set of pairs, and to trace examples from our global contemporary society where such a set of pairs might be illuminating – in this case, the contemporary organizational settings of time management (e.g. Just-In-Time) and virtual organizations. Despite the fact that these delicate Greek spatio-temporal notions have disappeared from our everyday language, they still are useful as complements to the omnipresent and abstract understanding of time and space as clock-time and geometry.

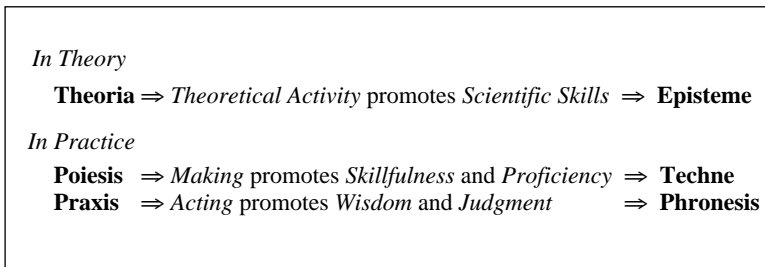
This article begins with a brief overview of some Aristotelian notions of

human action. This is followed by an examination of the Greek concepts *chronos*, *kairos*, *chora*, and *topos* together with some comments on their origin. Next comes a presentation in which these spatial and temporal notions are integrated. Finally, some examples of contemporary organizational settings are specified in which these ancient Greek notions are elucidated.

Aristotelian Notions of Human Action

To better comprehend these Greek spatial and temporal notions, a table of concepts of human action and some comments on their origin are required. Figure 1 sets out Aristotelian terminology, against an ordered conceptual background.

FIGURE 1
Aristotelian notions of human action



Source: Ramírez (1995: 8)

Initially, in an Aristotelian sense, any strict division between theory and practice in 'modern' language is artificial because theory and practice are merely two different forms of *activity*. *Theoretical activity* (*theoria*) has to do primarily with the activity investigating the world and not the resulting scientific documents, which is how the concept of theory tends to be understood today. Still, the 'results' of this scientific activity (*episteme*) is an acquired arrangement of words that describes and codifies different states of things (or affairs). However, this theoretical activity is only one theoretical form of performance and is similar to other performances such as those of carpenters and bricklayers. *Theoria* and *episteme* may gradually filter down into a twofold domain of practice: (a) to the *making* part of practice (*poiesis*), which promotes skillfulness and proficiency (*techne*); and (b) to the *acting* part of practice (*praxis*), which in turn promotes wisdom and judgment (*phronesis*). The latter, acting, part is sometimes forgotten by contemporary scholars, whose center of interest apparently is more on the improvement of skills and proficiency. Further, from an Aristotelian point of view, there is a much more pronounced difference between

the two forms of practical activities between the performative *poiesis/techne* and the somewhat forgotten *praxis/phronesis*, than there is between the theoretical activities of *theoria/episteme* and their performative counterpart *poiesis/techne*. However, the term ‘activity’, as used above, is not limited to intentional physical movements but extends to the activity of thinking, which precedes any intentional physical movements. Also, note the somewhat awkward denominations that *poiesis* is *making* and *praxis* is *acting*. The difference between making and acting, however, is crucial to distinguish the transitive form of *making something* from the intransitive form of *acting in a particular way*.

Two Notions of Time

Following this Aristotelian analysis leads to the temporal and spatial pairs of *chronos/kairos* and *chora/topos*, relationships that should be understood keeping in mind the previous concepts of theoretical and practical activities. First, however, some comments on the origin of the terms.

Chronos

Chronos is perhaps the best known of these spatio-temporal terms because it is still in use in present language as a stem in words such as chronic, chronicle, chronometer, chronology, as well as in scientific terminology: chronaxie (muscle or nerve tissue excitement measurement) and chronobiology (biological time structures). Originally, Chronos (Krónos) was a mythological pre-Greek fertility God of Persian origin (Zervan) who underlies the Attican harvest feast of the *Kronia* (cf. the Roman Saturnalia). Krónos was also a Titan in Greek mythology, a ruthless son of the sky God, Uranós and the earth Goddess, Gaia (the mother of Uranós). On the advice of his mother, Krónos achieved world domination by castrating his father, which separated Heaven from Earth. Krónos protected his newly obtained power by swallowing all his children except Zeus, in place of whom his consort (his sister) Rheia handed him a stone wrapped in napkins. Zeus later forced his father to disgorge the five swallowed children then dethroned him and hurled him into Tartarus the (underworld).¹ Linguistically, chronos, as a denomination for time, probably traces its origin to the Indo-European base **gher-*, to seize, take, hold, close, envelop – from which: **gher-on-os*, and the following Greek, chronos. In *Physics* (IV, 11, 219b), Aristotle defined chronos as the ‘number of motion with respect to the before and the after’, which is a classical expression of the concept of (chronos) time as change, measure, and serial order. Therefore, despite Aristotle’s antiquated understanding of physics – and a possible circularity in the definition – chronos, in this paper, is used as a definition of an exact quantification of time (e.g. passing time expressed in successive readings of a clock).

Kairos

The second, and more obscure, notion of time, *kairos*, and its 'kairic' stem is nowadays only sparsely used, for example in such technical terms as *kairomon* (a chemical scent substance among egg-laying insects), and *kairine* (a chemical compound).² *Kairos* is sometimes 'associated with the sophist Gorgias (ca. 490–385 BC) who founded his philosophy of rhetoric upon this concept' (White, 1994: 332). The origin of the notion of *kairos*, however, is older still. Its etymological origin remains unclear, but in Greek mythology, *Kairos* was the youngest son of Zeus (the son of *Krónos*) and God of the favorable moment. Hesiod, the 8th century BC contemporary poet to Homer, says in his hexametrical rules of practical conduct *The Works and Days* (line 694): 'Observe due measure: and proportion is best in all things.' In this sentence, which has become a proverb, the words 'due measure' and 'proportion' are two of the English translations of *kairos* that carry ideas of wisdom and judgment (*phronesis*).³ This 'kairic' stem stands as central in many ancient Greek conceptions of a means with respect to which extremes are balanced (see, for example, Kerkhoff, 1976; Kinneavy 1986; Ruin, 1994). The notion of *kairos* specifically referring to time, however, became apparent some 400 years later during the classical Greek period when authors such as Aristotle, Gorgias, Isocrates and Sophocles thought of *kairos* as exact time, critical time, season, or opportunity. In particular, Aristotle has several references to *kairos*, including a general distinction that *chronos* is dating time and *kairos* is the time that gives value. In *De Categoriae* (107a 8–10, 119a 26–37), Aristotle states that: 'What happens at the right time [*Kairos* – season] is good.' The importance of *kairos* in creating effective rhetoric in legal, political and ceremonial situations is also stressed by Aristotle and the sophists. For a rhetorical situation is not only dependent upon the appropriateness of timing and purpose, but also the appropriate nature of the situation, the approach, and the implications of the discourse. In a study entitled *Kairos in Aristotle's Rhetoric*, James Kinneavy and Catherine Eskin (1994) establish several ways of interpreting Aristotle's notion of *kairos*. Besides the general notion, roughly the 'right or opportune time to do something, or right measure in doing something', *kairos* also has educational and political overtones (Kinneavy and Eskin, 1994: 132 quoting Kinneavy, 1986: 80). *Kairic* time has also been defined as 'a season when something appropriately happens that cannot happen just at "anytime" . . . to a time that marks an opportunity which may not recur' (Kinneavy and Eskin, 1994: 132, quoting Smith, 1986: 4). The analogy of *kairos* to crucial moments in archery and weaving was noted by Onians (1954). According to Smith (1969: 6), three distinct but related concepts are involved in the notion of *kairos*. First, timing (the right time). Second, a time of tension which calls for a decision. Third, an opportunity to accomplish some purpose. *Kairos* has also been related to deco-

rum and fitness by Francis Bacon (Smith, 1986: 133, referring to Baumlin, 1984). Eric White (1987: 161) puts it somewhat differently in his emphasis on *kairos* ‘as a radical principle of occasionality establishing the living present as point of departure for rhetorical invention’. One of the few social scientists using a contrast between *chronos* and *kairos* is Elliott Jaques (1982), who stresses *kairos* as episodes of intentions and goals. The philosopher José Luis Ramírez (1995) has emphasized a similar focus on the culmination of decision and action in *kairos*.⁴

However, Ilya Prigogine and Isabelle Stengers have alluded to a ‘kairological’ right moment in physics for ensuring systemic transformation (the phenomenon of emergence by ‘points of bifurcation’) in their discussion of chaos theories (Prigogine and Stengers, 1984; see a similar account by Stone, 1997). Prigogine and Stengers’s idea is based on a ‘rehabilitation’ of Lucretius’ epicurean physics in *De Rerum Natura*, which apparently introduces a stochastic element into *kairos* (*clinamen atomorum*: ‘the swerve of the atoms’), an element that would have been in contrast to Aristotle’s notion of the concept. Therefore, from an Aristotelian point of view, the notion of *kairos* still remains closely connected with *human right moments to act* – judiciously, and not when someone (or a thing) just happens to be in the right place at the right moment, doing the right thing. In a strict Aristotelian sense, *kairos* is always an idea closely connected to *phronesis*. For instance, a skillful thief could have an excellent feeling for the right moment to act, but nonetheless lack the genuine meaning of *kairos* in terms of the wisdom and judgment of *phronesis*. Still, this connection of *phronesis* and *kairos* is not solely a question of moral sentiment, since a farmer’s ‘kairic’ feeling for the right moment to sow and harvest is not bound to be a moral action in itself.⁵

Two Notions of Space

The two spatial notions of *chora* and *topos* also differ in regard to familiarity. Whereas *topos* is derived from the same stem as, for instance, topic, topography, topology, toponym and utopia, *chora* has more or less disappeared from current usage, nowadays only sparsely used in technical terms such as chorography (mapping a region), chorology (geographical distribution of organisms) and chorometry (surveying a region).⁶ Still, this Greek notion of *chora* might serve as a useful complement to *topos* in its distinction between abstract space (*chora*) and concrete place (*topos*).

Chora

The abstract space of *choros* has been vividly described in Homer’s *Iliad* (8.491) as a characterization of a definite space, piece of ground (or place) that

is clear of the dead (i.e. not filled by the dead or the deadly). This Homeric notion was somewhat altered in the later Greek meaning of the word *chora* as an indefinite description of a partly occupied space (e.g. Zeno of Citium's *Stoicism*). Note that interpretations of *chora* always refer to a partly occupied space since *chora* is not the same as void (*kenon*). Thus, *chora* remains not emptiness, but far from the condensed, concrete, and meaningful place of *topos*. As a consequence of Plato's interpretation of being as an idea, *chora* and *topos* acquired their general meaning as distinctions between (extended) space and place. In *Timaeus* (52 a–d), Plato states that being and space (*chora*) and becoming existed even before the heaven. Thus, for Plato, *chora* is a non-place of non-origin and a 'space' for giving and creation. Some 20th-century thinkers have accentuated this very intricate elusiveness of *chora*. Heidegger, for instance, 'speculated' on the German word for place (*ort*) in terms of *chora*. In *An Introduction to Metaphysics* (1959/1987: 66), Heidegger remarked that:

The Greeks had no word for 'space' [*raum*]. This is no accident; for they experienced the spatial on the basis not of extension but of place [*ort*] (*topos*); they experienced it as *chora*, which signifies neither place nor space but that which is occupied by what stands there.

Thus, *chora* does not denote meaningful place, but a 'place' of convergence that is crossed through and 'erased'.⁷ Jacques Derrida says that *Khora* (as a feminine noun) is a 'triton genos' (third genus), that 'anachronizes being' as the 'difference' between existence and being (Derrida, 1993/1995; 1997). Without penetrating too deeply into Heideggerian neologisms or interpretations of Heidegger such as Derrida and Spivak's (in Ulmer, 1994a, for example), this 'erasure' and 'crossing' is a mark of the inaccuracy of legible words to point 'out' a *chora* in that it always already is.

In sum, the elusive conception of *chora* seems to be referring to a larger extension – an abstract space – rather than to concrete place. Therefore, in this paper, *chora* is used as a notion of abstract space.

Topos

Together with this 'abstract' space of *chora* stands the concrete and meaningful place of *topos*. The relation of *topos* to a certain place is already indicated in the Indo-European base of *topos*, **top-*, to arrive somewhere; to reach a place.⁸ The notion of *topos* is still discernible in modern usage, originating from *Topika*, Aristotle's treatise of 'topics' and techniques for dialectical arguments. The purpose of the *Topika* (100a) is, according to Aristotle, 'to discover a method by which we shall be able to reason from generally accepted opinions about any problem set before us and shall ourselves, when sustaining an argument, avoid saying anything self-contradictory'. This trait clearly leads towards what we

today call logic but what Aristotle himself called analytic; nevertheless, a trait beyond the scope of this article, as are mathematical topology and linguistic notions of topos. Instead, the notion of topos as used in this article refers to *place*, as is plain from the Latin translation of topos (*locus*) that implies aiming for a center or source of activities. The difference between chora (space) and topos (place) is that, when the former is a geometric or cartographic extension, the latter (topos) is contextual localization, without sharp demarcations. The French semiotic literary theorist and structuralist philosopher Roland Barthes describes place (topos) as follows (Barthes, 1988: 65):

Why *place*? Because, says Aristotle, in order to remember things it suffices to recognize the place where they happen to be (place is therefore the element of an association of ideas, of a conditioning, of a training, of a mnemonics); places then are not the arguments themselves but the compartments in which they are arranged. Hence every image conjoining the notion of a space with that of storage, of a localization with an extraction: a region (where one can find arguments), a *vein of some minerals*, a *circle*, a *sphere*, a *spring*, a *well*, an *arsenal*, a *treasury*, and even a *pigeon-hole*.

Time and Space

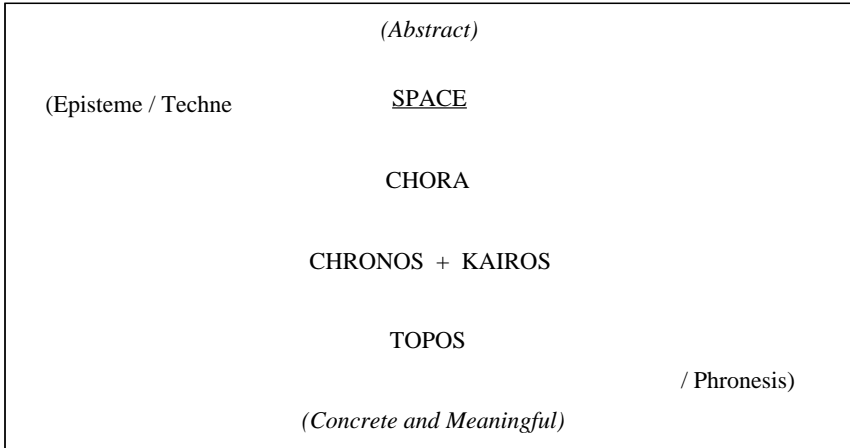
From this examination, a general distinction follows suggesting that the predominant chronos-time (i.e., clock-time) can be expressed as sequentially instantaneous *exact* quantification of time, and its qualitative counterpart is kairos. Further, the notion of topos, translated to denote place, is a complement to the purely abstract and three-dimensional space (chora). This distinction between place and space is crucial. For, according to Casey (1993: 21), ‘Place situates time by giving it a local habitation.’ Consequently, we are always already *implaced* in a place-world. Still, there is a considerable neglect of place in favor of space, which according to Casey (1997: 201) is unfortunate, because:

Space on the modernist conception ends by failing to locate things or events in any sense other than that of pinpointing positions on a planiform geometric or cartographic grid. Place, on the other hand, situates, and it does so richly and diversely. It locates things in a region whose most complete expression is neither geometric nor cartographic.

Following this duality between chronos and kairos we detect a further distinction between the two traditions of natural and cultural science, where natural science is firmly embedded in a more or less abstract mathematical logic tradition and where cultural science is equally firmly embedded in temporality and thus in history.⁹ In his elaboration on Aristotelian theories of human action, José Luis Ramírez further places chronos and kairos concurrently with space and place, successively building up a set of pairs in which the abstract chronos-time

is related to *space* (chora) and the meaningful kairos-time is related to *place* (topos). Figure 2 is a translation from Ramírez (1995: 171).

FIGURE 2
Aristotelian time and space



Source: Ramírez (1995: 171)

The abstract chronos and chora have to do with science and theoretical knowledge (*episteme* and *techne*), whereas kairos and topos characterize practical wisdom and judgment (*phronesis*). Because of this mapping, Ramírez changes Mikhail Bakhtin's insightful and widely known notion of *chronotopos* into *kairotopos*, as a unification of place and time into a condensed, meaningful and concrete wholeness (Bakhtin, 1919/1981).

Note, however, that the explicit spatial division between chora and topos specified above was less accentuated, in comparison with the difference between chronos and kairos, in ancient Greek. This is because Greek literature at that period was more a literature of (their native) place than of time, a point that is evident in Aristotle's emphasis in *The Art of Poetry* (1451b 6–7) on poetry's universality (*katholou*) more than on the particularity (*ekaston*) in history. Nonetheless, reading the above diagram starting from the upper left and moving diagonally down to the far right corresponds with the move from the scientific abstraction of episteme via techne towards phronesis, the concrete and meaningful action to promote practical wisdom and judgment.

Time and Space Manifold

The previous section has identified some Aristotelian notions of human action, time and space. The next step is to use this Aristotelian terminology in a

particular setting, namely, to develop an understanding of time and space in which humans are meaningfully participating. To illustrate the potential benefits to be derived from visualizing different forms of human action, time and space, this section focuses on two contemporary organizational settings: time management (e.g. Just-In-Time) and virtual organizations. First, however, a completion of the Aristotelian terminology into a matrix.

The presentations in this article are based on the Greek notions of *chronos*, *kairos*, *chora* and *topos*, as are the following neologisms: *chronochora*, *chronotopos*, *kairotopos* and *kairochora*, despite the fact that at least three of them have suitable translations. *Chronos* can be translated into clock-time, *chora* into space and *topos* into place, but *kairos* has no ‘perfect’ translation. If some major contributors to the philosophy of time are immodestly disregarded, then much of our contemporary understanding of the Greek notion of *kairos* corresponds roughly to the English word ‘timely’. Synonyms for ‘timely’ include ‘opportune’ (Latin: *opportunus*), well-timed, auspicious, propitious all concepts within the figurative sense of *kairos*. Similarly, the French *opportun*, the German *Zeitlichkeit*, the Spanish *oportunamente*, and the Swedish *tidslighet* can be used as fair translations of *kairos*. However, in *Sein und Zeit*, Heidegger frequently uses the word *Zeitlichkeit* (literally ‘timely’, but translated as ‘temporality’) in a different sense from what is akin to *kairos*; in any case, the word ‘*kairos*’ is hardly ever translated in current text.¹⁰ Further, a *kairos* understood in terms of timely will be a notion devoid of any immediate connections to *phronesis*, and thus would not involve features of wisdom and judgment. From this understanding, it also follows that many of the present common references to *kairos* seem to have reference to the Greek word *kairios*, which in its sense of timing aims at the idea of the timely, seasonable, without alluding to the elements of wisdom and judgment of *phronesis*.¹¹

Joining the Greek notions of space and time elaborated so far yields the scheme in Figure 3.

FIGURE 3
Time and space manifold

	¹ <i>Abstract Space</i>	² <i>Meaningful Place</i>
<i>Abstract Time</i>	<p>Chronochora (Episteme) e.g. mathematics, (time-) geography</p>	<p>Chronotops (Techne) e.g. sports, time management (JIT)</p>
<i>Meaningful Time</i>	<p>Kairochora (Techne) e.g. virtual organizations</p>	<p>Kairotopos (Phronesis) acting wisely and judiciously</p>

Chronochora

In this categorization, chronochora is the name given to spatio-temporal illustrations in mathematics; that is, time and space are expressed as infinitesimal slices. From their origin in Euclidean axiomatic geometry and onwards, spatio-temporal illustrations, together with logic, have been dominating features in theoretical activities (*theoria*) in the promotion of scientific skills (*episteme*). Through its far-reaching penetration in well-nigh all forms of knowledge, mathematical logic and formalism have gone beyond the (albeit fuzzy) limits of *theoria* and *episteme* into *poiesis* and *techne*. Nonetheless, this compound of chronochora remains principally within the features of *theoria* and *episteme*.

An example of abstract chronochora is the time-geographical line-diagrams developed by Torsten Hägerstrand. The model is based on a socio-environmental web model where 'human population is looked upon as a web of paths which flows through a set of time-space locations' (Carlstein, 1980: 40; see also Carlstein, 1978). Time-geography's abstract Euclidean web of life-paths has been noted by Schatzki (1991); see, too, similar accounts by Asplund (1983), Gregory (1994) and others.

Chronotopos

The progression from *episteme*'s abstract and generally applicable spatio-temporality of chronochora towards the concrete and meaningful *kairotopos* of human *phronesis* passes through the two forms of *techne* termed *chronotopos* and *kairochora*. In this distinction between two forms of *techne*, *chronotopos* comes before *kairochora*. This is because *chronotopos*, with its notion of abstract *chronos*-time, for instance, in successive readings of a clock, together with a conception of concrete and meaningful place, is a far older and more frequent human situation than the more recent 'invention' of *kairochora* (e.g. virtual communication and organization). As previously described, this first *techne* form of time and place (*chronotopos*) should not be confused with Bachtin's namesake that, in this presentation, is roughly equal to *kairotopos*. Rather, the notion of *chronotopos* in this presentation is most evident in contemporary western societies' frequently testified time-obsession. Everyone proficient in reading a clock experiences situations where the reified clock-time of *chronos* runs our daily duties from concrete place to place. The economist's valuation of the opportunity cost of time has also become increasingly stressed, embracing not only humans but also animals and nature that have to be 'ripe'n' ready' on time so as to be profitable. Particularly in management, time has become not only a tool for organizational study, but also a means, or a commodity, to gain competitive advantages in the marketplace. Thus, in management, time is frequently equated with speed and is regarded as an important

yardstick against which we measure the value of our activities. In the growing litany of managerial buzz-words, 'time-management', 'lean production' and 'Just-In-Time' (JIT) have to be some of the most influential of the 1990s (see for example Stalk and Hout, 1990; Stern and Stalk, 1998).

The automobile industry embraced early on the idea of conjoining different production stages within the organization to those in sequence outside its boundaries, to the suppliers and partners. According to Womack, et al., the authors of the much noted *The Machine that Changed the World* (1990), 'lean thinking' and vertical collaboration are the fundamental ideas underlying lean production. Notions of lean production have become an important feature in all manufacturing industries as well as in service sectors that handle complex logistical systems (e.g. transport services, hospitals, etc.). Additional to lean production's focus on quality and extended 'value streams' from suppliers to customers, its third focus is to produce things only when they are needed – just in time (and *just in place*) rather than just in case.¹² This notion of JIT in the West can be traced back to the principles developed by engineers at Toyota in the 1950s (after visiting Ford and Wal-Mart in the United States) and brought to the attention of westerners in an article by Sugimori et al. (1977). The term JIT is used to indicate a process that is capable of instant response to demand without the need for any overstocking, either in expectation of the demand being forthcoming or because of inefficiencies in the process. The fundamental idea of JIT is to reduce cost by eliminating all forms of waste that do not add value to the customer. It should be observed, however, that some parts of these managerial buzz-words have eventually fallen into disrepute for being causes of excessive stress ('management by stress') and for not fulfilling what they promised in terms of productivity, profit, or quality (see, for example Williams et al., 1992; Cusumano, 1994; Sakakibara et al., 1997).

By using the terminology specified in the previous section, it becomes clear that these time management ideas in general are equal to chronotopos. The common denominator among these management ideas is the creation of smooth, swift and thrifty flows from supplier via the manufacturer to the customer. This places great demands upon 'timing', both in (chronos) time and (topos) place; for instance, when issuing an order with the delivery date for the next day at exactly 3p.m. to a specific place. An alternative notion, called kairos-time, would instead imply that one should deliver when it is opportune, when one's judgment feels that it is the right moment to act. However, such judgment-based decisions are rare in middle-management environments, such as in operating technological production systems. Yet, the notion of a concrete place (topos) remains of utmost importance since this kind of thrifty production flow relies heavily on accurate placing.

This kind of chronotopos approach is also frequent in sports. An example is the downhill skier competing in Kitzbühel's classic and demanding

Hahnenkammrennen. In such a situation the skier has no chance to follow the stopwatch during the way down or to have any conception of split-second time (i.e. any immediate feeling if the elapsed time were 2.12.55 or 2.12.95, which could make all the difference between victory and second place). The skier does however, have a feeling of whether the descent was good or not (though this feeling is largely based on how well the skier managed to stay on an imagined ideal track on the way down). Thus, the place (topos) remains crucial, both in keeping the track of the ski slope itself as well as in an ability to perform well when the particular slope is the place of a World Cup competition.¹³ To clock a new world record with a wrist watch on the neighborhood running track or to race down the *Hahnenkamm* the day after the competition makes no headlines.

Kairochora

These examples of a generally known chronochora (i.e. when clock-time runs our lives from place to place) have recently been complemented with a notion of a concrete and meaningful time (kairos) and abstract space (chora). These two notions – kairos and chora – merge into *kairochora*.

Another of the managerial buzz-words in the 1990s with a clear focus on time is the ‘virtual organization’, a term typically used to refer to systems that are interlinked by advanced information technology (see for example Davidow and Malone, 1992; Grenier and Metes, 1995). Virtual corporation networks are sometimes claimed to operate independently of space and time in creating worldwide sources of information-based products and processes. This is, however, only partially true in the sense that, despite a corporation’s existence in a ‘virtual space’, it is still dependent on a clear sense of timing. This sense of timing could either be of a purely instrumental form (e.g. when all banks are clearing their transactions in a given clock-time) or in a more elaborate form (e.g. coordinating a program to develop a new computer software with participants in different parts of the world).

This latter form of organization has recently created sophisticated systems of human cooperation in global virtual networks and virtual organizations. Examples of virtual organizations are, for instance, The Open University, and Skandia AFS (Assurance and Financial Services). This form of virtual organizational development demands trustworthiness among the participants in as much as spontaneous physical interaction between the actors, as in an office setting, is no longer possible in virtual communication. In particular, the elusive notion of *trust* has recently been much noted in these virtual settings (e.g. the ‘early’ accounts on trust in Luhmann, 1979; Baier, 1986; Giddens, 1990 and more recently in Fukuyama 1995. On trust in organizations, see Kramer and Tyler, 1996 and *Academy of Management Review*, 1998). From this question of trust, especially in a Global and virtual setting, spring questions of wisdom and

judgment in actions undertaken (i.e. *kairos* and *phronesis*) since trust does not emanate from the rules of *techne* but from action in concrete situations. Trust, on the analysis proposed by Baier (1986), for example, always involves elements of judgment and discretionary power beyond instrumental specifications (e.g. beyond contracts). As Baier (1986: 236) pointed out in ‘Trust and Antitrust’:

Since the things we typically do value include such things as we cannot single-handedly either create or sustain (our own life, health, reputation, our offspring and their well-being, as well as intrinsically shared goods such as conversation, its written equivalent, theater and other forms of play, chamber music, market exchange, political life, and so on) we must allow many other people to get into positions where they can, if they choose, injure what we care about, since those are the same positions that they must be in in order to help us take care of what we care about.

In many ways, Baier’s analysis agrees with Luhmann’s (1979) analysis, in as far as they both acknowledge that trust reduces complexity and enhances the effectiveness of agency. To *uphold* a trust relationship in virtual and impersonal communications, where we frequently interact with persons unknown (or distant) to us, calls for elements of *phronesis* and *kairos*.¹⁴ The notions of virtual communication and virtual organizations could therefore be characterized as having features of *kairochora* (i.e. a communication based on human right moments to act judiciously in an abstract ‘virtual’ space [chora] that no longer ‘take place’ – only time).

In the book *Heuretics* (1994a), Gregory Ulmer touches upon this subject in his ‘reinvention’ of chorography, though without using the specific term ‘*kairochora*’. Instead, Ulmer calls for chorography to be a method for denoting the substitution of *topos* for *chora* as the ‘place’ (or rather virtual space) of invention in the electronic rhetoric of hypermedia. This recent hypermedia technology has obviously speeded up and changed written communication, opening up new senses of context, interactivity, rhetorics and *timeliness*. Consequently, the notion of *kairos* has begun to pop up in these hypertext/hyper-rhetoric situations (see, for example, Ulmer, 1994b; Landow, 1997). The notion of *kairos* is also used in a hypertext form called ‘Lingua MOO’, created at the University of Texas to serve as a learning environment on projects situated at the intersection of Arts & Humanities and electronic media.

Together, these scattered remarks establish the suggested correlations in a tentative manner; trust in virtual communication somehow contains a sense of *phronesis*, and of *kairos*. These matters cannot be explored explicitly; they remain indications of something to decipher. However, their elusive character should not lead us to underestimate their importance. They mark the presence of a vast concern, namely, the problem of running organizations based more on trust than on control, For virtual organizations frequented by people whom you

do not see except on rare and prearranged occasions simply 'requires trust to make it work: Technology on its own is not enough' (Handy, 1995: 44).

In summary, additional to the purely abstract episteme of *chronochora*, the two *techne* forms of time and space (*chronotopos* and *kairochora*) are applications of different aspects: *chronotopos* relies on clock-time precision in concrete places, whereas *kairochora* relies on a 'kairic' notion of right time to act in an abstract virtual space.

Kairotopos

There is also a condition in which both time and place are merged into a concrete and meaningful unity, into *kairotopos*. Illuminating examples of situations when a 'kairic' feeling for the right moment merges with being in the right place are not necessarily drawn from magnificent historical moments. For decisive moments, when one has to come swiftly to a discerning decision, are known to all. However, for these moments to be genuinely 'kairotopical', an element that is beyond the mechanically learned is required (i.e. beyond *techne* with its elements of skillfulness and proficiency in making [something]). By this reasoning, braking a car at the 'right moment' (i.e. a learned 'gut reaction') or most 'moments of truth' in interaction at work with clients, colleagues, or customers do not represent the genuine meaning of *kairos* or the merged form of *kairotopos*.¹⁵ For acting in a *kairotopos*-sense requires a feature of voluntary action beyond official responsibility that encompasses circumstances that the individual is aware of and from which a choice is made. From this reasoning, it follows that such actions do not have to be pleasant, or physical: an omission of 'wrongdoing' could well be in accordance with *kairotopos*.

Thus, in a strict sense, *kairotopos* is about the ability to act judiciously and wisely at a concrete and opportune occasion. Determinants of a physician's proficiency, for instance, are not only his or her skills in terms of technical proficiency (*techne*), but also his or her ability on a daily basis to care and communicate with people in vulnerable situations. Balancing burdens and benefits, deciding where to triage, choosing how to communicate bad news, and understanding the limits of technology are all manifestations of prudent stewardship and *kairotopos*. Similarly, any able artisan has a grasp of his or her subject far beyond the textbooks; he or she knows the crucial moment for judicious acting!

To sum up, this section has sought to explore some contemporary empirical examples of organizing practices where different forms of time and space abstractions are alluded to. Four overall types of time and space neologisms have been identified and some of their underlying theoretical and practical expressions discussed:

- the purely abstract and generally applicable *chronochora*, based on time

and space expressed as infinitesimal slices, e.g. clock-time (chronos) and geometrical extension (chora);

- *chronotopos*, a notion based on the abstract chronos-time of clocks in conjunction with a conception of concrete and meaningful place, e.g., time management;
- *kairochora*, a communication based on human ‘right moments’ to act judiciously in ‘virtual spaces’, e.g. in virtual networks and virtual organizations;
- *kairotopos*, the ability to act judiciously and wisely on a concrete and opportune occasion.

Conclusion

This study has been an attempt to bring ancient Greek and, particularly, Aristotelian notions of time and space to bear on contemporary settings, including different forms of contemporary organizational studies. In this way I hope to extend in a new way a mainstream understanding of time and space as clock-time and geometry.

Just like Saint Augustine and Alice’s white rabbit, we do not know what time *is*, but nowadays we are always aware of what time *it* is. Celerity – getting there quick – become the ultimative imperative. Time is frequently reduced to clock-time, economy is reduced to money matters and isotropic and decontextualized spaces dominate over meaningful places. By distinguishing between different aspects of abstract and concrete representations of human time and space manifold, the means to understand what goes beyond the reified objectivization of not only time and space but of humans as well is provided.

This account is an extract from a larger study of the discriminatory notion of time and space (chronochora) in scientific accounts of human action (e.g. in environmental management). Undoubtedly, Ockham’s razor will lose some of its luster in this complex of ‘taken-for-granted’ terms, but with a hint at Eliot and Heidegger: *To be conscious is not to be in (vulgar) time!*

Notes

I owe a special debt to Professor José Luis Ramírez, perhaps the leading authority on Aristotle in Sweden today, for sharing with me his creative and inspiring knowledge on Aristotle. However, due to Professor Ramírez’ sharp criticism of the increasing Anglophilism in European thought and his consequent refusal to write in English, his work has not reached areas outside the Scandinavian and Hispanic language spheres (even though he speaks English, German, French, Latin and Greek). I am grateful also for very helpful responses from Professors Gunnar Olsson and Barbara Adam.

1. On the bloody triangular power struggle between Uranós, Krónos and Zeus, see

Hesiod's *Theogony* (ca. 700 BC). According to another version of the story of the defeat by Zeus, Krónos became the monarch of the Golden Age. The succeeding Roman mythology's translation of Krónos and his spouse Rheia into Saturn and Ops follows this 'paradisical' version.

2. Kairos is included in the *Oxford English Dictionary* (2nd edn, 1989), where it is defined as 'Fullness of time, the propitious moment for the performance of an action or the coming into being of a new state.' Several references in the *OED* have Christian overtones, except one stating kairos as 'the seed of the notion of punctuality'. It is claimed in this article, however, that kairos has a different tenor from punctuality.
3. Martin Heidegger (1989) elaborated with phronesis' designation by means of kairos – a kairos which Heidegger translated into German *Augenblick*, thus following a dialectical-philosophical trail leading from Kierkegaard's *The Concept of Dread*, via Nietzsche, to Jaspers, Heidegger, Adorno and Benjamin. Heidegger's early Freiburg lectures and the elaboration of a phenomenological chronology in terms of 'kairology' is a subject in Kisiel (1993). Ruin (1994) also investigated the notion of Heidegger's *Augenblick*. John E. Smith (1986: 5) has also pointed out that kairos has ontological dimensions (e.g. the Pythagoreans, who regarded kairos as 'one of the laws of the universe'), a dimension sometimes overshadowed by a focus on kairos' anthropological meaning. According to Smith (*ibid.*) the time of kairos has also been seen as a summons to the attainment of Eschatology, and 'the fullness of time' (Biblical *en kairo*) as well as beyond the dimension of the religious, e.g., in Hegel, Marx, and Comte (see, e.g., Tillich, 1948). However, these philosophemes on 'authentic' present, change, and discontinuity are beyond the scope of this paper.
4. For more references to kairos, see Andersen (1995), Carter (1988), Doheny-Farina (1992), Kermodé (1967), Koch (1997) and Miller (1992).
5. Ecclesiastics in the Old Testament demonstrates a clear division between chronos and kairos, e.g. in Eccl. 3:1: '[chronos] time for everything and a [kairos] season for every activity' despite its Hebrew (and not Greek) origin, for the Hebrew tradition has a lucid sense of the qualitative character of the times involved. In the Greek translation of the Old Testament (Septuagint), occurrences of 'there is a time to' is accordingly translated as 'kairos'. Ruin (1994: 181) mentions that in the New Testament, Greek kairos-time is frequent as a word for the last day and for the return of the Lord, e.g. in the letters of Paul. (Ruin is particularly referring to Walter Bauer's [1952] *Griechisch-Deutsches Wörterbuch zu den Schriften des Neuen Testaments*).
6. Derrida and Ulmer (see Ulmer, 1994a) have made playful connections between *chorography* ('mapping a region') and *choreography* ('to write dance'). However, these terms have two different Greek stems: *choro-*, in chorology, comes from the Greek word for 'space' *chora* (χωρα), whereas *choreo-*, in choreography, comes from the Greek word for dance: *choreia* (χορεία). Still, there is an element of similarity in that the Greek word for dance originally had a connection to a (certain) place.
7. 'Crossing through' (X) in this sense is pertaining to the Greek letter χ (chi), as in, for instance, χωρα (chora). Compare with 'chiasm' and its sense of convergence and inversion. References to the notion of chora are elaborated in Algra (1994), Bochner (1966), Bochner (1973), Casey (1993), Casey (1997), Castoriadis (1975/1987: 186–95), Duhem (1976a and b), Heidegger (1954: 174–5/1968: 227)

and in Heidegger (1979: 335).

8. According to Bochner (1973: 296): ‘Topos is attested for the first time in the early fifth century B.C., in plays of Aeschylus and fragments of Parmenides.’
9. Note, however, that earth sciences (physical geography, quaternary research and geology) are ‘historical’ natural sciences.
10. In *Sein und Zeit* (*SuZ*), Heidegger (1927: H326) uses the German word *Zeitlichkeit* as a designation of a fundamental phenomenon, that of Dasein’s authentic care when characterized in time’s ‘ekstatic’ ‘stretchness’, i.e. in a ‘unity of a future, which makes present in the process of having been.’ In the 1962 English edition of *SuZ*, the translators, Macquarrie and Robinson, have added an explanation on page H17, note 3, that they choose to translate Heidegger’s adjective *Zeitlichkeit* into the English ‘temporality’ instead of the ‘entirely misleading’ ‘timely’.
11. The particular notion of *kairios* (not *kairos*) seems to have three meanings. First, in Homer, as a sense of bodily places, sore points, e.g. a horse’s ‘mortal place’ (*Iliad*: 8.84); and a man’s ‘dangerous spot’ (*Iliad*: 8.326). Second, as a sense of ‘the right place’, e.g. in Theognis (Poem: 341), Aeschylus (*The Libation Bearers*: 1064), and in Sophocles (*Philoctetes*: 637). Third, as a sense of time, i.e. seasonable, timely, in Herodotus (*History*: 1.125), and in Aeschylus (*Seven against Thebes*: 1). However, none of these notions of *kairios* seems to bear any immediate relation to the wisdom and judgment of *phronesis*, as *kairos* does. Onians (1954) says that *kairos*, and particularly *kairios* as parts of the body through which weapons could penetrate, can be understood as *kairos* in a sense of ‘parting’, ‘division’ as well as ‘opportunity’ and ‘due measure’ (e.g. in Pindar’s *Pythians*, IV, 286).
12. The importance of *just in place* is indicated in Just-In-Time management’s focus on eliminating waste – especially unnecessary inventory. It is also important as a distinction between *placement* in abstract (3, 4, or *n*-dimensional) space (*chora*), and *implacement* in a concrete, contextual place (*topos*) (see Casey, 1993, 1997).
13. Describing a ski slope as a place is somewhat in opposition to Casey’s (1993, 1997) and particularly Tuan’s (1979) understanding of the notion. By following Tuan’s reasoning, a ski slope is a space because *it is directed*. My point, however, is to exemplify the difference between time in a physical setting and time in a ‘virtual space’.
14. The importance of trust in social, economic, political, legal and organizational relations has been well recognized. I have not encountered any explicit reference to trust in relation to *phronesis* and *kairos*. Implicitly, however, *phronesis* (wisdom and judgment) and *kairos* (the right moment) seem to be present in all *individual* and *non-instrumental* accounts of trust, whereas collective and instrumental claims of trust are based on *techne* (e.g. virtual organizations). It follows that individual and non-instrumental accounts of trust presuppose *phronesis* but *phronesis* does not presuppose trust, in that a justified absence of trust could well be in accordance with *phronesis* (wisdom and judgment). Therefore, despite their different etymologies in Old Norse and Greek, respectively, the virtue of *trust* among cooperating parties implies questions of *phronesis*. From a Heideggerian point of view, when one thinks of *phronesis* showing itself in a ‘kairic’ rhetorical discourse, a ‘heard’ *voice of being/voice of conscience* in the speaker inscribed in a way which make these ‘voices’ available to subsequent hearers would engender trust. Or, in rhetorical terms, trust emanates from the character of the speaker (*ethos*) as inscribed in the discourse.

15. In his book *Moments of Truth* (1985/1987), Jan Carlzon, former CEO of SAS Airlines, defines a 'moment of truth' as the first 15 seconds of contact between a customer and your office.

References

- Academy of Management Review* (1998) 'Special Topics Forum on Trust In and Between Organizations', 23(3).
- Algra, K.A. (1994) *Concepts of Space in Greek Thought*. Leiden: E.J. Brill.
- Andersen, Ø. (1995) *I Retorikkens Hage*. Oslo: Universitetsforlaget.
- Asplund, J. (1983) *Tid, rum, individ och kollektiv*. Stockholm: Liber.
- Bachtin, M. (1919/1981) *The Dialogic Imagination*. Austin: University of Texas Press.
- Baier, A. (1986) 'Trust and Antitrust', *Ethics* 96(1): 231–60.
- Barthes, R. (1988) 'The Old Rhetoric: An Aide-memoire', in *The Semiotic Challenge*. Oxford: Basil Blackwell.
- Baumlin, J.S. (1984) 'Decorum, kairos, and the "new" rhetoric', *Pre/Text* 5(3–4): 171–83.
- Bochner, S. (1966) *The Role of Mathematics in the Rise of Science*. Princeton: Princeton, NJ: University Press.
- Bochner, S. (1973) 'Space', in P.P. Wiener (ed.) *Dictionary of the History of Ideas: Studies of Selected Pivotal Ideas*, Vol. IV. New York: Charles Scribner's Sons.
- Carlstein, T. (ed.) (1978) *Timing Space and Spacing Time*, Vol. 1–3. London: Edward Arnold.
- Carlstein, T. (1980) 'Time Resources, Society and Ecology: On the Capacity for Human Interaction in Space and Time', dissertation, Lund: Lund University.
- Carlzon, J. (1985/1987) *Moments of Truth*. Cambridge, MA: Ballinger.
- Carter, M. (1988) 'Stasis and Kairos: Principles of Social Construction in Classical Rhetoric', *Rhetoric Review* 7(1): 97–112.
- Casey, E.S. (1993) *Getting Back into Place. Toward a Renewed Understanding of the Place-World*. Bloomington: Indiana University Press.
- Casey, E.S. (1997) *The Fate of Place. A Philosophical History*. Berkeley: University of California Press.
- Castoriadis, C. (1975/1987) *The Imaginary Institution of Society*. Cambridge: Polity Press.
- Cusumano, M.A. (1994) 'The Limits To Lean', *Sloan Management Review* 35(4): 27–32.
- Davidow, W.H. and Malone, M.S. (1992) *The Virtual Corporation*. New York: HarperCollins Publishers.
- Derrida, J. (1993/1995) 'Khora', in T. Dutoit (ed.) *On the Name*. Stanford, CA: Stanford University Press.
- Derrida, J. (1997) 'Transcript One', and 'Chora', in J. Kipnis and T. Leiser (eds) *Chora L Works. Jacques Derrida and Peter Eisenman*. New York: Monacelli Press.
- Doheny-Farina, S. (1992) 'The Individual, the Organization, and Kairos: Making Transitions from College to Careers', in S.P. Witte, N. Nakadate and R.D. Cherry (eds) *A Rhetoric of Doing: Essays on Written Discourse in Honor of James L. Kinneavy*. Carbondale: Southern Illinois University Press.

- Duhem, P. (1976a) 'Plato's Theory of Space and the Geometrical Composition of the Elements', in M. Capek (ed.) *The Concepts of Space and Time: Their Structure and Their Development*. Dordrecht: D. Reidel.
- Duhem, P. (1976b) 'Space and the Void According to Aristotle', in M. Capek (ed.) *The Concepts of Space and Time: Their Structure and Their Development*. Dordrecht: D. Reidel.
- Fukuyama, F. (1995) *Trust: The Social Virtues and the Creation of Prosperity*. London: Hamish Hamilton.
- Giddens, A. (1990) *The Consequences of Modernity*. Cambridge: Polity Press.
- Gregory, D. (1994) *Geographical Imaginations*. Cambridge: Blackwell.
- Grenier, R. and Metes, G. (1995) *Going Virtual: Moving your Organization into the 21st Century*. Englewood Cliffs, NJ: Prentice Hall.
- Handy, C. (1995) 'How Do You Manage People Whom You Do Not See? Trust and the Virtual Organization', *Harvard Business Review*, May–June: 40–50.
- Heidegger, M. (1927/1962) *Being and Time*. San Francisco: Harper and Row.
- Heidegger, M. (1954/1968) *What is Called Thinking*. New York: Harper and Row.
- Heidegger, M. (1959/1987) *An Introduction to Metaphysics*. New Haven, CT: Yale University Press.
- Heidegger, M. (1979) *Gesamtausgabe, Bd. 55 (Heraklit)*. Frankfurt am Main: Klostermann.
- Heidegger, M. (1989) 'Phänomenologische Interpretation zu Aristoteles. Anzeige der hermeneutischen Situation', *Dilthey-Jahrbuch* 6: 237–69.
- Jaques, E. (1982) *The Form of Time*. New York: Crane Russak.
- Kerkhoff, M. (1976) 'Kairos', in J. Ritter et al., *Historische Wörterbuch der Philosophie*, Vol. IV. Darmstadt: Wissenschaftliche Buchgesellschaft.
- Kermode, F. (1967) *The Sense of an Ending: Studies in the Theory of Fiction*. New York: Oxford University Press.
- Kinneavy, J.L. (1986) 'Kairos: A Neglected Concept in Classical Rhetoric', in J.D. Moss (ed.) *Rhetoric and Praxis*. Washington, DC: Catholic University of America Press.
- Kinneavy, J.L. and Eskin, C.R. (1994) 'Kairos in Aristotle's *Rhetoric*', *Written Communication* 11(1): 131–42.
- Kisiel, T. (1993) *The Genesis of Heidegger's Being and Time*. Berkeley: University of California Press.
- Koch, C. (1997) 'Retorikkens Identitet', *Rhetorica Scandinavica* 1(1): 10–19.
- Kramer, R.M. and Tyler, T.T. (1996) *Trust in Organizations. Frontiers of Theory and Research*. Thousand Oaks, CA: Sage.
- Landow, G.P. (1997) *Hypertext 2.0: The Convergence of Contemporary Critical Theory and Technology*. Baltimore, MD: Johns Hopkins University Press.
- Luhmann, N. (1979) *Trust and Power*. Chichester: John Wiley and Sons.
- Miller, C.R. (1992) 'Kairos in the Rhetoric of Science', in S.P. Witte, N. Nakadate and R.D. Cherry (eds) *A Rhetoric of Doing: Essays on Written Discourse in Honor of James L. Kinneavy*. Carbondale: Southern Illinois University Press.
- Onians, R.B. (1954) *The Origin of European Thought: About the Body, the Mind, the Soul, the World, Time, and Fate*. Cambridge: Cambridge University Press.
- Prigogine, I. and Stengers, I. (1984) *Order Out of Chaos: Man's New Dialogue with Nature*. London: Heinemann.
- Ramírez, J.L. (1995) *Skapande Mening: En begreppsgenealogisk undersökning om rationalitet, vetenskap och planering* [Creative Meaning: A Contribution to a

- Human-Scientific Theory of Action]. Stockholm: NORDPLAN.
- Ruin, H. (1994) *Enigmatic Origins: Tracing the Theme of Historicity through Heidegger's Works*. Stockholm: Almqvist and Wiksell International.
- Sakakibara, S., Flynn, B.B., Schroeder, R.G. and Morris, W.T. (1997) 'The Impact of Just-in-Time Manufacturing and its Infrastructure on Manufacturing Performance', *Management Science* 43(9): 1246–57.
- Schatzki, T.R. (1991) 'Spatial Ontology and Explanation', *Annals of the Association of American Geographers* 81(4): 650–70.
- Smith, J.E. (1969) 'Time, Times, and the "Right Time"', *Chronos and Kairos*, *The Monist* 53(1): 1–13.
- Smith, J.E. (1986) 'Time and Qualitative Time', *Review of Metaphysics* 40(1): 3–16.
- Stalk, G., Jr and Hout, T.M. (1990) *Competing Against Time: How Time Based Competition is Reshaping Global Markets*. New York: The Free Press.
- Stern, C. and Stalk, G. Jr. (eds) (1998) *Perspectives on Strategy*. Chichester: John Wiley and Sons.
- Stone, A.P. (1997) 'A Program Model of Becoming', *Physics Essays* 10(1): 150–63.
- Sugimori, Y., Kusunoki, K., Cho, F. and Uchikawa, S. (1977) 'Toyota Production System and Kanban System: Materialization of Just-in-Time and Respect-for-Humanity System', *International Journal of Production Research* 15(6): 553–64.
- Tillich, P. (1948) *The Protestant Era*. Chicago: University of Chicago Press.
- Tuan, Y.-F. (1979) 'Space and Place: Humanistic Perspectives', in S. Gale and G. Olsson (eds) *Philosophy and Geography*. Dordrecht: D. Reidel.
- Ulmer, G.L. (1994a) *Heuristics: The Logic of Invention*. Baltimore, MD: Johns Hopkins University Press.
- Ulmer, G.L. (1994b) 'The Miranda Warnings: An Experiment in Hyperrhetoric', in G.P. Landow (ed.) *Hyper/Text/Theory*. Baltimore, MD: Johns Hopkins University Press.
- White, E.C. (1987) *Kaironomia: On the Will-To-Invent*. Ithaca, NY: Cornell University Press.
- White, E.C. (1994) 'Kairos', in S.L. Macey (ed.) *Encyclopedia of Time*. New York: Garland Publishing.
- Williams, K. et al. (1992) 'Against Lean Production', *Economy and Society* 21(3): 321–54.
- Womack, J.P., Jones, D.T. and Roos, D. (1990) *The Machine that Changed the World*. New York: Macmillan.

HANS RÄMÖ is a lecturer and PhD student in the School of Business at Stockholm University. His thesis, due for completion in 1999, is on how the notion of time is considered in theory and methodology as used in the natural and social sciences, with a particular focus on the different concepts of time in connection with situations when management decisions have environmental consequences. ADDRESS: School of Business, Stockholm University, S-106 91 Stockholm, Sweden. [email: hra@fek.su.se]