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Contents

We have gone along with the substantiation of time so that it seems a fact of nature, a power existing in its own right. The growth of a sense of time—the acceptance of time—is a process of adaptation to an ever more reified world. It is a constructed dimension, the most elemental aspect of culture. Time's inexorable nature provides the ultimate model of domination.

All ritual is an attempt, through symbolism, to return to the timeless state. Ritual is a gesture of abstraction from that state, however, a false step that only leads further away. The "timelessness" of number is part of this trajectory, and contributes much to time as a fixed concept.

With the help of the stars, the year and its divisions exist as instruments of organizational authority (Leach 1954). The formation of a calendar is basic to the formation of a civilization. The calendar was the first symbolic artifact that regulated social behavior by keeping track of time. And what is involved is not the control of time but its opposite: enclosure by time in a world of very real alienation.

In the world of alienation no adult can contrive or decree the freedom from time that the child habitually enjoys—and must be made to lose. Time training, the essence of schooling, is vitally important to society. This training, as Fraser (1984) very cogently puts it, "bears in almost paradigmatic form the features of a civilizing process."

In addition to the general antipathy at large, however, it is possible to point out some recent specifics of opposition. The Society for the Retardation of Time was established in 1990 and has a few hundred members in four European countries. Less whimsical than it may sound, its members are committed to reversing the contemporary acceleration of time in everyday life, toward the aim of being allowed to live more satisfying lives. Michael Theunissen's *Negative Theology of Time* appeared in 1991, aimed explicitly at what it sees as the ultimate human enemy. This work has engendered a very lively debate in philosophical circles (Penta 1993), due to its demand for a negative reconsideration of time.

"Time is the one single movement appropriate to itself in all its parts," wrote Merleau-Ponty (1962). Here we see the fullness of alienation in the separated world of capital. Time is thought of by us before its parts; it thus reveals the totality. The crisis of time is the crisis of the whole. Its triumph, apparently well established, was in fact never complete as long as anyone could question the first premises of its being.

Above Lake Silviplana, Nietzsche found the inspiration for Thus Spake Zarathustra. "Six thousand feet above men and time…," he wrote in his journal. But time cannot be transcended by means of a lofty contempt for humanity, because overcoming the alienation that it generates is not a solitary project. In this sense I prefer Rexroth's (1968) formulation: "the only Absolute is the Community of Love with which Time ends."

Can we put an end to time? Its movement can be seen as the master and measure of a social existence that has become increasingly empty and technicized. Averse to all that is spontaneous and immediate, time more and more clearly reveals its bond with alienation. The scope of our project of renewal must include the entire length of this joint domination. Divided life will be replaced by the possibility of living completely and wholly— timelessly—only when we erase the primary causes of that division.

The dimension of time seems to be attracting great notice, to judge from the number of recent movies that focus on it, such as *Back to the Future*, *Terminator*, *Peggy Sue Got Married*, etc. Stephen Hawking's *A Brief History of Time* (1989) was a best-seller and became, even more surprisingly, a popular film. Remarkable, in addition to the number of books that deal with time, are the larger number which don't, really, but which feature the word in their titles nonetheless, such as Virginia Spate's *The Color of Time: Claude Monet* (1992). Such references have to do, albeit indirectly, with the sudden, panicky awareness of time, the frightening sense of our being tied to it. Time is increasingly a key manifestation of the estrangement and humiliation that characterize modern existence. It illuminates the entire, deformed landscape and will do so ever more harshly until this landscape and all the forces that shape it are changed beyond recognizing.

This contribution to the subject has little to do with time's fascination for film-makers or TV producers, or with the current academic interest in geologic conceptions of time, the history of clock technology and the sociology of time, or with personal observations and counsels on its use. Neither aspects nor excesses of time deserve as much attention as time's inner meaning and logic. For despite the fact that time's perplexing character has become, in John Michon's estimation, "almost an intellectual obsession" (1988), society is plainly incapable of dealing with it.

With time we confront a philosophical enigma, a psychological mystery, and a puzzle of logic. Not surprisingly, considering the massive reification involved, some have doubted its existence since humanity began distinguishing "time itself" from visible and tangible changes in the world. As Michael Ende (1984) put it: "There is in the world a great and yet ordinary secret. All of us are part of it, everyone is aware of it, but very few ever think of it. Most of us just accept it and never wonder over it. This secret is time."

Just what is "time"? Spengler declared that no one should be allowed to ask. The physicist Richard Feynman (1988) answered,

"Don't even ask me. It's just too hard to think about." Empirically as much as in theory, the laboratory is powerless to reveal the flow of time, since no instrument exists that can register its passage. But why do we have such a strong sense that time does pass, ineluctably and in one particular direction, if it really doesn't? Why does this "illusion" have such a hold over us? We might just as well ask why alienation has such a hold over us. The passage of time is intimately familiar, the concept of time mockingly elusive; why should this appear bizarre, in a world whose survival depends on the mystification of its most basic categories?

We have gone along with the substantiation of time so that it seems a fact of nature, a power existing in its own right. The growth of a sense of time—the acceptance of time—is a process of adaptation to an ever more reified world. It is a constructed dimension, the most elemental aspect of culture. Time's inexorable nature provides the ultimate model of domination.

The further we go in time the worse it gets. We inhabit an age of the disintegration of experience, according to Adorno. The pressure of time, like that of its essential progenitor, division of labor, fragments and disperses all before it. Uniformity, equivalence, separation are byproducts of time's harsh force. The intrinsic beauty and meaning of that fragment of the world that is not-yet-culture moves steadily toward annihilation under a single cultures-wide clock. Paul Ricoeur's assertion (1985) that "we are not capable of producing a concept of time that is at once cosmological, biological, historical and individual," fails to notice how they are converging.

Concerning this "fiction" that upholds and accompanies all the forms of imprisonment, "the world is filled with propaganda alleging its existence," as Bernard Aaronson (1972) put it so well. "All awareness," wrote the poet Denise Levertov (1974), "is an awareness of time," showing just how deeply alienated we are in time. We have become regimented under its empire, as time and alienation continue to deepen their intrusion, their debasement of everyday life. "Does this mean," as David Carr (1988) asks, "that the 'struggle'

ward for one of the basic texts of the pro-time campaign, Prigogine and Stenger's *Order Out of Chaos* (1984). Prigogine disciple Ervin Laszlo, in a bid to legitimate and extend the dogma of universally irreversible time, asks whether the laws of nature are applicable to the human world. He soon answers, in effect, his own disingenuous question (1985): "The general irreversibility of technological innovation overrides the indeterminacy of individual points of bifurcation and drives the processes of history in the observed direction from primitive tribes to modern techno-industrial states." How "scientific"! This transposition from the "laws of nature" to the social world could hardly be improved on as a description of time, division of labor, and the mega-machine crushing the autonomy or "reversibility" of human decision. Leggett (1987) expressed this perfectly: "So it would seem that the arrow of time which appears in the apparently impersonal subject of thermodynamics is intimately related to what we, as human agents, can or cannot do."

It is deliverance from "chaos" which Prigogine and others promise the ruling system, using the model of irreversible time. Capital has always reigned in fear of entropy or disorder. Resistance, especially resistance to work, is the real entropy, which time, history, and progress constantly seek to banish. Prigogine and Stenger (1984) wrote: "Irreversibility is either true on all levels or none." All or nothing, always the ultimate stakes of the game.

Since civilization subjugated humanity we have had to live with the melancholy idea that our highest aspirations are perhaps impossible in a world of steadily mounting time. The more that pleasure and understanding are deferred, moved out of reach—and this is the essence of civilization—the more palpable is the dimension of time. Nostalgia for the past, fascination with the idea of time travel, and the heated quest for increased longevity are some of the symptoms of time sickness, and there seems to be no ready cure. "What does not elapse in time is the lapse of time itself," as Merleau-Ponty (1945) realized.

supporters of reversible time in nature consider the Second Law too superficial, a secondary law not a primary one (e.g. Haken 1988, Penrose 1989). Others (e.g. Sklar 1985) find the very concept of entropy ill-defined and problematic, and, related to the charge of superficiality, it is argued that the phenomena described by the Second Law can be ascribed to particular initial conditions and do not represent the workings of a general principle (Davies 1981, Barrow 1991). Furthermore, not every pair of events that bear the "afterward" relation the one to the other bear an entropic difference. The science of complexity (with a wider scope than chaos theory) has discovered that not all systems tend toward disorder (Lewin 1992), also contrary to the Second Law. Moreover, isolated systems, in which no exchanges with the environment are allowed, display the Second Law's irreversible trend; even the universe may not be such a closed system. Sklar (1974) points out that we don't know whether the total entropy of the universe is increasing, decreasing, or remaining stationary.

Despite such aporias and objections, a movement toward an "irreversible physics" based on the Second Law is underway, with quite interesting implications. 1977 Nobel Laureate Ilya Prigogine seems to be the most tireless and public advocate of the view that there is an innate unidirectional time at all levels of existence. Whereas the fundamentals of every major scientific theory, as noted, are neutral with respect to time, Prigogine gives time a primary emphasis in the universe. Irreversibility is for him and his like-minded fellow believers an over-arching primal axiom. In supposedly nonpartisan science, the question of time has clearly become a political matter.

Prigogine (1985), in a symposium sponsored by Honda and promoting such projects as Artificial Intelligence: "Questions such as the origin of life, the origin of the universe, or the origin of matter, can no longer be discussed without recourse to irreversibility." It is no coincidence that non-scientist Alvin Toffler, America's leading cheerleader for a high-tech world, provided an enthusiastic for-

of existence is to overcome time itself?" It may be that exactly this is the last enemy to be overcome.

In coming to grips with this ubiquitous yet phantom adversary, it is somewhat easier to say what time is not. It is not synonymous, for fairly obvious reasons, with change. Nor is it sequence, or order of succession. Pavlov's dog, for instance, must have learned that the sound of the bell was followed by feeding; how else could it have been conditioned to salivate at that sound? But dogs do not possess time consciousness, so before and after cannot be said to constitute time.

Somewhat related are inadequate attempts to account for our all but inescapable sense of time. The neurologist Gooddy (1988), rather along the lines of Kant, describes it as one of our "subconscious assumptions about the world." Some have described it, no more helpfully, as a product of the imagination, and the philosopher J.J.C. Smart (1980) decided that it is a feeling that "arises out of metaphysical confusion." McTaggart (1908), F.H. Bradley (1930), and Dummett (1978) have been among 20th century thinkers who have decided against the existence of time because of its logically contradictory features, but it seems fairly plain that the presence of time has far deeper causes than mere mental confusion.

There is nothing even remotely similar to time. It is as unnatural and yet as universal as alienation. Chacalos (1988) points out that the present is a notion just as puzzling and intractable as time itself. What is the present? We know that it is always now; one is confined to it, in an important sense, and can experience no other "part" of time. We speak confidently of other parts, however, which we call "past" and "future." But whereas things that exist in space elsewhere than here continue to exist, things that don't exist now, as Sklar (1992) observes, don't really exist at all.

Time necessarily flows; without its passage there would be no sense of time. Whatever flows, though, flows with respect to time. Time therefore flows with respect to itself, which is meaningless owing to the fact that nothing can flow with respect to itself. No

vocabulary is available for the abstract explication of time apart from a vocabulary in which time is already presupposed. What is necessary is to put all the givens into question. Metaphysics, with a narrowness that division of labor has imposed from its inception, is too narrow for such a task.

What causes time to flow, what is it that moves it toward the future? Whatever it is, it must be beyond our time, deeper and more powerful. It must depend as Conly (1975) had it, "upon elemental forces which are continually in operation."

William Spanos (1987) has noted that certain Latin words for culture not only signify agriculture or domestication, but are translations from Greek terms for the spatial image of time. We are, at base, "time-binders", in Alfred Korzybski's lexicon (1948); the species, due to this characteristic, creates a symbolic class of life, an artificial world. Time-binding reveals itself in an "enormous increase in the control over nature." Time becomes real because it has consequences, and this efficacy has never been more painfully apparent.

Life, in its barest outline, is said to be a journey through time; that it is a journey through alienation is the most public of secrets. "No clock strikes for the happy one," says a German proverb. Passing time, once meaningless, is now the inescapable beat, restricting and coercing us, mirroring blind authority itself. Guyau (1890) determined the flow of time to be "the distinction between what one needs and what one has," and therefore "the incipience of regret." Carpe diem, the maxim counsels, but civilization forces us always to mortgage the present to the future.

Time aims continually toward greater strictness of regularity and universality. Capital's technological world charts its progress by this, could not exist in its absence. "The importance of time," wrote Bertrand Russell (1929), lies "rather in relation to our desires than in relation to truth." There is a longing that is as palpable as time has become. The denial of desire can be gauged no more definitively than via the vast construct we call time.

Time's arrow—irrevocable, one-direction-only time—is the monster that has proven itself more terrifying than any physical projectile. Directionless time is not time at all, and Cambel (1993) identifies time directionality as "a primary characteristic of complex systems." The time-reversible behavior of atomic particles is "generally commuted into behavior of the system that is irreversible," concluded Schlegel (1961). If not rooted in the micro world, where does time come from? Where does our time-bound world come from? It is here that we encounter a provocative analogy. The small scale world described by physics, with its mysterious change into the macro world of complex systems, is analogous to the "primitive" social world and the origins of division of labor, leading to complex, class-divided society with its apparently irreversible "progress".

A generally held tenet of physical theory is that the arrow of time is dependent on the Second Law of Thermodynamics (e.g. Reichenbach 1956), which asserts that all systems tend toward ever greater disorder or entropy. The past is thus more orderly than the future. Some proponents of the Second Law (e.g. Boltzmann 1866) have found in entropic increase the very meaning of the past-future distinction.

This general principle of irreversibility was developed in the middle decades of the 19th century, beginning with Carnot in 1824, when industrial capitalism itself reached its apparent nonreversible point. If evolution was the century's optimistic application of irreversible time, the Second Law of Thermodynamics was its pessimistic one. In its original terms, it pictured a universe as an enormous heat engine running down, where work became increasingly subject to inefficiency and disorder. But nature, as Toda (1978) noticed, is not an engine, does not work, and is not concerned with "order" or "disorder". The cultural aspect of this theory—namely, capital's fear for its future—is hard to miss.

One hundred and fifty years later, theoretical physicists realize that the Second Law and its supposed explanation of the arrow of time cannot be considered a solved problem (N,eman 1982). Many

ral order (Gribbin 1979, Lindley 1993), quantum physics has raised fundamental questions about time and causality. In the quantum microworld common acausal relationships have been discovered that transcend time and put into question the very notion of the ordering of events in time. There can be "connections and correlations between very distant events in the absence of any intermediary force or signal" which occur instantaneously (Zohar 1982, Aspect 1982). The eminent American physicist John Wheeler has called attention (1977, 1980, 1986) to phenomena in which action taken now affects the course of events that have already happened.

Gleick (1992) summed up the situation as follows: "With simultaneity gone, sequentiality was foundering, causality was under pressure, and scientists generally felt themselves free to consider temporal possibilities that would have seemed far-fetched a generation before." At least one approach in quantum physics has attempted to remove the notion of time altogether (J.G. Taylor 1972); D. Park (1972), for instance, said, "I prefer the atemporal representation to the temporal one."

The bewildering situation in science finds its match in the extremity of the social world. Alienation, like time, produces ever greater oddities and pressures: the most fundamental questions finally, almost necessarily, emerge in both cases.

St. Augustine's fifth century complaint was that he didn't understand what the measurement of time really consisted of. Einstein, admitting the inadequacy of his comment, often defined time as "what a clock measures." Quantum physics, for its part, posits the inseparability of measurer and what is measured. Via a process physicists don't claim to understand fully, the act of observation or measurement not only reveals a particle's condition but actually determines it (Pagels 1983). This has prompted Wheeler (1984) to ask, "Is everything—including time—built from nothingness by acts of observer-participancy?" Again a striking parallel, for alienation, at every level and from its origin, requires exactly such participation, virtually as a matter of definition.

Time, like technology, is never neutral; it is, as Castoriadis (1991) rightly judged, "always endowed with meaning." Everything that commentators like Ellul have said about technology, in fact, applies to time, and more deeply. Both conditions are pervasive, omnipresent, basic, and in general as taken for granted as alienation itself. Time, like technology, is not only a determining fact but also the enveloping element in which divided society develops. Similarly, it demands that its subjects be painstaking, "realistic", serious, and above all, devoted to work. It is autonomous in its overall aspect, like technology; it goes on forever of its own accord.

But like division of labor, which stands behind and sets in motion time and technology, it is, after all, a socially learned phenomenon. Humans, and the rest of the world, are synchronized to time and its technical embodiment, rather than the reverse. Central to this dimension—as it is to alienation per se—is the feeling of being a helpless spectator. Every rebel, it follows, also rebels against time and its relentlessness. Redemption must involve, in a very fundamental sense, redemption from time.

Time and the Symbolic World

"Time is the accident of accidents," according to Epicurus. Upon closer examination, however, its genesis appears less mysterious. It has occurred to many, in fact, that notions such as "the past," "the present," and "the future" are more linguistic than actual or physical. The neo-Freudian theorist Lacan, for example, decided that the time experience is essentially an effect of language. A person with no language would likely have no sense of the passage of time. R.A. Wilson (1980), moving much closer to the point, suggested that language was initiated by the need to express symbolic time. Gosseth (1972) argued that the system of tenses found in Indo-European languages developed along with consciousness of a universal or abstract time. Time and language are coterminous, decided Derrida

(1982): "to be in the one is to be in the other." Time is a symbolic construct immediately prior, relatively speaking, to all the others and which requires language for its actualization.

Paul Val,ry (1962) referred to the fall of the species into time as signalling alienation from nature; "by a sort of abuse, man creates time," he wrote. In the timeless epoch before this fall, which constituted the overwhelming majority of our existence as humans, life, as has often been said, had a rhythm but not a progression. It was the state when the soul could "gather in the whole of its being," in Rousseau's words, in the absence of temporal strictures, "where time is nothing to the soul." Activities themselves, usually of a leisurely character, were the points of reference before time and civilization; nature provided the necessary signals, quite independent of "time". Humanity must have been conscious of memories and purposes long before any explicit distinctions were drawn among past, present, and future (Fraser, 1988). Furthermore, as the linguist Whorf (1956) estimated, "preliterate ['primitive'] communities, far from being subrational, may show the human mind functioning on a higher and more complex plane of rationality than among civilized men."

The largely hidden key to the symbolic world is time; indeed it is at the origin of human symbolic activity. Time thus occasions the first alienation, the route away from aboriginal richness and wholeness. "Out of the simultaneity of experience, the event of Language," says Charles Simic (1971), "is an emergence into linear time." Researchers such as Zohar (1982) consider faculties of telepathy and precognition to have been sacrificed for the sake of evolution into symbolic life. If this sounds far-fetched, the sober positivist Freud (1932) viewed telepathy as quite possibly "the original archaic means through which individuals understand one another." If the perception and apperception of time relate to the very essence of cultural life (Gurevich 1976), the advent of this time sense and its concomitant culture represent an impoverishment, even a disfigurement, by time.

exist and, in reverse, comes into existence. So why is our world asymmetric in time? Why can't it go backward as well as forward? This is a paradox, inasmuch as the individual molecular dynamics are all reversible. The main point, to which I will return later, is that time's arrow reveals itself as complexity develops, in striking parallel with the social world.

The flow of time manifests itself in the context of future and past, and they in turn depend on a referent known as the now. With Einstein and relativity, it is clear that there is no universal present: we cannot say it is "now" throughout the universe. There is no fixed interval at all that is independent of the system to which it refers, just as alienation is dependent on its context.

Time is thus robbed of the autonomy and objectivity it enjoyed in the Newtonian world. It is definitely more individually delineated, in Einstein's revelations, than the absolute and universal monarch it had been. Time is relative to specific conditions and varies according to such factors as speed and gravitation. But if time has become more "decentralized", it has also colonized subjectivity more than ever before. As time and alienation have become the rule throughout the world, there is little solace in knowing that they are dependent on varying circumstances. The relief comes in acting on this understanding; it is the invariance of alienation that causes the Newtonian model of independently flowing time to hold sway within us, long after its theoretical foundations were eliminated by relativity.

Quantum theory, dealing with the smallest parts of the universe, is known as the fundamental theory of matter. The core of quantum theory follows other fundamental physical theories, like relativity, in making no distinction in the direction of time (Coveny and Highfield 1990). A basic premise is indeterminism, in which the movement of particles at this level is a matter of probabilities. Along with such elements as positrons, which can be regarded as electrons moving backward in time, and tachyons, faster-than-light particles that generate effects and contexts reversing the tempo-

useful to science, is a theoretical construct. "The laws of science," Stephen Hawking (1988) explained, "do not distinguish between past and future." Einstein had gone further than this some thirty years earlier; in one of his last letters, he wrote that "People like us, who believe in physics, know that the distinction between past, present and future is only a stubborn, persistent illusion." But science partakes of society in other ways concerning time, and very deeply. The more "rational" it becomes, the more variations in time are suppressed. Theoretical physics geometrizes time by conceiving it as a straight line, for example. Science does not stand apart form the cultural history of time.

As implied above, however, physics does not contain the idea of a present instant of time that passes (Park 1972). Furthermore, the fundamental laws are not only completely reversible as to the 'arrow of time'—as Hawking noted—but "irreversible phenomena appear as the result of the particular nature of our human cognition," according to Watanabe (1953). Once again we find human experience playing a decisive role, even in this most "objective" realm. Zee (1992) put it this way: "Time is that one concept in physics we can't talk about without dragging in, at some level, consciousness."

Even in seemingly straightforward areas ambiguities exist where time is concerned. While the complexity of the most complex species may increase, for example, not all species become more complex, prompting J.M. Smith (1972) to conclude that it is "difficult to say whether evolution as a whole has a direction."

In terms of the cosmos, it is argued, "time's arrow" is automatically indicated by the fact that the galaxies are receding away from each other. But there seems to be virtual unanimity that as far as the basics of physics are concerned, the "flow" of time is irrelevant and makes no sense; fundamental physical laws are completely neutral with regard to the direction of time (Mehlberg 1961, 1971, Landsberg 1982, Squires 1986, Watanabe 1953, 1956, Swinburne 1986, Morris 1984, Mallove 1987, D'Espagnant 1989, etc.). Modern physics even provides scenarios in which time ceases to

The consequences of this intrusion of time, via language, indicate that the latter is no more innocent, neutral, or assumption-free than the former. Time is not only, as Kant said, at the foundation of all our representations, but, by this fact, also at the foundation of our adaptation to a qualitatively reduced, symbolic world. Our experience in this world is under an all-pervasive pressure to be representation, to be almost unconsciously degraded into symbols and measurements. "Time", wrote the German mystic Meister Eckhart, "is what keeps the light from reaching us."

Time awareness is what empowers us to deal with our environment symbolically; there is no time apart from this estrangement. It is by means of progressive symbolization that time becomes naturalized, becomes a given, is removed from the sphere of conscious cultural production. "Time becomes human in the measure to which it becomes actualized in narrative," is another way of putting it (Ricoeur 1984). The symbolic accretions in this process constitute a steady throttling of instinctive desire; repression develops the sense of time unfolding. Immediacy gives way, replaced by the mediations that make history possible—language in the forefront.

One begins to see past such banalities as "time is an incomprehensible quality of the given world" (Sebba 1991). Number, art, religion make their appearances in this "given" world, disembodied phenomena of reified life. These emerging rites, in turn, Gurevitch (1964) surmises, lead to "the production of new symbolic contents, thus encouraging time leaping forward." Symbols, including time, of course, now have lives of their own, in this cumulative, interacting progression. David Braine's *The Reality of Time and the Existence of God* (1988) is illustrative. It argues that it is precisely time's reality which proves the existence of God; civilization's perfect logic.

All ritual is an attempt, through symbolism, to return to the timeless state. Ritual is a gesture of abstraction from that state, however, a false step that only leads further away. The "timelessness"

of number is part of this trajectory, and contributes much to time as a fixed concept. In fact, Blumenberg (1983) seems largely correct in assaying that "time is not measured as something that has been present all along; instead it is produced, for the first time, by measurement." To express time we must, in some way, quantify it; number is therefore essential. Even where time has already appeared, a slowly more divided social existence works toward its progressive reification only by means of number. The sense of passing time is not keen among tribal peoples, for example, who do not mark it with calendars or clocks.

Time: an original meaning of the word in ancient Greek is division. Number, when added to time, makes the dividing or separating that much more potent. The non-civilized often have considered it "unlucky" to count living creatures, and generally resist adopting the practice (e.g. Dobrizhoffer 1822). The intuition for number was far from spontaneous and inevitable, but "already in early civilizations," Schimmel (1992) reports, "one feels that numbers are a reality having as it were a magnetic power field around them." It is not surprising that among ancient cultures with the strongest emerging senses of time—Egyptian, Babylonian, Mayan—we see numbers associated with ritual figures and deities; indeed the Mayans and Babylonians both had number gods (Barrow 1992).

Much later the clock, with its face of numbers, encouraged society to abstract and quantify the experience of time still further. Every clock reading is a measurement that joins the clock watcher to the "flow of time." And we absently delude ourselves that we know what time is because we know what time it is. If we did away with clocks, Shallis (1982) reminds us, objective time would also disappear. More fundamentally, if we did away with specialization and technology, alienation would be banished.

The mathematizing of nature was the basis for the birth of modern rationalism and science in the West. This had stemmed from demands for number and measurement in connection with similar teachings about time, in the service of mercantile capitalism. The

because of the many parallels between scientific theory and human affairs.

"Time," decided N.A. Kozyrev (1971), "is the most important and the most mysterious phenomenon of Nature. Its notion is beyond the grasp of imagination." Some scientists, in fact, have felt (e.g. Dingle 1966) that "all the real problems associated with the notion of time are independent of physics." Science, and physics in particular, may indeed not have the last word; it is another source of commentary, however, though itself alienated and generally indirect.

Is "physical time" the same as the time of which we are conscious; if not, how does it differ? In physics, time seems to be an undefined basic dimension, as much a taken-for-granted given as it is outside the realm of science. This is one way to remind ourselves that, as with every other kind of thinking, scientific ideas are meaningless outside their cultural context. They are symptoms of and symbol for the ways of living that give rise to them. According to Nietzsche, all writing is inherently metaphorical, even though science is rarely looked at this way. Science has developed by drawing an increasingly sharp separation between inner and outer worlds, between dream and "reality". This has been accomplished by the mathematization of nature, which has largely meant that the scientist proceeds by a method that debars him or her from the larger context, including the origins and significance of his/her projects. Nonetheless, as H.P. Robinson (1964) stated, "the cosmologies which humanity has set up at various times and in various localities inevitably reflect the physical and intellectual environment, including above all the interests and culture of each society."

Subjective time, as P.C.W. Davies pointed out (1981), "possesses apparent qualities that are absent from the 'outside' world and which are fundamental to our conception of reality"—principally the "passing" of time. Our sense of separation from the world owes largely to this discrepancy. We exist in time (and alienation), but time is not found in the physical world. The time variable, though

In his Critique of Cynical Reason (1987), Peter Sloterdijk called for the "radical recognition of the Id without reservation," a narcissistic self-affirmation that would laugh in the face of morose society. Narcissism has of course traditionally been cast as wicked, the "heresy of self-love." In reality that meant it was reserved for the ruling classes, while all others (workers, women, slaves) had to practice submission and self-effacement (Fine 1986). The narcissist symptoms are feelings of emptiness, unreality, alienation, life as no more than a succession of moments, accompanied by a longing for powerful autonomy and self-esteem (Alford 1988, Grunberger 1979). Given the appropriateness of these "symptoms" and desires it is little wonder that narcissism can be seen as a potentially emancipatory force (Zweig 1980). Its demand for total satisfaction is obviously a subversive individualism, at a minimum.

The narcissist "hates time, denies time" (letter to author, Alford 1993) and this, as always, provokes a severe reaction from the defenders of time and authority. Psychiatrist E. Mark Stern (1977), for instance: "Since time begins beyond one's control one must correspond to its demands… Courage is the antithesis of narcissism." This condition, which certainly may include negative aspects, contains the germ of a different reality principle, aiming at the nontime of perfection wherein being and becoming are one and including, implicitly, a halt to time.

Time in Science

> I'm not a scientist but I do know that all things begin and end in eternity.
>
> *The Man Who Fell to Earth*, Walter Tevis

Science, for our purposes, does not comment on time and estrangement with anywhere near the directness of, say, psychology. But science can be re-construed to shed light on the topic at hand,

continuity of number and time as a geometrical locus were fundamental to the Scientific Revolution, which projected Galileo's dictum to measure all that is measurable and make measurable that which is not. Mathematically divisible time is necessary for the conquest of nature, and for even the rudiments of modern technology.

From this point on, number-based symbolic time became crushingly real, an abstract construction "removed from and even contrary to every internal and external human experience" (Syzamosi 1986). Under its pressure, money and language, merchandise and information have become steadily less distinguishable, and division of labor more extreme.

To symbolize is to express time consciousness, for the symbol embodies the structure of time (Darby 1982). Clearer still is Meerloo's formulation: "To understand a symbol and its development is to grasp human history in a nutshell." The contrast is the life of the non-civilized, lived in a capacious present that cannot be reduced to the single moment of the mathematical present. As the continual now gave way to increasing reliance upon systems of significant symbols (language, number, art, ritual, myth) dislodged from the now, the further abstraction, history, began to develop. Historical time is no more inherent in reality, no less an imposition on it, than the earlier, less choate forms of time.

In a slowly more synthetic context, astronomical observation is invested with new meanings. Once pursued for its own sake, it comes to provide the vehicle for scheduling rituals and coordinating the activities of complex society. With the help of the stars, the year and its divisions exist as instruments of organizational authority (Leach 1954). The formation of a calendar is basic to the formation of a civilization. The calendar was the first symbolic artifact that regulated social behavior by keeping track of time. And what is involved is not the control of time but its opposite: enclosure by time in a world of very real alienation. One recalls that our word comes from the Latin calends, the first day of the month, when business accounts had to be settled.

Time to Pray, Time to Work

"No time is entirely present," said the Stoic Chrysippus, and meanwhile the concept of time was being further advanced by the underlying Judeo-Christian tenet of a linear, irreversible path between creation and salvation. This essentially historical view of time is the very core of Christianity; all the basic notions of measurable, one-way time can be found in St. Augustine's (fifth century) writings. With the spread of the new religion the strict regulation of time, on a practical plane, was needed to help maintain the discipline of monastic life. Bells summoning the monks to prayer eight times daily were heard far beyond the confines of the cloister, and thus a measure of time regulation was imposed on society at large. The population continued to exhibit "une vaste indiffrance au temps" throughout the feudal era, according to Marc Bloch (1940), but it is no accident that the first public clocks adorned cathedrals in the West. Worth noting in this regard is the fact that the calling of precise prayer times became the chief externalization of medieval Islamic belief.

The invention of the mechanical clock was one of the most important turning points in the history of science and technology; indeed of all human art and culture (Synge 1959). The improvement in accuracy presented authority with enhanced opportunities for oppression. An early devotee of elaborate mechanical clocks, for example, was Duke Gian Galeazzo Visconti, described in 1381 as "a sedate but crafty ruler with a great love of order and precision" (Fraser 1988). As Weizenbaum (1976) wrote, the clock began to create "literally a new reality…that was and remains an impoverished version of the old one."

A qualitative change was introduced. Even when nothing was happening, time did not cease to flow. Events, from this era on, are put into this homogeneous, objectively measured, moving envelope—and this unilinear progression incited resistance. The most extreme were the chiliast, or millenarian, movements, which

Capek (1961) called time "a huge and chronic hallucination of the human mind"; there are few experiences indeed that can be said to be timeless. Orgasm, LSD, a life "flashing before one's eyes" in a moment of extreme danger…these are some of the rare, evanescent situations intense enough to escape from time's insistence.

Timelessness is the ideal of pleasure, wrote Marcuse (1955). The passage of time, on the other hand, fosters the forgetting of what was and what can be. It is the enemy of eros and deep ally of the order of repression. The mental processes of the unconscious are in fact timeless, decided Freud (1920). "…time does not change them in any way and the idea of time cannot be applied to them." Thus desire is already outside of time. As Freud said in 1932: "There is nothing in the Id that corresponds to the notion of time; there is no recognition of the passage of time."

Marie Bonaparte (1939) argued that time becomes ever more plastic and obedient to the pleasure principle insofar as we loosen the bonds of full ego control. Dreams are a form of thinking among non-civilized peoples (Kracke 1987); this faculty must have once been much more accessible to us. The Surrealists believed that reality could be much more fully understood if we could make the connection to our instinctive, subconscious experiences; Breton (1924), for example, proclaimed the radical goal of a resolution of dream and conscious reality.

When we dream the sense of time is virtually nonexistent, replaced by a sensation of presentness. It should come as no surprise that dreams, which ignore the rules of time, would attract the notice of those searching for liberatory clues, or that the unconscious, with its "storms of impulse" (Stern 1977), frightens those with a stake in the neurosis we call civilization. Norman O. Brown (1959) saw the sense of time or history as a function of repression; if repression were abolished, he reasoned, we would be released from time. Similarly, Coleridge (1801) recognized in the man of "methodical industry" the origin and creator of time.

according to Arlow (1986), who believed that our experience of time arises out of unfulfilled emotional needs. Similarly, Reichenbach (1956) had termed anti-time philosophies, like religion, "documents of emotional dissatisfaction." In Freudian terms, Bergler and Roheim (1946) saw the passage of time as symbolizing separation periods originating in early infancy. "The calendar is an ultimate materialization of separation anxiety." If informed by a critical interest in the social and historical context, the implications of these undeveloped points could become serious contributions. Confined to psychology, however, they remain limited and even misleading.

In the world of alienation no adult can contrive or decree the freedom from time that the child habitually enjoys—and must be made to lose. Time training, the essence of schooling, is vitally important to society. This training, as Fraser (1984) very cogently puts it, "bears in almost paradigmatic form the features of a civilizing process." A patient of Joost Meerlo (1966) "expressed it sarcastically: 'Time is civilization,' by which she meant that scheduling and meticulousness were the great weapons used by adults to force the youngsters into submission and servility." Piaget's studies (1946, 1952) could detect no innate sense of time. Rather, the abstract notion of "time" is of considerable difficulty to the young. It is not something they learn automatically; there is no spontaneous orientation toward time (Hermelin and O'Connor 1971, Voyat 1977).

Time and tidy are related etymologically, and our Newtonian idea of time represents perfect and universal ordering. The cumulative weight of this ever more pervasive pressure shows up in the increasing number of patients with time anxiety symptoms (Lawson 1990). Dooley (1941) referred to "the observed fact that people who are obsessive in character, whatever their type of neurosis, are those who make most extensive use of the sense of time…" Pettit's "Anality and Time" (1969) argued convincingly for the close connection between the two, as Meerloo (1966), citing the character and achievements of Mussolini and Eichmann, found "a definite connection between time compulsion and fascistic aggression."

appeared in various parts of Europe from the 14th into the 17th centuries. These generally took the form of peasant risings which aimed at recreating the primal egalitarian state of nature and were explicitly opposed to historical time. These utopian explosions were quelled, but remnants of earlier time concepts persisted as a "lower" stratum of folk consciousness in many areas.

During the Renaissance, domination by time reached a new level as public clocks now tolled all twenty-four hours of the day and added new hands to mark the passing seconds. A keen sense of time's all-consuming presence is the great discovery of the age, and nothing portrays this more graphically than the figure of Father Time. Renaissance art fused the Greek god Kronos with the Roman god Saturn to form the familiar grim deity representing the power of Time, armed with a fatal scythe signifying his association with agriculture/domestication. The Dance of Death and other medieval memento mori artifacts preceded Father Time, but the subject is now time rather than death.

The seventeenth century was the first in which people thought of themselves as inhabiting a particular century. One now needed to take one's bearings within time. Francis Bacon's *The Masculine Birth of Time* (1603) and *A Discourse Concerning a New Planet* (1605) embraced the deepening dimension and revealed how a heightened sense of time could serve the new scientific spirit. "To choose time is to save time," he wrote, and "Truth is the daughter of time." Descartes followed, introducing the idea of time as limitless. He was one of the first advocates of the modern idea of progress, closely related to that of unbounded linear time, and characteristically expressing itself in his famous invitation that we become "masters and possessors of nature."

Newton's clockwork universe was the crowning achievement of the Scientific Revolution in the seventeenth century, and was grounded in his conception of "Absolute, true and mathematical time, of itself and from its own nature, flowing equably without relation to anything eternal." Time is now the grand ruler, answer-

ing to no one, influenced by nothing, completely independent of the environment: the model of unassailable authority and perfect guarantor of unchanging alienation. Classical Newtonian physics in fact remains, despite changes in science, the dominant, everyday conception of time.

The appearance of independent, abstract time found its parallel in the emergence of a growing, formally free working class forced to sell its labor power as an abstract commodity on the market. Prior to the coming of the factory system but already subject to time's disciplinary power, this labor force was the inverse of the monarch Time: free and independent in name only. In Foucault's judgment (1973), the West had become a "carceral society" from this point on. Perhaps more directly to the point is the Balkan proverb, "A clock is a lock."

In 1749 Rousseau threw away his watch, a symbolic rejection of modern science and civilization. Somewhat more in the dominant spirit of the age, however, were the gifts of fifty-one watches to Marie Antoinette upon her engagement. The word is certainly appropriate, as people had to "watch" the time more and more; watches would soon become one of the first consumer durables of the industrial era.

William Blake and Goethe both attacked Newton, the symbol of the new time and science, for his distancing of life from the sensual, his reduction of the natural to the measurable. Capitalist ideologue Adam Smith, on the other hand, echoed and extended Newton, by calling for greater rationalization and routinization. Smith, like Newton, labored under the spell of an increasingly powerful and remorseless time in promoting further division of labor as objective and absolute progress.

The Puritans had proclaimed waste of time the first and in principle the deadliest of sins (Weber 1921); this became, about a century later, Ben Franklin's "Time is money." The factory system was initiated by clockmakers and the clock was the symbol and found

and so is his Murphy (1957), in which time becomes reversible in the mind of the main character. When the clock may go either way, our sense of time, and time itself, vanishes.

The Psychology of Time

Turning to what is commonly called psychology, we again come upon one of the most fundamental questions: Is there really a phenomenon of time that exists apart from any individual, or does it reside only in one's perceptions of it? Husserl, for example, failed to show why consciousness in the modern world seems to inevitably constitute itself in time. We know that experiences, like events of every other kind, are neither past, present nor future in themselves.

Whereas there was little sociological interest in time until the 1970s, the number of studies of time in the literature of psychology has increased rapidly since 1930 (Lauer 1988). Time is perhaps hardest of all to define "psychologically". What is time? What is the experience of time? What is alienation? What is the experience of alienation? If the latter subject were not so neglected the obvious interrelationship would be made clear.

Davies (1977) termed time's passage "a psychological phenomenon of mysterious origin" and concluded (1983), "the secret of mind will only be solved when we understand the secret of time." Given the artificial separation of the individual from society, which defines their field, it is inevitable that such psychologists and psychoanalysts as Eissler (1955), Loewald (1962), Namnum (1972), and Morris (1983) have encountered "great difficulties" in studying time!

At least a few partial insights have been achieved, however. Hartcollis (1983), for instance, noted that time is not only an abstraction but a feeling, while Korzybski (1948) had already taken this further with his observation that "'time' is a feeling, produced by conditions of this world..." In all our lives we are "waiting for Godot,"

The disorientation of an age wracked by time and subject to the acceleration of history has led modern writers to deal with time from new and extreme points of view. Proust delineated interrelationships among events that transcended conventional temporal order and thus violated Newtonian conceptions of causation. His thirteen-volume A la Recherche du Temps Perdu (1925), usually rendered in English as Remembrance of Things Past, is more literally and accurately translated as Searching for Lost Time. In it he judges that "a minute freed from the order of time has recreated in us…the individual freed from the order of time," and recognizes "the only environment in which one could live and enjoy the essence of things, that is to say, entirely outside time."

Philosophy in the twentieth century has been largely preoccupied with time. Consider the misguided attempts to locate authentic time by thinkers as different as Bergson and Heidegger, or the latter's virtual deification of time. A.A. Mendilow's *Time and the Novel* (1952) reveals how the same intense interest has dominated the novels of the century, in particular those of Joyce, Woolf, Conrad, James, Gide, Mann, and of course, Proust. Other studies, such as Church's *Time and Reality* (1962), have expanded this list of novelists to include, among others, Kafka, Sartre, Faulkner, and Vonnegut.

And of course time-struck literature cannot be confined to the novel. T.S. Eliot's poetry often expressed a yearning to escape time-bound, time-ridden conventionality. "Burnt Norton" (1941) is a good example, with these lines:

> Time past and time future
>
> Allow but a little consciousness.
>
> To be conscious is not to be in time.

Samuel Beckett, early in his career (1931), wrote pointedly of "the poisonous ingenuity of Time in the science of affliction." The play Waiting for Godot (1955) is an obvious candidate in this regard,

tainhead of the order, discipline and repression required to create an industrial proletariat.

Hegel's grand system in the early 19th century heralded the "push into time" that is History's momentum; time is our "destiny and necessity," he declared. Postone (1993) noted that the "progress" of abstract time is closely tied to the "progress" of capitalism as a way of life. Waves of industrialism drowned the resistance of the Luddites; appraising this general period, Lyotard (1988) decided that "the illness of time was now incurable."

An increasingly complex class society requires an ever larger array of time signals. Fights against time, as Thompson (1967) and Hohn (1984) have pointed out, gave way to struggles over time; resistance to being yoked to time and its inherent demands was defeated in general, replaced, typically, by disputes over the fair determination of time schedules or the length of the work day. (In an address to the First International (July 28, 1868), Karl Marx advocated, by the way, age nine as the time to begin work.)

The clock descended from the cathedral, to court and courthouse, next to the bank and railway station, and finally to the wrist and pocket of each decent citizen. Time had to become more "democratic" in order to truly colonize subjectivity. The subjection of outer nature, as Adorno and others have understood, is successful only in the measure of the conquest of inner nature. The unleashing of the forces of production, to put it another way, depended on time's victory in its long-waged war on freer consciousness. Industrialism brought with it a more complete commodification of time, time in its most predatory form yet. It was this that Giddens (1981) saw as "the key to the deepest transformations of day-to-day social life that are brought about by the emergence of capitalism."

"Time marches on," as the saying goes, in a world increasingly dependent on time and a time increasingly unified. A single giant clock hangs over the world and dominates. It pervades all; in its court there is no appeal. The standardization of world time marks a victory for the efficient/machine society, a universalism that un-

does particularity as surely as computers lead to homogenization of thought.

Paul Virilio (1986) has gone so far as to foresee that "the loss of material space leads to the government of nothing but time." A further provocative notion posits a reversal of the birth of history out of maturing time. Virilio (1991), in fact, finds us already living within a system of technological temporality where history has been eclipsed. "…the primary question becomes less one of relations to history than one of relations to time."

Such theoretical flights aside, however, there is ample evidence and testimony as to time's central role in society. In "Time — The Next Source of Competitive Advantage" (July-August, 1988 *Harvard Business Review*), George Stark, Jr. discusses it as pivotal in the positioning of capital: "As a strategic weapon, time is the equivalent of money, productivity, quality, even innovation." Time management is certainly not confined to the corporations; Levine's 1985 study of publicly accessible clocks in six countries demonstrated that their accuracy was an exact gauge of the relative industrialization of national life. Paul Adler's January-February, 1993 *Harvard Business Review* offering, "Time-and-Motion Regained," nakedly champions the neo-Taylorist standardization and regimentation of work: behind the well-publicized "workplace democracy" window dressing in some factories remains the "time-and-motion discipline and formal bureaucratic structures essential for efficiency and quality in routine operations."

Time in Literature

It is clear that the advent of writing facilitated the fixation of time concepts and the beginning of history. But as the anthropologist Goody (1991) points out, "oral cultures are often only too prepared to accept these innovations." They have already been conditioned, after all, by language itself. McLuhan (1962) discussed how

the coming of the printed book, and mass literacy, reinforced the logic of linear time.

Life was steadily forced to adapt. "For now hath time made me his numbering clock," wrote Shakespeare in Richard II. "Time", like "rich", was one of the favorite words of the Bard, a time-haunted figure. A hundred years later, Defoe's *Robinson Crusoe* reflected how little escape from time seemed possible. Marooned on a desert island, Crusoe is deeply concerned with the passage of time; keeping close track of his affairs, even in such a setting, meant above all keeping track of the time, especially as long as his pen and ink lasted.

Northrop Frye (1950) saw the "alliance of time and Western man" as the defining characteristic of the novel. Ian Watt's *The Rise of the Novel* (1957) likewise focused on the new concern with time that stimulated the novel's emergence in the eighteenth century. As Jonathan Swift told it in *Gulliver's Travels* (1726), his protagonist never did anything without looking at his watch. "He called it his oracle, and said it pointed out the time for every action of his life." The Lilliputians concluded that the watch was Gulliver's god. Sterne's Tristram Shandy (1760), on the eve of the Industrial Revolution, begins with the mother of Tristram interrupting his father at the moment of their monthly coitus: "'Pray, my dear,' quoth my mother, 'have you not forgot to wind up the clock?'"

In the nineteenth century Poe satirized the authority of clocks, linking them to bourgeois superficiality and obsession with order. Time is the real subject of Flaubert's novels, according to Hauser (1956), as Walter Pater (1901) sought in literature the "wholly concrete moment" which would "absorb past and future in an intense consciousness of the present," similar to Joyce's celebration of "epiphanies". In *Marius the Epicurean* (1909), Pater depicts Marius suddenly realizing "the possibility of a real world beyond time." Meanwhile Swinburne looked for a respite beyond "time-stricken lands" and Baudelaire declared his fear and hatred of chronological time, the devouring foe.