Time and Social Theory
Towards a social theory of time

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ABSTRACT. The paper first discusses fundamental issues
raised for social theory by the concept of 'social time' and
investigates how the concept is delineated from other disci-
pline-embedded ones. The second section reviews the concept
of social time in the work of major social theorists, notably
Mead, Elias, Giddens and Luhmann. The link or lack thereof
to human agency is considered crucial. The third section exam-
ines briefly the numerous empirical contributions to the study
of time that cover a wide variety of subfields of social research.
Finally the present potential for 'time studies' in the social
sciences is assessed. KEY WORDS ● social theory ● sociology
● sociology of the social sciences

I. Time and Social Theory: Some Fundamental Issues

To discuss the topic of time in conjunction with social theory raises from
the outset a fundamental issue: is there a concept of 'social time' which
is sufficiently grounded in social theory? If so, can it be distinguished
from other concepts of time, notably from astronomical time, the time
of the clock and of physics, but also from time notions used in other
scientific disciplines, such as biology, psychology or history? If the claim
is made that one can speak of a 'social time' unique to human societies
or social systems, and this is the generally accepted assumption, then it
becomes crucial to inquire how it is socially constituted, what leads to
its emergence and change, which variations it exhibits between different

kinds of societies or social groups, which social functions it serves and how societies cope with 'the problems of time'. If such a fundamental distinction is to be made, it has to be argued concretely, thereby delineating the concept also from the hidden influences emanating from the philosophical tradition of the 'foundations' of time.

An early and quite radical claim, which placed the category of time right into the epistemological centre of social theory, was made by Emile Durkheim's pathmaking observations in 1912 about the social origins of the category of time, along with the categories of space and causality. In the then undeveloped sociology of knowledge, Durkheim held as the most general conclusion that it is the rhythm of social life which is the basis of the category of time itself (Durkheim, 1912:7). These observations opened up important questions about the social origins and functions of the category of time and how social time can be distinguished and is distinct from astronomical time. Yet, it was only in a paper written by Sorokin and Merton in 1937, entitled 'Social Time: A Methodological and Functional Analysis' that some of the Durkheimian ideas were taken up again. This paper identified social time as qualitatively heterogeneous (e.g. holidays and market days), not quantitatively homogeneous as astronomical or physical time has it. Social time was seen as being divided into intervals that derive from collective social activities rather than being uniformly flowing. Local time systems, it was argued, function mainly in order to assure the coordination and synchronization of local activities which eventually become extended and integrated, thereby necessitating common time systems. The Durkheimian claim of the category of time being rooted in social activities, of time being socially constituted by virtue of the 'rhythm of social life' itself, buttressed by the analysis of the social functions it served, was a tacit rebuttal of Kant's a priori intuitions of time, space and causality. The intent was for sociology to go beyond this understanding. The claim to the existence of a concept of 'social time', distinct from other forms of time, was thus made early in the history of social thought. It continues to focus upon the claims of the peculiar nature of the 'social constitution' or the 'social construction' of time. These claims evidently put the category of 'social time' into the wider realm of 'symbolic time', a cultural phenomenon, the constitution of which has remained the object of inquiry of more disciplines than sociology alone, but which separates it from time in nature, embedded in things and artifacts. But while Kant's and other philosophers' conception of time had apparently been put out of the social theorists' sight, further theoretical developments showed that many hidden influences were to remain.

Since social collective activities form the very stuff that social life is

made of, it is inevitable that many empirical studies, focusing on other problems of social structure and behaviour, or on comparisons of socio-structural variations, would almost by accident stumble upon the topic of social time. Interest in time emerges repeatedly from many studies; hence came to form a kind of temporary derivative, an interesting side-line, rather than the core of a continuing research programme. This may also account for the often remarked-upon discontinuous nature of the study of time in the social sciences. When delving into the literature one encounters a seeming paradoxon: recurrent complaints about the 'neglect' of time in social theory or of 'not taking time seriously' are to be compared with the continuously growing literature on the subject. J. T. Fraser, one of the world's foremost experts on time and the founding secretary-general of the International Society for the Study of Time[1] has estimated that, of the more than 800 citations found in 'A Report on the Literature of Time, 1900–1980', the part 1966–80 contains two-thirds of the entries, the part 1900–66 one-third (personal communication). Anyone who has worked, even for a short period, in the area of time very soon comes to realize that the literature is booming, also in the social sciences.

The point is not so much that a continuous, if not cumulative and progressive increase in dealing with matters of time and temporalism is a necessary condition for the theoretical advance of the social sciences, although this point can surely be made from a comparative epistemologi-cal point of view (Martins, 1974). The question is, rather, why the repeated complaint about the neglect of time in social theory or in the social sciences in general? Is it only a 'protective assertion' permitting many authors to pursue their beginning interest in the subject-matter without having to take into account what others in the field have already produced (Bergmann, 1983, 1992)? Is the complaint justified, when directed more specifically against the sheer fragmentation of approaches which ramble through many subfields and facets, each one discovering anew time as a 'social construction' or the fact that all social life is couched in a temporal (as well as spatial) dimension? Or is it mainly social theory that has to be singled out with its 'continued default' of not building time systematically and centrally into its research programme? A default which is not specific to time per se, but rather linked to the still highly individualistic modes of theory building with each major social theorist working in relative isolation and intent to build up 'his' or 'her' theory in a consistent way without having to face the challenge or confrontation either from empirical work or from other social theorists?

In one of the earliest, and also largely neglected survey articles on time and social theory, Herminio Martins (1974) raises astute criticisms

against the would-be successors of the defunct structural-functionalism. The demise of structural-functionalism, he argues, has not brought about a substantial increment in the degree of temporalism and historicism in the theoretical constructs of general sociology, even though this was one of the major goals announced by the critics of functionalism, paramount to a meta-theoretical criterion of what an 'adequate' theory should consist of. None of the post-functionalist schools, movements and cult figures competing for a share or even the monopoly of the sociological imagination, he scolds, have translated the concern with 'becoming, process, diachrony, historicity' which was found lacking in functionalism, into their own theoretical programmes. The 'continued default', as Martins calls it, is evidenced in all variants of post-functionalist successor theories. Yet, differences exist. Martins draws a distinction between two criteria of temporalism and/or historicism. One he calls 'thematic temporalism', indicated by the degree to which temporal aspects of social life, diachronicity, etc., are taken seriously as themes for reflection of metatheoretical inquiry. The other criterion is the degree or level of 'substantive temporalism', the degree to which becoming, process or diachrony are viewed as ontological grounds for socio-cultural life or as methodologically prior to structural synchronic analysis or explanations. In terms of these distinctions, the bulk of social theory, according to Martins, may be viewed as being low in substantive temporalism. With regard to thematic temporalism, he concludes, the situation is not so uniformly bleak.

What, one may ask with the benefit of hindsight, has changed in the one and a half decades since Martins's criticism has been published? The sheer amount of the growing body of literature on time in the social sciences underlines the fact that thematic temporalism, to use Martins's terminology, is on the rise. Substantive temporalism may still be comparatively low, but, as the next section shows, it too is on the rise. There is also a widespread acknowledgement, especially in evidence in the empirical literature, of what I will call 'pluritemporalism'. This is an acknowledgement of the existence of a plurality of different modes of social time(s) which may exist side by side, and yet are to be distinguished from the time of physics or that of biology. There is growing awareness and interest in the existence of 'shapes of time', as G. Kubler, an art historian, has called it (Kubler, 1962; Jacques, 1982). He and others have argued that historical events or actions or art works may constitute their own times, follow certain sequences and temporal patterns which have a beginning, maturation and decline. In a more recent book, Michael Young has attempted to reconcile the cyclical and the linear as complementary temporal patterns that shape social life and has shown

ways how natural (biological) rhythms and human timetables may complement each other in order to escape the grid of the 'metronomic society' (Young, 1988). 'Symbolic time' as an essentially socially or culturally produced abstraction is even encountering the time 'embedded' in technological artifacts or, more generally, time embedded in the visible and tangible reality of nature and things (Hägerstrand, 1988). The enumeration of similar recent attempts to confront a plurality of times could be continued. Why, one can therefore ask, bringing us to yet another issue to be faced when contemplating the relationship of time and social theory, does this sudden explosion of interest in problems of different modes of times and their relationships occur now? Why does the widely shared assumption about time being 'socially constructed' suddenly move out of one social structure in order to encounter other, and often quite differently constructed social times? A definition of social time, like the one I attempted myself in the early 1970s, according to which the term social time 'refers to the experience of inter-subjective time created through social interaction, both on the behavioural and symbolic plane' now calls for a much more encompassing and dynamic definition, taking into account also the plurality of social times (Nowotny, 1975:326).

   Obviously, the issues raised here are not independent of each other. Nor can they negate their own temporal relation with the past, the present or the future of thinking about time in social terms. In the next section I offer a summary view on how time has been constructed or reconstructed in social theory and where and how the question of human agency as well as that of social theory enters. For reasons of lack of space I then move to an extremely cursory overview of empirical studies dealing with issues of social time. I end with some 'timely' reflection of my own, while attempting to move beyond the issues discussed.

II. Time in Social Theory: A Place for Human Agency

Despite Durkheim's radical epistemology concerning the social origins of the category of time and the implications it opened for social inquiry, the relationship between time and social theory has remained a highly discontinuous and, moreover, a highly ambiguous one (Adam, 1990). Although virtually all classical founding fathers of sociology had their encounter with time — a more intentional than real encounter in the case of Simmel; an all-encompassing one in the case of Marx, for whom all of economics would finally become dissolved in the economics of time; a means–ends scheme related one in the case of Weber — time was for long too elusive a concept to become a central concern for social

theory. While empirical studies, initially drawing heavily upon the work initiated by anthropologists and historians who were interested in reconstructing the history of western and non-western time, were full of 'thick descriptions' about time reckoning systems and how clock time came to dominate industrialized societies, time and social theory remained in an uneasy relationship. 'For the social scientist', Tommy Carlstein observed, 'time adopts the somewhat discourteous practice of wearing different hats which are seldom raised to greet the unwary researcher with an unambiguous meaning' (Carlstein, 1982:2). And Norbert Elias begins his essay on time with the sentence which characterizes many other works on time as well: 'This is an essay on time, but it is not concerned with time alone' (Elias, 1974:1). What is it then, that social theorists are concerned with when they speak about time? What do the main encounters with time look like and what kinds of meanings do social theorists attribute to their encounters with time?

One disguise which time has frequently adopted is its own conceptual appearance and the changes the concept has undergone. We lack, according to Norbert Elias, a theory of the concept of time. In refuting, just as did Durkheim, the Kantian assumption of an a priori synthesis the problem remains for Elias of how to account for the development of concepts of time both across the historical variations of societal developments and for the peculiar dominance of the western concept of time characterized by an ever higher level of abstraction. Numerous accounts of the history and technology of time-measurements and clocks, as well as the social uses to which they have been put, converge in describing the evolution of one dominant (the western) concept of time, out of many highly different 'local times' (Landes, 1983; Zerubavel, 1985; Nowotny, 1975). It is an evolution in the direction of ever greater abstraction, culminating in the quasi-universal use of clock time as the standard reference and the scientific definition of time in terms of mathematical and physical relationships. Few social theorists, however, have ventured beyond correlating the rise and diffusion of a mathematical–physical conception of time with processes of western modernization and rationalization of social life. The conception of time as something 'external', which 'flows', as Newton thought, 'of itself and from its own nature' and which is somehow embodied in clock times, seems to have suited most social theorists as an external reference frame, against which 'social time' could be posited. The contingent nature of time was indeed, as Durkheim already suggested, hard to realize and even harder to keep in mind (Elchardus, 1988:43).

One of the few authors to take exception to such an unquestioned concept of time is Norbert Elias. If we had a model of the development

of time-concepts, Norbert Elias admonishes, it would enable us to see more clearly the growth of the relative autonomy of society within nature. Unless one learns to perceive human societies, living in a world of symbols of their own making, as emerging and developing within the larger non-human universe, one is unable to attack one of the most crucial aspects of the problem of time. For Elias it consists, stated very briefly, in how to reconcile the highly abstract nature of the concept of time with the strong compulsion its social use as a regulatory device exerts upon us in daily life. His answer: time is not a thing, but a relationship. For him the word time is a symbol for a relationship which a group of beings endowed with the capacity for memory and synthesis establishes between two or more continua of changes, one of which is used by them as a frame of reference or standard of measurement for the other. Time relationships are thus connections between at least three continua: between those who connect and two continua of changes, to one of which they give the function of a standard continuum. (Elias, 1974).[2] By clarifying the concept of time as a conceptual symbol of evolving complex relationships between continua of changes of various kinds, Elias opens the way for grounding the concept of time again in social terms. The power of choosing the symbols, of selecting which continua are to be used, be it by priests or scientists, also becomes amenable to social analysis. The social matrix becomes ready once more to house the natural world or our conception of it in terms of its own, symbol-creating and continuously evolving capacity. The question of human agency is solved in Norbert Elias's case by referring to the process of human evolution through which men and women are enabled to devise symbols of increasing power of abstraction which are 'more adequate to reality'. Moreover, specific agents in society are identified who have assumed the power of setting and controlling time: priests and, with the rise of the natural sciences, physicists. Elias interprets Galileo's time measurement experiments as an essentially social process, thereby locating natural science practice of measuring time firmly in the societal matrix.

Related to this encounter of the first kind, in which social theory meets the concept of time, is the question of the relationship between time in social systems with other forms of (physical, biological, 'natural') time or, as Elchardus calls it, 'sui generis time' (Elchardus, 1988). In this encounter between time in social systems and time in other systems, the social scientist has several possibilities of reacting. Social theory can posit the existence of a sui generis time while skirting the problem of its specification. This strategy is, according to Elchardus, followed by Giddens and Luhmann. Elchardus suggests defining the culturally induced

temporality of systems when certain conditions (i.e. relative invariance and sequential order) are met. Time then becomes the concept used to interpret that temporality. The interpretation of the temporality of non-reflexive systems is consequently left to physicists (Elchardus, 1988:44).

One of the few authors who turned their attention towards sui generis time as redefined in his own lifetime through the advent of relativity theory in physics was G. H. Mead (1932/1959). Searching to reconcile Darwinian evolutionary theory with Einsteinian relativity theory and, especially, its reconceptualization of simultaneity, Mead followed Whitehead's lead in locating the origins of all structuration of time in the notion of the 'event': without the interruption of the flow of time by events, no temporal experience would be possible (Joas, 1980, 1989). For Mead, for whom the totality of perspectives is the objective world, albeit one which offers no access without interpretation, it is the shared, intersubjective practice in which all temporal structuration emerges. By seeing human history as part of the continuing evolution of natural history, Mead is able to include, as constitutive, practical relations between all organisms and their environments, not only the world of human interaction. Time therefore structures itself through interaction and common temporal perspectives are rooted in a world constituted through practice. This holds for sui generis time as well as for social time.

Another strategy in dealing with sui generis time consists in juxtaposing clock time to the various forms of 'social time' and considers the latter as the more 'natural' ones, i.e. closer to subjective perceptions of time, or to the temporality that results from adaptations to seasons or other kinds of natural (biological, environmental) rhythm. This strategy, often couched also in terms of an opposition between 'linear' clock time and 'cyclical' time of natural and social rhythms devalues, or at least questions, the temporality of formal organizations which rely heavily on clock time in fulfilling their coordinative and integrative and controlling functions (Young, 1988; Elchardus, 1988). The third strategy is the unencumbered embracing of pluritemporalism. With or without awareness that the concept of an absolute (Newtonian) physical time broke down irrevocably at the turn of this century and that a different kind of pluritemporalism has also been spreading in the physical sciences (Prigogine and Stengers, 1988; Hawking, 1988; Adam, 1990), social theory is free to posit the existence of a plurality of times, including a plurality of social times. In most cases this amounts to a kind of 'theoretical agnosticism' with regard to physical time. Pluritemporalism allows for asserting the existence of social time next to physical (or biological) time without going into differences of emergence, constitution or epistemological

status. Pluritemporalism therefore posits different 'modes' of time constructs, different 'shapes of time', e.g. 'time of the Other' (Fabian, 1983), or women's time (Davies, 1989; Forman, 1989). While containing many valuable phenomenological descriptions of the plurality of different temporal forms and modes which can be found in social life, the theoretical assumption underlying it denies any hierarchical ordering: rather it professes a kind of theoretical minimalism, based on the commonly accepted formula of the 'social construction of time' (Berger and Luckmann, 1967).

It may well be, as Edmond Wright has pointed out (personal communication) that by leaving sui generis time to the physicists, i.e. by leaving it out of social theory altogether, there is the risk of losing sight of the 'real' temporal continuum which serves as standard reference for all other forms of times. It also impedes coming to terms with 'time embedded' in natural objects and technical artifacts, as Hägerstrand (1974, 1975, 1988) repeatedly emphasized. By concentrating exclusively upon 'symbolic time', the dualism separating society — reflexive systems — from nature — non-reflexive systems — is not only unquestioningly accepted by social theory, but reasserted.

When it comes to the third encounter between time and social theory, it therefore means time *in* social systems or, rather, the constitution of time in social systems. If it is 'socially constructed' who constructs it and how? We have finally moved into the sanctuary of theory construction and it is patently obvious that time matters. In the following I have to concentrate my remarks upon the works of a few social theorists only who exemplify current social theory in the making: I begin with Giddens's recent attempt to connect social structure and human agency. The concept of 'duality of structure' as enabling as well as constraining and of 'structuration' bringing in the (otherwise unrecognized) preconditions for action have opened the door for reconsidering time and space. 'Duality of structure' implies that structure is simultaneously a medium and a result of human agency. It addresses the question of how structurally constituted actors act in such a way that the combined effect of their actions changes the very structure that constitutes them. The fundamental question for Giddens then becomes how social systems 'come to be stretched across time and space' (i.e. how they constitute their temporality (Giddens, 1984). A quite different and much more radical approach is followed by Niklas Luhmann, who proposes to replace the subject/ action scheme by a time/action scheme, thus eliminating the actors altogether and replacing them with expectations and attributions. Structure for him is a selection of possible ways of connecting events and complex systems are always systems with temporalized complexity (Luhmann,

1979). Last, but not least, I want to focus upon the rediscovery of the work of G. H. Mead and its contributions to time in social theory (Mead, 1936, 1932/1959; Adam, 1990; Bergmann, 1981; Joas, 1980/1989). Such a selection inevitably eclipses the work of other important contributions. The notion of 'structuration', for instance, has been prominent long before Giddens in the work of Pierre Bourdieu and others (Bourdieu, 1972; Pred, 1983, 1984). Bourdieu's replacement of 'rules' through 'strategies', exemplified in his anthropological investigations of Kabylian peasant society, aims to reintroduce time through the practical structures inherent in the cycle of reciprocity with its (symbolic) rhythm, its directions and irreversibility. But he also points out that certain forms of scientific practice negate time: science needs a time which differs from the time of social practice, hence its tendency towards reification. Recently, Elchardus has made an interesting attempt to overcome some of the shortages he sees in the present state of theorizing by constructing a social theory of time based upon the criteria of repetition (or recurrence) of events and their sequential ordering. He arrives at a concept of time that expresses these properties as well as a temporal meaning, i.e. a meaning-interpreting reality by using these properties (Elchardus, 1988; Elchardus and Glorieux, 1988).

To introduce time into present-day social theory means at its core to redefine its relation to social action and subsequently to human agency. It is there that the central questions arise, where differences begin to matter between action theory, structuration theory and system theory with regard to time. The question of how social action and time are linked or, put in another way, what sociological implications can be derived from an existential type of temporalist emphasis in the foundations of action theory, are indeed crucial (Martins, 1974:257). Heidegger and those who branched off his foundational analysis of temporality tried to show how human existence was grounded in time and what the implications were for 'philosophical anthropology' of such a position. Giddens has been reproached for basing his analysis upon Heidegger's (from a sociological point of view) insufficient anthropological foundations, rather than seeking support in the writings of symbolic interactionists and pragmatists whose tradition of reflexivity in action and treatment of temporality as emerging from inter-subjective action would have served him much better (Joas, 1986). Already Plessner has noted that Heidegger acknowledged human nature, let alone society, only 'in as far as it leads to death' (Plessner, 1974). In his critical review of time and (largely Parsonian) social action theory, Martins begins by noting that the means–ends scheme, even if one limits oneself to social theory alone, is always mediated through definite philosophical orientations —

neo-Kantian, Husserlian, Wittgensteinian, critical rational or eclectic combinations thereof. In summarizing certain invariant reference points which are endemic to all means–ends schemes used in the universe of sociological persuasion, one is the necessity to take some account of time, 'if only because purposiveness is by definition future-directed and such issues as the structure of human subjective time, its relationship to other modes of time, the privileged status of time in the field of conduct etc. must be considered with varying degress of elaborateness, systematization and radicalness' (Martins, 1974:225).

Giddens sets out to reject the view of time–space as mere 'environments', 'containers' or 'categories of mind'. He sees them rather as constitutive features of social systems, implicated deeply in the most stable forms of social life as in those subject to the most extreme or radical mode of change. Based on Heidegger and Leibniz, Giddens asserts that 'they *are* modes in which relations between objects and events are expressed' (Giddens, 1981:30–1). In an interview given to Bernd Kiessling, Giddens reiterates that he intends to reformulate the concept of social action and that his theory of structuration aims at overcoming the abstract antagonism of (subjectivist) action theories and so-called objectivist structural sociologies. Action is but the constant intervention of humans into the natural and social world of events. Giddens adds that he would also like to make clear the constitutive relation between time and action. 'I do not' he says, 'equate action with intentionality, but action starts always from an intentionally-oriented actor, who orients him/herself just as much in the past, as he/she tries to realize plans for the future. In this sense, I believe, action can only be analyzed, if one recognizes its embeddedness in the temporal dimension' (Kiessling, 1988:289).

To show 'how the positioning of actors in contexts of interaction and the interlacing of those contexts themselves' relate to broader aspects of social systems, Giddens proposes that social theory should confront 'in a concrete rather than an abstractly philosophical way' the situatedness of interaction in time and space (Giddens, 1984:110). As a concrete example he chooses the time–space geography pioneered by the work of Torsten Hägerstrand and his students (Hägerstrand, 1970, 1974). Time–space geography is mainly concerned with identifying sources of constraints over human activity which are exercised by the 'indivisibility' of the human body (allowing it to be only in one place at a given time). It has spawned numerous concrete studies, showing how time and space are movement resources which are restricted within national or regional boundaries (Carlstein, 1982; Pred, 1983, 1984, 1985; Thrift, 1983). There has also been a pronounced methodological concern with the analysis of

activity sequences and activity coordination in modern 'time-compact societies' (Lenntorp, 1978). As such, the conception of time and space remains contextual. However, as A. Kellerman (1989) has pointed out in his assessment of Giddens's structuration theory for the use of geography, for society at large time and space are more than mere movement resources. They are production resources, major organizational dimensions and containers. This casts doubt on the homology of space–time on the individual and societal level implied by Giddens (Kellerman, 1987, 1989). On the other hand, Giddens has in turn stated his reservations about the 'limitations' of time–space geography (Giddens, 1984:116–19). The gulf separating social theory from its concretization in specific empirically accessible situations is therefore still a wide one.

A much more radical departure from action theory has been taken by N. Luhmann (Luhmann, 1979). He proposes to substitute the actor/action scheme, in which 'time plays a role only as temporal difference between means and ends', by a time/action scheme. Social theory, in his view, has sufficiently advanced to be able to move to a higher level of abstraction. Social systems are built from present actions and through them a social present with a very specific past and future is opened up. In Luhmann's temporal perspective (reminiscent of Whitehead, 1926 and Mead, 1932/59) action appears as an event which constitutes the social present, as the constitutive difference between past and future, thus giving rise to questions of linking past and future, the novelty of events, selectivity and attribution of actions. Luhmann's criticism of what he calls the actor/action scheme starts from the assumption that it places the actor, with his/her motives and interests, into the central theoretical position. Time is therefore built into this scheme as temporal difference between means and ends, following the rational action scheme of Max Weber. Social action theory still starts today, in Luhmann's view, from the assumption of actors' intentions and the belief that these intentions are determined by attitudes towards time, e.g. the width of the temporal horizon, dispositions towards risks or deferred gratification. Luhmann, in contrast, wants to cut these links and therefore pleads for an autonomy of the temporality of action against the structure of motivation. His system theory is deliberately set out to challenge 'the last domination of the actor of his/her actions' (Luhmann, 1979:64). In doing so, he introduces a virtually unknown 18th-century text, with the unspecific title of 'Réflexions sur divers sujets' written by Luc de Clapiers, Marquis de Vauvenargues (1715–1745), who was apparently the first to note that the present can only be retained by an action which emanates from the present itself. Action hence becomes a counter-movement against the self-annihilation of time. Luhmann seeks to rehabilitate the question why

action is necessary at all and how it is possible, a question which he opposes to the general action theory's generalization of the concept of interest. The answer is to be found in highly complex systems always being systems with temporal complexity. They need time in order to sequentialize the multitude of relational patterns which form the component elements of the system. These elements cannot be understood independently of time. They are possible only as events. The emergence of new system properties is therefore not a substantive derivative from what existed before; rather, emergence` has to be defined itself as an order of temporal relationships in time. Since each moment/event has the intrinsic quality of the new, it is open for continuity or discontinuity, maintenance or change, conformity or deviance from what went on before. Similar to Mead, Luhmann's three theses about action and agency deny the movement character of action and insist on action as event. Only as event can action contain and follow surprise. The temporal reference to action/agency is therefore the social present. Instead of some kind of transcendental flow, it is social communication that enables the pure sequential series of one's own temporal experience to become fused with the experience of others. This is how the problem of selective integration of past and future arises in a present which is never 'sufficient' to include everything as 'timely'. Because the temporal integration of action as mediating past and future presupposes social communication, the constitution of action necessitates processes of attribution. For all concerned it must be obvious where the selection takes place and for whom it constitutes experience or action.

Luhmann's conclusions culminate in the statement that time is a problem as a result of societal complexity. How it becomes a problem is a question of semantic tradition, the changes of which are self-organizing, but which can also follow structural changes and increasing pressure of time. Viewed from the perspective of the complexities of social systems, the main problem then becomes how changing relationships between actions can be coordinated within limited time. The time horizons of future and past become spaces for calculations for actions which can only be achieved in the present. Time becomes scarce, insofar as it is used for social coordination; it predisposes some kind of 'packaging', or 'splitting', it necessitates limitations and terminations, as well as agenda setting. Action in the end is always a 'time-binding' disposition which fills the memory beyond the moment and creates premises for future action. It renders time scarce for oneself and for others. Luhmann admits that the concept of the 'time-binding effect of action' is still to be further developed; it lacks other concepts to link up with. But he indicates which guiding lines for further research have been opened by this perspective.

What makes events and action new is not 'more', but rather 'fewer' possibilities when compared with what was before. Events are not to be interpreted as small holes into which possibilities disappear gradually. Rather, they use selective reduction in order to change the patterns of relationships among themselves. After an act, other actions and action contexts become more relevant than before and this is possible only by reducing and redesigning the existing possibilities. The time-binding effect of action couples uno actu two temporal relations: the distinction between as well as the relationship to past and future and permanent change in relation to 'actuality', i.e. the relevance for the act.

In his most recent work and in line with the central notion of the observer, Luhmann (1989:4) asserts that 'everything which occurs, occurs simultaneously' in the momentous present which implies also a momentous attribution of sense. He is led to deny the existence of causality, which is replaced by the actuality of the observer who observes, in a given moment, with the help of the difference 'cause–effect'. Time is thus built into systems theory in a double sense: as simultaneousness of occurrences of action/events *and* as the application of a (temporal) difference, e.g. before/after; tempus/aeternitas; future/past; time measurement/what is being measured (Luhmann, 1989). Human agency, it should be added, has been reduced, but also extended into the omnipresence of 'making a distinction', which is the basis for all observation and of knowledge through action. The simultaneity of the non-simultaneous becomes the paradox which the social system has to solve, when coping with time.

While having the virtue of being consistent with the theoretical premisses of Luhmannian systems theory and allowing him to spawn ever new 'findings' which result from the solution of paradoxes like the one cited above, Luhmann's treatment of time and especially of simultaneity fails, in my opinion, to take account of the system's *own* definition of simultaneity as being constitutive of its temporality. In the end, any social theory of time has to be able to explain the empirical and phenomenological richness of cultural and historical variation, which go far beyond distinctions of the type 'before/after, or tempus/aeternitas'. The definition of its own simultaneity could offer a potentially very rewarding 'operator' for any social system. It is a definition which cannot be taken for granted, but rather has to be explained in terms of its social preconditions and cultural variations. Moreover, the question of simultaneity — or rather the 'illusion of simultaneity' as I have maintained elsewhere (Nowotny, 1989) — leads back once more to the relation between sui generis time and social time by inviting comparisons between the differing definitions of simultaneity. If human agency culminates in 'making a distinction'

why do some human agents, e.g. physicists, make different distinctions from other human agents? Rather than falling into another trap of reification — the observer — I would plead for tackling the many-sidedness of human agency. After all, physicists too are human agents and their ways of observing the natural world and acting upon it consti-tute one specific expression of human agency (Nowotny, 1989b).

At this point it may be useful to throw one glance back to an author whose contributions to time and social theory would have remained marginal, if not completely ignored, were it not for recent attempts to bring them back. As Bergmann (1981), and more recently, Lüscher (1989) and Adam (1990) and before them Joas (1980, 1989) have shown, a radical change in perspective away from time as 'flow' or time as embedded in the intentionality of the actor, can already be found in the social philosophy of time by G. H. Mead (Mead, 1936, 1932/1959, 1964). His is also a theory in which it is not the actor and his/her motives, interests or the means–ends scheme which dominates, but where action is interpreted as event — moreover, an event which is both temporal and social in nature. Referring the reader who is interested in learning more about the Meadian concepts of emergent event, act, sociality and perspective to the literature, I can here only briefly sketch the most striking features of Mead's social philosophy of time. Strongly influenced by Whitehead, who saw nature as a process, a sequence of events where all physical and organic substances could no longer be conceptualized as substantive 'entities', but had to be thought of as temporal–spatial 'actual entities', the emphasis is on 'the specific character of a place through time. This is what I mean by event' (Whitehead, 1926:52). Such defi-nitions owe much to the discoveries of Einsteinian relativity theory. In making the newly emergent event or its social correlate 'action', the central 'actual entity' of his theory of time, Mead follows Whitehead, but attempts to transplant these concepts into society. Events as actual entities are unique, not repeatable entities. They do not last in time, but they constitute time. Whitehead remarked in 1926 (p. 55): 'Time is known to me as an abstraction from the passage of events. The funda-mental fact which renders this abstraction possible is the passing of nature, its development, its creative advance. . .', whereas Mead stated: 'time can only come into existence through the structuration of sequences by these unique events' (Mead, 1932/1959:264, quoted in Bergmann, 1981:353). The emphasis is thus on the emergent and the novel. The world is a world full of events, in which the present, and thereby time, is defined in relation to a novel event. Only this present is seen as a 'space of reality', while past and future can only be reconstructed hypothetically from a present event. The dimension of sociality enters

with the Meadian concept of 'perspective' (which in turn was also influenced by Whitehead and is, in some ways, close to Husserl's 'horizon'. Again, I have to refer the reader to the literature). The perspective orders a spatial–temporal environment in a specific way. Perspectives are not subjective deviations from an objective reality, but the totality of perspectives is the objective world. The specific human capacity to be present in several systems at the same time is what constitutes sociality for Mead. Time and space are therefore no absolutes, but rather a multitude or plurality of temporal–spatial relations: *the* present or *the* past or *the* future do not exist — only system-relevant perspectives do. They enable the (social) constitution of time whereby individuals can communicate and alternate between their personal and communal identity. Similar to Luhmann, as Bergmann points out, every action is seen as creating also a 'difference' (in Luhmann's terminology) or a 'discontinuity' (Mead): as present passes into present there is always some break in continuity — within continuity, not of continuity (Mead, 1964:350, quoted in Bergmann, 1981). Likewise, the constitution of event/action as time leads to the present as novelty in its emergent characteristics. For Luhmann it creates an original re-'present'-ation of all time, by rendering relevant in a selective way past and future through action or communication (Luhmann, 1979:74). For Mead all new events constitute new pasts and hence root the past with all its characteristics firmly in the present (Joas, 1980/1989).

As can be seen by these and other theoretical formulations, the problem of time in social theory, while gradually coming to new terms with social action, does not lend itself easily to providing bridges for the agents behind human agency, the social actors, nor to those who do empirical research in order to understand the world from an actor's perspective. Perhaps it needs a radical anti-philosophical stand, like the one adopted by Norbert Elias, for whom the conceptualization of time as well as the practice of measuring it are solidly rooted in the social world and need to be explained by sociological concepts, so that answers can be gained also for questions emanating from empirical observations and research. The formation of time concepts and the making of time measurements, i.e. the production of devices as well as their use and social function, become for him a problem of social knowledge and its formation. It is couched in the long-term perspective of evolution of human societies. Knowledge about time is not knowledge about an invariant part or object of nature. Time is not a quality inherent in things, nor invariant across human societies. Nor is it solely the result of a specific human capacity for concept formation in the sense of creating ever more abstract synthetic concepts. It is also a capacity inherent in

the societal evolutionary process, connected to the ability of learning and the passing on of knowledge to the next generation about how to order events both in sequence and in synchrony. But at the same time this remarkable capacity is also 'creating' and 'setting time' which then is felt as exerting a compelling influence upon actors. For Elias time has ceased to have any of the 'mysterious qualities', with which 'generations of philosophers and philosophizing social scientists have endowed it'. For time is nothing but a 'symbol for a relationship established between two or more continua of changes, one of which is used . . . as a frame of reference or standard of measurement for the others' (Elias, 1974:7). From this perspective, Elias can investigate the processes of ever tighter integration noticeable in highly industrialized societies as well as changes in the temporal awareness and experience of individuals living in these societies. The gradual process of mastering the external natural environment is accompanied by an equally gradual process of self-mastery in the social realm. 'Human agency' for Elias is also conceptualized in a dual way which takes account of the social nature of the individual: society is a society of individuals (Elias, 1987). The driving force accountable for the shifting I–We balances (instead of the Meadian I–Me balance) of those parts of society which are structurally as well as emotionally attached to the collective 'we' and those which gather at the other end of the individualizing 'I', are the processes of societal and cultural evolution in a world in which 'nature' and 'society' cannot be separated.

Social theory has undoubtedly made progress recently in both openly acknowledging the centrality of time for theory building as well as by striving to incorporate it. Time as mere 'temporal difference' in the means–ends scheme of Parsonian general social action theory has been overcome. Also laid aside has been the all too simple notion of equating time with social change (Giddens, 1984). Yet, influences as to 'what time is', that betray definitions originating either in philosophy or which are taken for granted as coming from the natural sciences, continue to impede further progress. Recently, Barbara Adam has pleaded forcefully that social scientists have to reappraise and update their understanding of physicists' notions of time since it is of central significance to social theory and practice (Adam, 1990). Time in social theory, however, remains bound to the kind of social theory which is developed. The tension between action theory (or the theory of structuration) and systems theory has not completely vanished, but at least the areas of disagreement have become clearer. The 'event' structure of time with its implicit legitimization through physics, but which is equally a central notion for historians (Grossin, 1989) holds a certain attraction for empirical studies and for those who are interested in the definitional or

social-constructive power of agents. 'Events' occur, but they are also interpreted and given meaning in order to make sense. There is a unique historical quality to this event-structure which engages the sociologist in contemplating not merely 'revolutionary times'. Events stand out in the study of life courses, a growing multi-disciplinary research area, and are central to the literature on event-history analysis (Allison, 1984). Studies of time in organizations have long since recognized the importance of 'events' as a complex admixture which shapes social life inside an organization and its relationship to the outside world. 'Sociological analyses', we are told, 'require a theory of time which recognizes that time is a socially constructed, organizing device by which one set, or trajectory of events is used as a point of reference for understanding, anticipating and attempting to control other sets of events. Time is in the events and events are defined by organizational members' (Clark, 1985:36). A 'duality of structure' perspective is also highly in demand, when an understanding of both the human agents' point of view and their emotions is necessary, as well as a more systemic or societal understanding. In the first case, one wants to understand how and why choices are made; in the second how the 'We' or 'Them' feeling is related to the 'I' feeling. These are only two of many more salient questions that a multitude of empirical time studies can ask of a social theory not content with treating time only *in* social theory, but aiming to be a social theory *of* time.

III. The Empirical Tribute to Human Agency:
Towards a Social Theory of Time

Not surprisingly, empirical studies dealing with time and temporal dimensions oscillate between the many-faceted aspects and problems which time poses in social life. They investigate time in working life and the options available for altering work-time schedules; the time spent waiting in a doctor's office or negotiating about time which goes on between doctors and patients. They range from historical investigations into the impact of the telegraph on the standardization of time to changes in consumption patterns and time budgets due to the introduction of new technologies. They include detailed accounts of time as strategy in social exchange relations or its negation in certain types of contracts; the special quality of revolutionary times is singled out as is women's time or the temporal experiences of beginnings and endings. Time-management studies in organizations claim relevance as do studies of ageing processes. Time in social life has indeed many faces. What guidelines for empirical

research can social theory provide? What common themes emerge from these studies and what questions do they raise for a social theory of time?

Despite the apparent diversity of themes, certain common patterns can be discerned in empirical studies dealing with time. They bear the imprint of the ups and downs of research fashions as well as the waxing and waning of influences from neighbouring disciplines. But they all acknowledge 'time as a problem' in 'time-compact' societies (Lenntorp, 1978), imbued with the pressures of time that come from time being a scarce resource. They reveal the changing patterns of working time (Rinderspacher, 1985; Gasparini, 1988) and so-called leisure time (in itself a highly disputed concept, Müller-Wiechmann, 1984), reaching out into the emergence of 'politics of time' as a new policy arena (Hernes, 1987; Kirsch et al., 1988). The temporal experience peculiar to unemployment has remained a central topic ever since the pioneering work of Jahoda, Lazarsfeld and Zeisel in their Marienthal study. Other 'favourite' areas of research have been hospitals and time as crucial negotiable variables in the doctor–patient relationship. The organization of both space and time in medical practice is seen as a crucial constraint or 'working dimension' for doctors and their patients. The social (re)definition of illness is interpreted also as a temporal phenomenon (Armstrong, 1985; Pritchard, 1987; Frankenberg, 1992). Time in schools or 'education time' is yet another institutional setting in which temporal experience and management are crucial (*Temporalistes*, 1991). While the exploration of temporal experience, outlook and concerns towards past and future as well as the use of time along social class distinctions have receded in significance, the different temporal experiences and structures which influence the lives of women have been added to the research agenda marking the area of 'gendered time' as being of growing importance (Davies, 1989; Forman, 1989; Adam, 1989; Foster, 1988). Patterns of convergence in typical male and female life-styles have been found with regard to economic activity levels, career notions, identity as determined by one's position in the labour market as well as in gendered temporal management (Schuller, 1988). Time in organizations has remained a central topic to any student of organizations: not only is time and temporality a distinctive part of any social organization and its culture, it is even more a central and scarce resource for every organization and its management. It has to be employed in planning and design; it is omnipresent in decision-making, deadlines and other aspects of organizational behaviour like various forms of group processes (Bluedorn and Denhardt, 1988; Clark, 1985; McGrath and Kelly, 1986). With the increase in studies of ageing, the juxtaposition of biological and social

time also gains ascendency in the study of life courses and life-cycles
(Imhof, 1988; Göckenjan and von Kondratowitz, 1988). Time-budget
studies hold out continuing interest for those who want to measure
shifting uses of time across historical periods and societies (Andorka,
1987). Time has recently been discovered to offer a strategic vantage
point for studying the effects of technology (Schiray and Vinaver, 1981;
Gökalp, 1988; von Thienen, 1988).The 're-appropriation' of time by
workers and others employed in organizations with more or less rigid
time patterns has become a dominant theme in studies that aim to show
how the individual's autonomy over his/her time could be increased
(Zoll, 1988). Time and temporal rhythms also play a crucial role when
analysing urban life-styles and traffic flows (Melbin, 1987), as well as
studies ranging from societal rhythms to everyday routine practice. Ana-
lysing the family as a social group showing time patterns in many respects
yields unexpected insights combining a sociology of knowledge approach
with more familiar studies in family sociology (Lüscher and Wehrspaun,
1986). The list of examples could be continued.

   One recent fine study, full of empirical examples, has been devoted
mainly to the topic of rediscovering social rhythms and, hence, cyclical
time as contrasted with the more prevalent linear time conception
embodied in organizations and clocks alike (Young, 1988; Young and
Schuller, 1988). On a related more macrosociological level, the question
of the temporal dimensions of social change and especially of the defi-
nition and measurement of rates of change continues to pose itself. The
rapid pace of social change is obvious, yet relatively little is known about
what affects rates of change in different types of institutions and which
of their structural elements make for slower or faster changes (Jahoda,
1988). Among the driving forces for social change and acceleration which
have been identified, science and technology figure prominently. While
technology has been acknowledged for some time as a pace- if not
time-setting force, especially in connection with industrialization and the
introduction of linear clock time into the world of labour, recent studies
have focused on specific technologies, such as the advent of the telegraph
and the railroad, in triggering hitherto unknown 'needs' for social coordi-
nation. At present, information and communication technologies con-
tinue to reshape temporal experience and collective time consciousness
(Nowotny, 1989b). The standardization of local times into standard world
time is one of the prime examples for the push towards standardization
and integration also on the temporal scale (Zerubavel, 1982). Other
studies, spurred by an interest in the sociology and anthropology of
laboratory science, have attempted to show how the 'real'-life time of
high energy physicists, for instance, working with the beam time of their

accelerating machines, differs from the temporal experience of engineers engaged in designing a product (Dubinskas, 1988). On the micro-level of social life, and especially in studies of so-called everyday life, time as a research topic has also gained much attention. Everyday life offers a wealth of empirical observations, from phenomena such as 'waiting' to temporal interactions between mothers and children and to the 'denial of time' inherent in business transactions lacking 'socially expected duration' (Merton, 1982; Elchardus, 1988).

The extremely rich gamut of temporal themes in social science research could be pursued beyond the mere listing I can offer here. It becomes even more extended when considering neighbouring disciplines such as geography, social psychology, anthropology, political science and especially history and economics. Whatever the theoretical and methodological defaults of such studies may be (including their mutual ignorance), one can certainly not claim that 'time is neglected' in the social sciences. As witnessed by this brief and grossly incomplete account, temporal awareness is undoubtedly high. I would also dispute that the sometimes discontinuous nature of past work in this area, where students of time are rediscovering the topic for themselves, is still characteristic of the present state of the art. Perhaps the ready access to computer-aided literature search has helped to overcome some of the lack of institutionalization of time research. For it is this feature, in my opinion, which has to account much more than any voluntaristic explanation for the impression of fragmentation and discontinuity. 'Time' and time research is not an institutionalized subfield or subspeciality of any of the social sciences. By its very nature, it is recalcitrantly transdisciplinary and refuses to be placed under the intellectual monopoly of any discipline. Nor is time sufficiently recognized as forming an integral dimension of any of the more permanent structural domains of social life which have led to their institutionalization as research fields. Although research grants can be obtained for 'temporal topics', they are much more likely to be judged as relevant when they are presented as part of an established research field, such as studies of working time being considered a legitimate part of studies of working life or industrial relations.

Does this mean now that time has matured as a topic in the social sciences? Has it come of age? Since time does not belong to any one discipline it could provide an intellectually highly productive vehicle for the cross-fertilizaton of ideas and the transplant of concepts. Investigating, for instance, how Giddens has given empirical content to his concept of structuration by his borrowing from time–space geography and observing how his concepts in turn may infuse theoretically guided new questions, such as that of the time–space homology in geography, one gets

an impression of the kind of transfers that are not only possible but have
occurred already (in a similar vein, early and present-day anthropology
has much material to offer). The influence of philosophy on social theory,
as evidenced by some of the examples cited earlier and the process of
'sociologizing' the imported philosophical questions, would be another
instance. Chronological reasoning and the various temporal modes so
prominent in history (of which Braudel's orders of duration, eventual
and structural modes are only the best known) is yet another example.
Beyond them lie other transfers and dialogues yet to be discovered,
from linguistics to psychiatry, from literary criticism and irreversibility in
economics to the cognitive sciences (Fraser, 1989).

The innovative potential of time and human agency in weaving
together intellectually rewarding strands of thought and in opening up
new research agendas for the social sciences is in my opinion very high.
But the constraints are also equally formidable, quite apart from the
inherent and well-known difficulties that impede any kind of transdisci-
plinary research. It is the lack of institutionalization of cross-disciplinary
research which penalizes all those who stray outside the officially recog-
nized professional boundaries of their disciplines. Funding agencies, even
if they are willing to support transdisciplinary topics, require a more or
less sharp focusing upon disciplinary recognized 'problems' in order to
be persuaded to support less well institutionalized research fields.

It may well be that the problem of time in highly technologized
societies has to increase further to a clearly perceptible extent before we
shall witness a flowering of research in this area. For this is one general
conclusion that social theorists and empiricists (if this word may be used)
could readily agree upon: from Giddens's 'dual structure' to Luhmann's
concept of increasing temporal complexity which can only be selectively
reduced, to Elias's farsighted evolutionary perspective which deals also
with the emotional price that societies of individuals have to pay for
their modernization — strands of convergence could easily be constructed
with a multitude of detailed empirical investigations which show how
men and women, organizations and societies attempt to cope with the
increasing scarcity and pressure of time. 'Time famine' and 'time glut'
have indeed become a central feature of our time-compact globe (Fraser
et al., forthcoming). Social theory may, despite its occasional apparent
aloofness, hold out more promises for yielding deep insights into the
'causes' which give rise to such perceptions and definitions of 'time
problems'. It may help to put proposed solutions, of a very practical and
often also of a politically controversial nature, into a longer-term and
more distanced perspective, allowing, for instance, assessment also of
hitherto untapped but possible alternatives. When Martins criticized not

only structural functional theory, but all postfunctionalist 'successor' theories for their lack in taking up 'substantive' temporal issues, he was also pleading from the selective point of view of Third World countries for the exploration of theoretically possible alternatives or, to put it into other words, the delineation of what in the experience of western and non-western societies so far is universally valid and yet historically restricted. Such questions touch the very essence of the process of modernization. They evoke images of a closed past and an open or no longer so open future, of structures of collective memory as well as shifting collective and individual identities of people who are increasingly drawn into the processes of world-wide integration and globalization. Anthropological accounts are extremely rich in different time reckoning modes and systems, in the pluritemporalism that prevailed in pre-industrialized societies. The theory of historical time — or times — both from a western and non-western point of view still has to be written. There exists already an impressive corpus of writings analysing the rise of the new dominant 'western' concept of time and especially its links with the process of industrialization. The temporal representations underlying the different disciplines in the social sciences allow not only for a reconceptualization of their division of intellectual labour, but also for a programmatic view forward towards a 'science of multiple times' (Grossin, 1989). However, any such endeavour has to come to terms also with non-western temporal experience. It has to deal not only with questions of chronologies and their derivatives, with cultural variations and how societal experience shapes the construction of social time and temporal reference, or with what confers 'actuality' to the many possible, and culturally available, social constructions of time. But it will also have to come to terms with confronting 'the Other' (Fabian, 1983), with 'the curious asymmetry' still prevailing as a result of advanced industrial societies receiving a mainly endogenous and synchronic analytic treatment, while 'developing' societies are often seen in exogenous, diachronic terms. Study of 'Time and the Other' presupposes, often implicitly, that the Other lives in another time, or at least on a different time-scale. And indeed, when looking at the integrative but also potentially divisive 'timing' facilitated by modern communication and information-processing technology, is it not correct to say that new divisions, on a temporal scale, are being created between those who have access to such devices and those who do not? Is not one part of humanity, despite globalization, in danger of being left behind, in a somewhat anachronistic age?

There are clear signs in my opinion that the salience of time and temporal processes is on the rise in highly advanced industrialized societies. But, above all, to speak about societal time in the last decade

of the 20th century inevitably means to speak about world time. After
the colonization of space through modern technology, which began on
a large scale with the railroad in the 19th century, the colonization of
time is proceeding at an accelerated pace, turning time rapidly into the
ultimate scarce resource. Major societal transformations are linked to
information and communication technologies, giving rise to processes of
growing global interdependence. They in turn generate the approxi-
mation of coevalness, the illusion of simultaneity by being able to link
instantly people and places around the globe. Many other processes are
also accelerated. Speed and mobility are thus gaining in momentum,
leading in turn to further speeding up processes that interlink the move-
ment of people, information, ideas and goods. Yet, new social cleavages
open up at the same time, creating distinctions between 'our time' and
'their time' with clear advantages going to those who are faster, usually
through the use of modern technology, and able to utilize the 'small
difference' of being ahead to their advantage. Temporal coevalness car-
ries its share of social and economic inequalities, especially when com-
parisons are made on the global scale.

But the process of intensification and increasing density and compact-
ness in the use of time leave their profound impact also in many areas of
social life and interaction in advanced industrialized societies. Intensified
economic utilization of time is part of an ongoing process of economic
rationalization which began with industrialization, even though very dif-
ferent patterns of time management and working-time schedules prevail
now compared with the earlier linear and mechanized time regime. With
highly individualized life-styles emerging and due to women's massive
participation in the labour market, gendered time and the inability to
articulate collective time preferences have also come to the fore, putting
time onto the policy agenda. Social identities have increasing difficulty
in being construed in terms of stable social attributes in a highly mobile —
both socially and geographically — society. They will have to rely on
other, temporal dimensions, in what are becoming increasingly precari-
ous, if not completely contingent, identities in constant need of redefi-
nition. One's 'own', proper time situated in a momentous present which
is extended on the societal level in order to accommodate the pressing
overload of problems, choices and strategies, becomes a central value for
the individual as well as a characteristic of the societal system (Nowotny,
1989a). This means also that the predominantly linear time is comp-
lemented by greater awareness of cyclical times and temporal routines
which are overlapping each other. Temporal strategies, such as playing
with and utilizing the interval, come to be recognized as important
not only for strategic ends, but also to structure day-to-day temporal

performances in ways which are more meaningful to individuals. Many individuals today are articulating their wish for greater autonomy over their time, including the ability to structure time in such a way that it yields units meaningful for them and in accordance with certain types of activities embedded in their life situations. 'Event time', which can be lifted out of the ordinary routine flow of time, is increasingly valued as an end in itself. The uniqueness of the 'moment' is celebrated as one such possibility. Other temporal strategies to enhance the quality of one's own 'proper time' are also experimented with. They can be interpreted as a tribute to human agency. They take place on the level of individuals, of social groups and institutions just as much as on the level of societies. Structuring one's everyday life in a more autonomous way, suited to one's experience, life situation and needs, despite a growing interconnection of temporal coordination, is but one expression of it. Societies in their selective grasp and appropriation of past and future also face choices which have to be made. Confrontation with pressing problems, foremost of all those related to the environment, makes it more difficult to relegate those choices to a more distant future. The category of the future has lost much of its open horizon which was intimately linked to the idea of continuous human betterment and unending progress. Planning the future takes place in the present which thus becomes overloaded with choices that have to be made. In order to escape the inherent contradiction, the present is extended at the expense of the future, which shrinks. Also, this kind of structuration is a tribute to human agency.

The year 1989 was marked by 'events' whose significance goes far beyond their historical and intrinsic uniqueness. Institutions and political systems that had abrogated themselves the power to 'freeze' a past and the dogmas upon which it was built, collapsed and set free the past and now face a highly uncertain future. Yet the actual present, overloaded with conflicts between ethnicities and nations in the countries formerly under communist rule, is stretched to the extreme by having to accommodate also a selective reconstructing of the past. Which collective memories are to be preserved and how are they to be evaluated? Which new identities can be shaped with bits and pieces coming out of the shadows of history? What kind of individual and collective amnesia is to be instigated in view of both expectations towards the future and the necessity of coming to terms with the past? While 'time' here is solidly placed within the realm of 'social time' together with its con- as well as deconstruction, time in yet another context takes us beyond such confines.

I have repeatedly emphasized the unresolved problem of coming to terms with time which is not only symbolic, not only social time in the sense in which this term has predominantly been used in social theory.

My concern has been extended to address the underlying and uneasy relationship between nature and society. Nature has been incorporated into social theorizing only in as far as it either has become an object to which meaning is attributed and which hence figures as part of human reflexivity, as object met with emotions or attitudes; or, it is seen as an object of transformation by those forces which act upon it: economic forces, but foremost forces emanating from science and technology. The natural environment, including the biosphere and a multitude of environmental risks which have come to the fore today, negate clear-cut boundaries between the effects of human intervention, and hence agency, and synergistic processes which are 'natural' but still a result of human interaction with the environment. Time, it has been emphasized, is not only embedded in symbolic meaning or intersubjective social relations but also in artifacts, in natural and in culturally made ones. Likewise, the ongoing transformation and endangering of the natural environment is performed by processes which are chemical and atmospheric, biological and physical. But they all interact with social processes tied to energy production and use, modes of food production and land utilization, demographic pressures and possible interferences through use of technology. At the turn between the 19th and the 20th century, the emerging social sciences witnessed and addressed themselves to one overriding problem: the inclusion of what were then called 'the masses' into the societies of that time. They addressed the issue in conceptual and in practical terms by studying how 'the masses' were to be incorporated into the political realm, essentially by the process of extending democracy to popular participation, limited at first to the extension of universal suffrage. Their incorporation into the sphere of economics was accomplished essentially through the market mechanism and later through mass production and consumption; while in the social and cultural areas, social integration was to become a main theme for social policy, sociology and other fields. While first being persuaded that in society similar laws were at work as in the natural sciences which could be studied, but hardly counteracted, meaning, for instance, that poverty was regarded as a 'natural' consequence of industrialization and the working of the market, the social sciences (and other political actors as well as social movements) were to discover later the 'forming' of society, that it was possible to intervene and to alter the course of what no longer appeared as inevitably given (Evers and Nowotny, 1986). Today, at the turn between the 20th and the 21st century, another challenge looms large on the research horizon of the social sciences: how to incorporate, on a conceptual and practical level what, for the lack of a better term, will be called the non-human agents which are active in the natural

world as well as in the artificially created world by virtue of science and technology, which continue to interact with human agents on many different levels and in different ways (Latour, 1987).

Human agency is potentially a powerful analytic concept, but it will have to address the question of interaction with non-human agents, active within and through technology, within and through the 'natural' environment continuously transformed through human intervention. Using the concept successfully will also depend upon taking its multi-sidedness seriously. It is a multi-sidedness, or multi-perspectivism in the sense of G. H. Mead, which will have to take into account not only the differences and interlinkages among agents — human and non-human ones — but also their forms of interaction embedded into temporal processes. Past interactions continue to be activated in the present, and future expectations impinge upon present action. Both are likely to shape the future in ways that differ from what history, couched mainly in terms of time conceived for human agents, has been able to teach us so far. Social theory, which has sufficiently matured in order to confront time as a central conceptual category, will continue to be challenged by changes in social experience and the evolution of the time-compact globe. To the extent that time will be felt to become an ever more salient problem in many facets of our societies and individual lives, the pressure will mount not only to bridge social theory and concepts of time as they exist and are relevant in other disciplines but to come forth with a multi-perspectived social theory of time. But after all, what are theories if not perspectives?

Notes

1. The only institutionalized forum for regular meetings on 'time' started with the International Society for the Study of Time, founded in 1966 almost single-handedly by a dedicated scholar of the topic with a remarkable gift for persistence and interdisciplinarity: J. T. Fraser. The society has published seven volumes so far under the title 'The Study of Time' (Fraser, 1987, 1989). Only recently have other associations been founded with the aim of providing some kind of institutionalized platform, newsletter and regular meetings on time in the social sciences. The Association for Social Studies of Time (ASSET) has already organized a series of successful conferences and issues a regular newsletter; there is a Project on Time and Organization, a research group focusing on organizational time which also issues a Bulletin. A French Group located with Temps Sociaux CNRS/IRESCO under the leadership of William Grossin also publishes a regular newsletter, *Temporalistes*. In 1991 Kurt Lüscher and Helga Nowotny began a German-language newsletter,

Zeittheorie und Zeitdiagnose. For the empirically minded, The European Foundation for the Improvement of Living and Working Conditions has established the European Foundation Archive of Time Budget Data in Dublin, Ireland. Since January 1992 this journal has provided a regular outlet for publications in the field. Athough there have undoubtedly been many conferences and meetings on time outside these recently created frameworks, they have tended to retain the ad hoc character of single events without follow-up activities.

2. If this definition appears too formal for a sociologist, read what a 'constructivist' natural scientist has to say about time. 'For me it is very important that time is not confused with sequence. Sequence is a fundamental assumption which comes from experience. Since I cannot focus my attention on two things at the same time, since I cannot hold them constant, a "before" and "after" results simply from the way in which my attention functions. But this does not appear to be time. In order to construct time, I need at least two sequences. Only from the relationships between at least two sequences I can obtain a continuum which is extended. When I say A follows B, then I say, look first to B then to A. But what happens in between, does not matter. There can be thousands of years or milliseconds. Milliseconds or thousands of years I only obtain by taking another sequence and by relating the first to the second or vice versa. Then I obtain a space, in which other things happen and this gives me time, or better, a space-time. I must repeat: this here is a hypothetical thought model. It does not tell anything about what time is or could be "in reality". Piaget is completely right in my opinion, when he emphasizes that the cognitive organism could also construct a stable world picture in an ontological world which is in continuous motion (whereby stable is of course relative). In my opinion, Maturana means the same, when he describes the living organism as an inductive organization. As soon as one speaks about induction, time is already constructed, for induction in the elementary sense consists of repeating that which has worked. . .' (my translation, H.N.) (Glasersfeld, 1987:435).

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