

# Future Shock – Discussing the Changing Temporal Architecture of Daily Life<sup>1</sup>

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## Abstract

*Alvin Toffler's classic book Future Shock (1970) argued that in our world of ever-quickenning change, the human mind is threatened by shattering. Almost forty years after its publication, the book still feels fresh. Based on interviews with experts, the book became a bestseller in the field of futures studies, and defined futures studies for many decades to come. (Paradoxically, the apex of futures studies has been slow to change although the world is said to be changing faster than ever.) It is hardly a coincidence that the publication of Future Shock took place at precisely the time the first few international comparative studies of time use were published. This article addresses Toffler's claim of the acceleration of our everyday life rhythms in the light of international empirical time use studies. In addition, it pays attention to more recent theoretical developments aiming to understand social rhythms.*

**Keywords:** future shock, Toffler, time use studies, rhythm analysis

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## Future Shock!

In the early 1970s, Alvin Toffler's book *Future Shock* brought the radical change in the use and perception of time into the center of futures studies. The book sold six million copies and can be regarded as one of the first bestsellers in futures studies (Strathern, 2007 & 2008)<sup>2</sup>. The main purpose of this article is to examine, in the light of time-use research, to what extent and in what ways Toffler's claims about the quickening of life rhythms have come true. Since *Future Shock* free time has increased in western countries and national time-use accounting shows that leisure time has increased slowly but steadily over almost the entire western world since the 1970s<sup>3</sup>. Paradoxically, at the same time, feelings of hurriedness have consistently increased (Michelson, 2005; Robinson & Godbey, 1997; Southerton, 2006). Pantzar and Shove (2010a) suggest that the paradox of increased leisure time and feelings of hurriedness become understandable when the focus is shifted from the total amount of free time (and duration of activities) to qualitative changes in rhythms resulting

from various interdependencies between mundane activities. Following from this view, the second purpose of this article is to speculate upon what sort of theoretical approaches would be needed to increase understanding of the changing rhythms of everyday life. In accordance, the article is divided into two parts. The first part studies, on the basis of time use research, to what extent Toffler's suggestion of acceleration of life has taken place. On the basis of these findings, the second part of the article sketches elements of emerging rhythm analysis.

The book *Future Shock* (1970), published a few years before the 1973 oil crisis, bundled together many topical phenomena that have materialized since. Toffler talked about human relationships, for instance, becoming disposable and about the increasing shift of firms from hierarchical managerial styles to *ad hoc* management, and also to short-term employment contracts. As will be seen at the end of this paper, the sections discussing the mutual rapprochement of consumers and producers ("prosumer") are closely related to early 21<sup>st</sup> century ideas of 'value co-creation' (Prahalad & Ramaswamy, 2002) and 'open innovations' (Chesbrough, 2006). Yet, it is rather challenging to assess Toffler's arguments in the light of empirical research. The international comparative study of Levine and Norenzayan (1999), for instance, supports the thesis that the rhythms quicken as the economy develops. They argue that the best predictor of frenetic rhythms is the degree of vitality of the economy, a cold climate, and a central place accorded to individualism<sup>4</sup>. Studies like this are rare, and it should be remembered, as Rosa (2003) points out, that Western Societies' apparently fast pace of change is possibly a surface phenomenon beneath which we find intended (slow food) and unintended (traffic jams) inertia<sup>5</sup>.

After Toffler, the issues of time use and changing rhythms have not been emphasized in futures studies with the same vigor. Graham Molitors' articles (2008a & 2008b) about the oncoming of the "Leisure Era", James Gleick's *Faster* (1999), and Leon Kreitzman's *The 24 Hour Society* (1999) are refreshing exceptions. This genre also includes research-based discussion of slower living (e.g., Parkins & Craig, 2006) and narratives of experience society (e.g. Jensen's (1999) *The Dream Society*, and Pine and Gilmore's (1999) *The Experience Economy*). This genre does, however, connect only minimally to a wide literature dealing with historical and social studies of rhythms (e.g. Hall, 1984; Zerubavel, 2001), time-use studies (e.g. Gershuny's (2000) extensive work) - the main empirical source of this article -, or rhythms analysis that already originated as early as a hundred years ago (Lefebvre, 2004; Meyer, 2008; Miller, 2004). Before going into the empirical part of the article, a few words about rhythm analysis are provided to frame the general focus of this article.

The notion of 'rhythm analysis' was originally developed by the Brazilian philosopher Lucio Alberto Pinheiro dos Santos in the early 1930s. The first bars of rhythm analysis were played when researchers became interested in the quickening rhythm and the new kind of mass movement brought about by big-city culture ("modern life") (c.f. Le Corbusier, 1987), and the new collective transportation systems (Mels, 2004). At the same time, the tension between social time and clock time became the topic of research contributions by Lewis Mumford (1934 & 1964), city researcher and philosopher of technology; Pitirim Sorokin, sociologist of long cycles; and Robert Merton, sociologist of science (Sorokin & Merton, 1937).

Since then the eminent French philosopher Henri Lefebvre (2004) has probably been the most prominent developer of 'rhythm analysis'. His *Rhythm analysis, space, time and everyday life* (2004), which was published posthumously, suggests that violence and wars are, in essence, the consequences of the incompatibility of the social rhythms generated by different systems of routines. Other more recent contributions to rhythm analysis have been made by William McNeill, an American history professor, in his book *Keeping together in time* (1995), and Paul Miller, media artist, in his book *Rhythm Science* (2004)<sup>6</sup>. Interestingly, today it is media artists who are the first to develop fresher ways of recording and mapping people's everyday movements by means of different information-technological trackers ("emotion mapping", "biomapping") (Galloway, 2004). The active role of artists also has important political consequences. For instance, the notion of the 'social choreography' emerging from dance studies (Klien, 2007; c.f. Thrift, 2008) has been employed to replace the concept of "social engineering", and thus moving the notion of steering and ordering a larger system away from mechanical thinking into the realm of social creativity, aesthetics and performance.

Paul Miller (2004, p.16) (a.k.a DJ Spooky), is caught up by the media, and our novel ability to 're-rhythm' our social life by means of the new technologies: "Music like hip-hop and electronics is about theater: how people live to the sounds". Media artists use social material as their raw material and create novel identities in the process. But ordinary people, too, will start to make rhythmical movements and workaday algorithms: "At the end of the day, it's all about reprocessing the world around you, and this will happen no matter how hard entertainment conglomerates and older generation artists tries to control these processes" (Miller, 2004, p.29).

Miller's speculative views about algorithms of everyday life have interesting commonalities with both cyclic and spiral macrohistorical views developed within futures studies during the last few decades (c.f. Daffara, 2004; Galtung & Inayatullah, 1997). Indeed, historically evolving self-referential and self-sustaining networks are at the core of Lovelock's Gaia (1991) hypothesis, and chronobiology (Koukkari & Sothorn, 2006). According to Lovelock, the earth behaves functionally as self-regulating single super-organism. Theoretically quite similar views can be found from a growing body of literature on biological (molecular) clocks suggesting that natural rhythms of various scales are typically based on self-sustaining networks. In boldly extending these ideas to the social realm, I suggest that, indeed, behavioral rhythms, like those of sleeping or grooming, might also be viewed as self-sustaining networks. The seemingly autonomous role of the biological clock or earth as a self-regulating entity, are explained in terms of feedback effects. It remains to be seen whether rhythm analysis and new surveillance technology (RFID, GPS etc.) help social scientists or ordinary people to identify feedback leading to rhythmic patterns of the masses (c.f. Borch, 2005; Latour, 2009).

The rhythms of each one of us are simultaneously determined both internally and externally: "In one day in the modern world, everybody does more or less the same things at more or less the same times, but each person is really alone in doing it." (Lefebvre, 2004, p.75). The fact that most Europeans wake up at about seven a.m., eat round noon, and go to bed around eleven p.m. (European Commission, 2003 & 2004),

is anything but a self-evident natural phenomenon. Such regularity is a consequence of millions of single individual time fragments, moments, and episodes. At the same time, the regularity is also an expression of collectively intertwined individual routines, which is partly associated with our endeavors to coordinate our behavior, and partly associated with unintended consequences of our choices. Indeed, as the second part of this article suggests, the rhythms of consumption and everyday life basically derive from the fact that the ways of action we have adopted are in complex, network-like relations of interaction with each other, rather like heartbeat and breathing work through network-like actions of different body parts (Koukkari & Southern, 2006; Pantzar & Shove, 2010a; Schatzki, 2009). This kind of idea requires totally new kinds of research tools, and probably the advent of a whole 'theory of the organization of time.' During the last few decades macrohistory, studying grand patterns of change has become a foundational part of Futures Studies (e.g. Galtung & Inayatullah, 1997). It will be seen to what extent this emerging field could fertilize the general view of rhythm analysis, and possibly together generate Toffler's New Millennium.

I shall return to these general viewpoints at the end of this article. Let us start, however, with findings of empirical time-use studies. How could one study the general changes in time use and social rhythms that Toffler describes? Can the present methods of time-use research offer tools for it, or do we need decidedly new kinds of approaches and conceptualizations?

## Time-use Research

Standardized (empirical) statistical time-use research that produces internationally comparable information originated in the early 1970s. People's time use was found, rather surprisingly, to be more dependent on the degree of economic development than the economic system (on both sides of the cold-war Iron Curtain). With regard to time use, life in the Soviet Union and the United States resembled each other (Szalai, 1972; Uusitalo, 1981). Within one and the same economic system, the superpowers differed significantly from other countries.

Encouragement from such observations, along with international cooperation, led to the current practice of time-use accounting, in which each person fills in her/his own time budget book. Time use is monitored as a sequential 'stream of episodes.' Each episode has its total duration, and total time use is calculated by adding up the episodes. In the 'adding-up method', a person's day and night are divided into periods such as, paid work, housework, free time, and rest. A commonly observed use is to calculate the most difficult item to define, i.e., free time, as a remainder of sorts; that is, by subtracting the time spent on paid work, housework, and sleep from 24 hours. European Commission (2003 & 2004) studies, for example, are based on this calculation method. The same goes for the time-use research of Statistics Finland (Niemi & Pääkkönen, 1989 & 2001). Furthermore, the same approach and type of data form the basis of such classics in time-use research as the works of Gershuny (2000), and Robinson and Godbey (1997).

Time-use researchers are well aware of the many problems that are attached to time-use accounting (Michelson, 2005). One obvious problem is that the categories of

time use, e.g., free time, have been derived theoretically. The standardized categories of the time-budget form, such as 'eating', do not necessarily match the everyday categories that the respondents themselves use. Swedish researchers found new categories, to their surprise, when they used open answers (Ellegård, 1999). For example, coming home is a significant moment and a real category for people, but the ready-made forms contain no such category.

According to Jonathan Gershuny (2000), time use in the western countries seems to be heading for greater uniformity, both between men and women and among different social classes, perhaps also among different nations. There are only 24 hours to the day, and the use of only a small part of it can be chosen freely. Perhaps it is for this reason that time-use research tells us that changes come very slowly. The time spent in individual traffic, for example, has not increased remarkably though the distances to the shops and to work have grown longer (and that is because locomotive speed has also increased; see Ellegård & Vilhelmson, 2004)<sup>7</sup>. This is likely to change in the near future, when we reach the limits of the growth of our locomotive speed (c.f. Molitor, 2008a & 2008b; Rosa, 2003).

Likewise, the amount of sleep has not changed remarkably although even popular science journals (e.g., Tiede 8/2006, p.18) have referred to a radical decrease in the amount of sleep. According to one American sleep researcher, the talk about the continuing decrease in the sleep people get is more the propaganda of the sleep medication industry than descriptions of real changes (Horne, 2004). In a similar vein, in Finland, the notion of the continuing decrease of sleep has stubbornly kept appearing in the media, but researchers who could verify a nationwide (or world wide) decrease cannot be found.

From the point of view of time-use research, the most remarkable change since *Future Shock* (1970) has clearly been the increase in the time spent watching television. In almost all western countries, the share of television from the roughly six hours of daily free time is nowadays about a third (that is over two hours). From the point of view of change, it is paradoxical that the most dominant form of time use, TV-watching, is also the chief locus of flexibility in individuals' time use. TV-watching fills empty time slots, but it is also where the most cuts are made when necessary (Robinson & Godbey, 1997). Now, is the popularity of chatting and text-messaging part of the same phenomenon: forms of time use that can be expanded almost without limit, but that can also be easily cut when other forms of time use require it? The Internet has affected, and is affecting, radical changes in time use, but those changes are not necessarily revealed in statistics whose interest lies in primary time use, not the time use that overlaps or alternates with other activities (Wellman & Haythornthwaite, 2002).

Dale Southerton (2006) has pointed out that simple findings, like the above, which stress converging patterns, may be due to the use of indicators that are too rough. The current accounting practice of time use, concentrating as it does on hours and minutes, fails to take into account certain relevant points, such as the observation that the time use of the upper classes and men is a lot freer than that of the lower classes and women<sup>8</sup>. Southerton (2006), like Michelson (2005), one of the classics in time-use research, proposes that it is high time to shift our sights from the amount to

the quality of the time spent and especially to the inner structure of time use, or the architecture of time. Indeed, it seems that it is 'the order of the day', bundled activities (Pantzar & Shove, 2010a; Schatzki, 2009), that causes tensions and stress (i.e. feelings of hurriedness), rather than the overall amount of hours spent on different activities, the area time-use studies have mainly concentrated (Michelson, 2005; Southerton, 2006; Wajckman, 2008).

Southerton (2003 & 2006) and Michelson (2005) are probably right in saying that the experience of urgency is only secondarily a question of the sufficiency of free time. The primary issue is dissatisfaction with the way time is organized. IT work, like the housewife's life, is largely externally directed, being largely reactive to continual surprises. Such autonomy is only apparent, and the lack of autonomy causes stress (Orlikowski, 2007). In Finland, for instance, almost a third of working Finns experience urgency continuously. In particular, it is women who experience urgency both at work and home. In the field of IT in particular, people suffer from a sense of urgency although they work no more hours than others. (Nätti, Anttila & Väisänen, 2005, p.57). Time use in the IT field is characterized by fairly large autonomy, and a sense of urgency at the same time<sup>9</sup>. Does freedom cause a sense of urgency? And what is the role of information and communication technology in people's feelings of insufficiency?

We must also remember that the opposite of the feeling of urgency or insufficiency, 'idle time and a feeling of futility', can be as problematic as the feeling of urgency. In Finland at least, the public discourse of urgency emphasizes paid work and does not note that for many people a problem more real than urgency is the abundance of time (and loneliness). People's rhythms seem to be polarizing. According to a time-use study of Statistics Finland, a quarter of Finns complain about too much idle time and only a fifth about their feeling of urgency (Niemi & Pääkkönen, 2001). In the future, the 'slow' and the 'fast' economy will probably be further separated as the active, healthy, and wealthy population of ageing people in Europe gives rise to a new kind of 'free-time class' and possibly a slow moving economy.

Summing up the above, we can note that mainstream research on time use tells us that changes are quite small, with the exception of the increased time spent on TV-watching. An essential point to notice, however, is that figures presented in averages effectively mask qualitative changes. In the future, with IT work (and ICT based leisure time) gaining ground, the number of action episodes is likely to increase further. Possibly men's time use will become similar to that of women. At present, women's time is divided into many more pieces than men's, which perhaps explains why women are more stressed than men about their time use (Michelson, 2005). This trend is strengthened by the fact that the overlapping of episodes has increased, especially with women. One talks about multitasking, polysynchronicity and simultaneous actions.

### The New Complex Architecture of Time

By means of novel, more delicate measures, such as Internet registers and logs, we can probably ascertain that the development that started in the past few decades,

and was partly predicted by Toffler, is continuing. Table 1 provides a very stylized picture of the suggested changes.

Table 1  
*Changing architecture of time use*

Tendencies in the architecture of time use:	Sources:
1) Time-use is becoming more irregular (ad-hocracy).	Acs and Lyles 2007; Gleick 1999; Kreitzman 1999; Rosa 2003; Toffler 1970
2) Time-use is becoming more fragmented	Michelson 2005; Southerton 2003, 2006; Putnam 2000
3) Time-use is becoming more overlapped	Jacobs and Gerson 2004; Kaufman and Lane 1996; Michelson 2005; Partridge 2005; Rideout 2010
4) Time-use and everyday routines are shifting to new places	Robinson and Godbey 1997; Orlikowski 2007; Towers and Duxbury 2006
5) Productivity gains and rationalization achieved by new technology does not generate free time but rather heightens standards	Cowan 1983; Towers and Duxbury 2006; Orlikowski 2007

An example of time use becoming irregular can be seen in the rhythms of eating, for instance. In the transition from the agrarian order to the industrial order, the early (and heavy) morning meal was replaced with breakfast, but the meal times continued to be largely shared within the family and the whole of society. Even today, the shared lunch and dinner play a central role in continental Europe; in France and Spain, for example, which shows as uniform time use in the studies. In Anglo-Saxon countries, to which Finland also belongs with regard to food culture, the national eating rhythm has partly broken down, and we can talk of *ad hoc* eating or the culture of munching (e.g. European Union, 2003 & 2004). Snacking and gaining weight would seem to be mutually connected in the world-shattering epidemic of fatness, in which one essential feature is the rise of a special 'infrastructure of fatness', in which eating in the form of snacking is a major trend (Acs & Lyles, 2007).

As the rhythms of eating and working, for example, become irregular, child rearing also shifts to new places. In itself, the time spent with children may increase, even if child rearing should shift from the dinner table to the car, for example, while the children are being driven from one activity to another (Gauthier, Smeeding & Furstenberg, 2004). In the United States, parents do increasingly more of their child rearing while watching television (Jacobs & Gerson, 2004, p.30), and the increase of snacking, is shown in the high growth in the rate of the intake of calories consumed in the car. Indeed, perhaps the most evident property of the time shock has to do with the phenomenon called multitasking and polysynchronicity. These concepts have become common and have been adopted by researchers from the information technology debate of the 1960s (Gleick, 1999, p.168). Within different disciplines, the same phenomenon is referred to in slightly different terms, such as 'blended communication' (education discourse) and 'multiple channels' (communication research). Interestingly,

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some activities offer better chances of 'workaday multitasking' than others. Researchers talk about 'contamination' when women's work in particular is characterized by many simultaneous activities (Michelson, 2005). During the past few decades, TV watching and child minding in particular have become such contaminated activities that are done in between other activities (Jacobs & Gerson, 2004, p.30). This perhaps explains why a large-scale nationally representative survey by the Kaiser Foundation found that the amount of television viewing in the US has been unaffected by the dramatic increase in the use of other media (Rideout, Foehr & Roberts, 2010).

The new information and communication technology is also said to represent simultaneous skills of a new kind. Chatting and watching television at the same time are perhaps a habit with many of us already, but is that really an example of simultaneous activities? Time was when driving a car was regarded as a set of simultaneous activities, as it called for coordinating the action of the arms, the legs, and the eyes, but today we talk about such established activities requiring multiple skills as anything but multitasking. It seems that some forms of activity retain their 'purity' (Southerton, 2006). As to why it is precisely that some specific free-time activities remain free of contamination, is another question (Michelson, 2005).

Some researchers of leisure time emphasize that it is divided into two kinds (see Rojek, Shaw & Veal, 2006). There is disturbance-free leisure, which is open for various simultaneous activities and is composed of spontaneous, accidental elements ('casual leisure'). There seems to be no clear hierarchy of activities and no order of progression. One can watch television, for example, simultaneously with other activities. Another distinctive feature is a lack of 'cumulative order', which means that these activities do not evidence cumulativeness, in the form of experience and know-how for example. The other kind of leisure is 'serious leisure' (Stebbins, 2006), which means free time that contains many hierarchical elements. Such a state of concentration does not allow any multitasking of activities. In serious leisure the know-how is often cumulative, and some sort of progression could be identified. These two different kinds of leisure can also be called the 'open and the closed regime'. The open regime is much more flexible, but it does not offer a proper dimension of development in the form of series of activities, for instance. The closed regime, exemplified by stamp collecting, contains a clearer dimension of temporal change, e.g. the learning by doing effect. A fairly similar dichotomy of ideal types has been drawn by Ian Burkitt (2004), who divides free-time activities into regulated games (the closed regime, serious leisure) and freer play (the open regime, casual leisure), in which the object-subject relationship evolves continuously. As a consequence, there are moments and episodes that are characterized, more or less, by adaptation and spontaneity (Southerton, 2003).

Presumably, the new technology both eases time pressures and causes new ones (Wajcman & Haddon, 2005). At the same time as life becomes easier in some quarters, new demands and new forms of time use come about elsewhere (Robinson & Godbey, 1997; Towers & Duxbury, 2006). We may be dealing here with the same phenomenon as Ruth Schwarz Cowan (1983) has described: when the 'productivity' of households increased with the advent of new household appliances in the early 20<sup>th</sup> century; the increased free time of housewives was eaten up by heightened levels of



expectation (e.g., diversification of diets and higher levels of hygiene). Similarly, we get to enjoy the best entertainment in the world from dozens of television channels at the global buffet of television entertainment. The growth in efficiency has been used for growth of variation. A corresponding phenomenon can be seen in working life, where the rationalization of time use by means of information technology may have led to higher levels of expectations, rather than larger autonomy (c.f. Orlikowski, 2007; Rosa, 2003).

### **Towards New Research Perspectives**

By pondering on these hard-to-discern changes, i.e., time use becoming irregular, fragmented, spatially redefined, and overlapping, we can take a fresh look at many activities that we have regarded as self-evident. The question of the total duration of activities and routines, asked in traditional time-use research, is still relevant. New research questions could include the mutual synchronizing and possible overlapping of routines, e.g., how following the media or eating adapts to the coexistence of quickening life rhythms (fast economy) and slowing life rhythms (slow economy).

With the advent of new research questions, more versatile and detailed methods to account changes should emerge. Southerton (2003 & 2006), for instance, specifies five dimension of social time. Firstly, the concept of *duration*; the most typical concept used in time-use studies. Time diary data records and measures the amount of time devoted to various activities. Secondly, the concept of *tempo* accounts for time-space compression and the intensification of activities and experiences. Thirdly, the concept of *sequence* refers to the order in which activities are conducted. Fourthly, the concept of *synchronization* describes the ways different activities of different people mesh together. Fifthly, *periodicity* refers to the frequency and repetition of events and activities. The terms "sequence, synchronization and periodicity" are closely related to Lefebvre's (2004) terms "melody, harmony and rhythm".

In accordance, in the future, more attention needs to be paid to the repetitiveness and periodicity of routines: does the following of the media, for example, bring periodicity to life or break it? Equally, we could turn our sights to the series and sequences of workaday routines: does the brushing of one's teeth or reading the morning paper, for instance, form a path towards the next routine? It is also interesting to investigate the social coordination of the mechanisms of the routines: when can people engage in a certain activity simultaneously and when is non-simultaneity necessary? And how essential are shared locations in the digital world? Shared sleeping rhythms obviously make social life easier, but one could ask whether moving about in crowds would go better if not everyone was in the street between eight and nine a.m.

Perhaps, elements for a more general theory of social rhythms should be sought outside the current research traditions; e.g., in the theory of music or that of biological rhythms. For their understanding of the origin and the renewal of social rhythms, music plays an important role in the work of the Frenchman Henri Lefebvre and the Americans William McNeill and Paul Miller.

## Rhythm Analysis

To Lefebvre, rhythm is primarily associated with the customs and conflicts of social coordination, whereas McNeill lays more emphasis on shared rhythms as a precondition of (emotional) collective commitment. Miller, for his part, takes a lighter approach to rhythm from the point of view of artistic performance. At the same time, he emphasizes that firms are losing touch with artist-like consumers. What the three are talking about could be called 'co-creation of value', in the language of consultants (see Zwick, Bonsu & Darmody, 2008).

Lefebvre also includes chronobiology in his concept of rhythm when emphasizing that the entire body is a highly complex rhythm based organ. Seen this way, the microscopic everyday life routines can be thought, after all, to integrate into a whole, as it were, like a symphony orchestra. Each of us has several instruments at our disposal simultaneously. The melody represents sequential routines and action sequences. Harmony is needed to guarantee the compatibility of simultaneous routines (both intra- and inter-individually). Life proceeds, seeking its own rhythm, slowly at times to find its proper forms, and more quickly and repetitively at other times.

A rhythm analyst sees rhythms everywhere in society: "a rhythm analyst have to learn to 'listen' to a house, a street, a town, as an audience listens to a symphony...he must recognize representations by their curves, phases, periods, and recurrences...he receives data from all the sciences" (Lefebvre, 2004, p.25). Because of the diverse composition of every day life, s/he must learn to make use of all the senses, even the belittled sense of smell: "The rhythm analyst calls on all his senses...he does not neglect smell, scents, the impressions that are so strong in the child and other living beings, which society atrophies, neutralizes in order to arrive at the colourless, and the insensible...The rhythm analyst observes and retain smells as traces that mark rhythms" (Lefebvre, 2004, p.21).

Lefebvre concretized his hard-to-discern and abstract views by describing the workday as a music-like performance. The melody or, in our case, the sequence of routines indicates the temporal progression of the notes (chords, instruments). Harmony (i.e., the synchrony of routines) indicates how well the notes, the instruments, and the sounds play together. For a third parallel, we need a notion of rhythm, which tells us about the relative duration and repetitiveness of the notes, chords, and instruments. In examining the world in Lefebvre's way, music replaces mathematical models and calculuses. Furthermore, Lefebvre emphasizes that music gives people comfort in a world that is basically unjust (Lefebvre, 1991 & 2004, p.xi).

An interesting point of comparison and point of view to the rhythm of routines is offered by Professor (emer.) William McNeill (1995), University of Chicago, who argues that 'marching in step' has created and strengthened social and emotional bonds among people throughout the ages. He finds 'muscular bonding' in the marching of soldiers, for instance and, in a more general way, in different forms of collective dancing. His speculative thoughts on the evolutionary role of dance are radical: "Group consolidation through dance was, perhaps, critical in separating our remote ancestors from other protohominid species; and dance certainly operated throughout historic times to maintain village communities and innumerable other human groups"

(McNeill, 1995, p.11). Dance might have preceded other verbal competencies in human evolution and promoted the formation of groups. This is an interesting addition to the more general conception of human evolution, according to which verbal communication started together with the formation of social groups, the growth of the brain, and the evolution of language and tools (cf. Maryanski & Turner, 1992).

McNeill sees similar vital elements producing communality in the behavior of the masses, such as the trance of football audiences and demonstrators, in patriotic parades, and in religious rituals. Maintaining muscular bonding by means of shared gestures brings emotional pleasure. Walking in step reinforces the bonds among individuals first and may eventually cause individuals working in the group to become part of it (group coherence), consciously and unconsciously, as the boundaries between the individual and the group disappear ('boundary loss').<sup>10</sup> McNeill points out emphatically that his work is speculative in nature and that the research work done on mass movement and mass emotion is very scant.<sup>11</sup>

A third interesting piece of work to prime us to rhythm analysis is the book *Rhythm Science* by Paul Miller (2004), an American disc jockey and media artist. According to Miller, the changing architecture of everyday life is associated with a novel artistic movement of 'life-editing', which is characterized by 'sampling', i.e., working old pieces of music into new ones, and 'scratching', which means spinning a record on the turntable creatively by hand. In this movement of re-editing all sorts of old material, artists have the leading role, but the main thing is the creation and the existence of media materials and archives: "a rhythm scientist begins as an archivist of sound, text, and image" (Miller, 2004, p.16). Today, the Internet functions just as such a giant archive, and with the possibilities offered by digital recording, we will each be creating archives of our own lives in the future.

New generations will not be dependent on technology in the way we are: Future generations "won't have a 'dependence' on technology. They will have technology as a core aspects of their existence – as much as the languages we speak, the air we breathe, and the food we that we eat are all aspects of technology" (Miller, 2004, p.16). Members of the new generation will download themselves daily: "Fluid memories run into circuitry and focus on our attention on a world where we download ourselves daily" (Miller, 2004, p.9).<sup>12</sup>

It remains to be seen to what extent futurists turn to these directions. It is, however, clear that rhythm analysis requires a new kind of ability to perceive and illustrate phenomena of different levels, jointly and separately, in one and the same garden of life: "In a place of collection of fixed things, you will follow each being, each body, as having its own time above the whole. Each one therefore having its place, its rhythm, with its recent past, a foreseeable and distant future...Continue and you will see this garden and the objects...polyrhythmically, or if you prefer symphonically" (Lefebvre, 2004, p.31).

These abstract thoughts on rhythm analysis work as stimuli for futurists' ponderings on the new architecture of daily time, but they can serve us equally well in our attempts to understand why social rhythms are so similar and permanent across cultures and countries. Yet their most important lesson is perhaps the firm notion that our everyday life rhythms are part of human nature and a sign of life in individuals and

societies. In a sense, as Toffler would certainly say, for firms trying to understand consumers' needs, that is an important point. Let us come back to Toffler.

### **Discussing Policy Implications: How Does Technology Learn to Behave?**

*Future Shock* described many developments that have materialized since its publication. For example, Toffler's predictions of the splitting of the workday into ever shorter and more irregular periods, and especially the increasing power of the consumer ('prosumer'), have turned out to be surprisingly accurate. Indeed, during the past decade there has been a clear shift in consumer and innovation research from the viewpoint of a recipient of technology (the 'Edisonian' technological and economic determinism) towards that of a consumer, which started to be called the viewpoint of 'domesticating technology', among other things, in the 1990s (see Pantzar, 1997). In this line of thought, consumers are no longer mere recipients of technology, but even so, it is still customary to approach them via groups of elite consumers (e.g. 'pro-am consumers', 'lead users'). In the early 21<sup>st</sup> century this elitist viewpoint has been countered by that of a 'social-movement': the masses make the movement. A new distribution technology (Web 2.0) and a new kind of willingness to follow the wisdom of the masses are at the core of Consumer 2.0, 'Wikinomicks' and the 'Democratizing of Innovations' (von Hippel, 2005; Repo, Pantzar, Timonen & Hyvönen, 2006; Surowiecki, 2004).

Today we should also ask the critical question of what sort of progress the adoption of the wisdom of the masses (and the co-creation of value) represents (in the literature on marketing). As Zwick *et al.* (2008) point out, control over spontaneous forces is a most contradictory goal in a world dominated by the language of rationalized governance. Paradoxically, we are witnessing: "the emergence of customer management as a form of governmentality, where corporations work with and through the freedom of consumer subject all the while hoping to ensure that the subject's experience of freedom follows a prescribed program...In short, administering consumption in ways that allow for creative new forms of life to continuously emerge is the true meaning of the concept of co-creation" (Zwick *et al.*, 2008, p.182). Certainly this is not what Toffler meant by the concept of a 'prosumer'.

If we seriously believe in the findings of both time use studies and more theoretical rhythm analysis the current wisdom-of-the-masses line of thinking should start emphasizing the central place of an understanding of the consumers' time/place limitations as the core of business know-how. The Consumer 2.0 line of thinking (Web 2.0) brings to the fore the findings of time-use research that tell us that our present life rhythms (the minute, hour, day, week, year, and life-span rhythm) have not adapted to a market economy at all. Changing one's biological and social rhythms is often violent, if it is possible at all.

Potentially, with the Internet and social media, the line of thinking that humans must learn the ways of technology is transforming increasingly into one that says technology must learn the ways of humans. What are 'the ways of humans'? And human nature? This article suggests that similarly as the heartbeat is a sign of life, the

rhythms of living and consuming are signs of social life (c.f. Hall, 1983; Koukkari & Southern, 2006; Zerubavel, 1981). The new technology does not necessarily destroy the old rhythms; on the contrary, it may even strengthen the historically developed rhythms that are characteristic of humans (Maryanski & Turner, 1992). One good example would be 'home banking.' People's visits to their Internet bank still reflect the weekly rhythm, in that Saturday evenings in particular are 'protected' from transactional activity (Pantzar & Shove, 2010a). Other Internet business, too, takes a day off on Saturday, to become active again on Sunday evening. Is free time guided by structural compulsions more or less than working time? Could it be thought that the family, for example, with its social needs is a sort of network-like mycelium that sets limits to freedom, or is it rather a question of external factors, such as the shopping hours, structuring our day-to-day life?

Many developments described by Toffler, such as the one towards irregular time use, have come true. On the other hand, what initially looks irregular may turn out to be a new kind of regularity. For example, as ICT is becoming commonplace, it is creating new kinds of time-place dependencies. The old activities connected with eating and social intercourse, for example, are being moved to new places and new times. Yet again, the new technology does not always mean upheaval. For example, although the use of the telephone has changed since telephones became mobile, the weekly distribution of telephone use has remained surprisingly similar (unpublished data by Elisa Communication and DNA, 2007). The fewest calls are still made on Sundays, and they are still longer than those made on other days. The most calls are still made on Mondays. Winter Sundays are still the busiest and summer Sundays the slowest telephoning days. But the places the calls are made from are new; the car (and the journey home), for example, has become an important place of communication.

Toffler described the shattering of the human mind in our world of ever-quicken- ing change forty years ago. On the basis of hundreds of expert interviews, the futurol- ogist with a journalist's education perceived our way of life, turning ever more fren- zied, as a worsening state similar to an illness (cf. 'information bloat'). Toffler was among the first to introduce the term "information input overload". As shown above some of Toffler's predictions have indeed come true, but not all of them. Toffler, for instance, believed in the future of the paperless office.

On one point, Toffler was clearly wrong according to our present knowledge: he expected the society of urgency to kill human interaction and, in particular, to lead to a weakening of the position of the family, the home, the children, and the spouse. In fact, however, and rather surprisingly, both time-use studies and value studies con- ducted over the past few decades tell us about distinct growth of family- and home- centeredness in the western world (e.g., Inglehart, 1997; Meszaros, 2004; Ruuskanen, 2004; Sayer, Bianchi & Robinson, 2004). Furthermore, the new information technolo- gy has not moved time use away from the home, either; it has done the opposite<sup>13</sup>. The "café society" described by Kreitzman (1999) has not come about, except in advertis- ing pictures. The Internet has been estimated to have increased home-centeredness (Ellegård & Vilhelmson, 2004; c.f. Wellman *et al*, 2002). Europeans spend 70 per cent of their time at home (and three per cent in cafés and restaurants), and women spend slightly more time at home than men do (European Commission, 2004, pp.106-108).

With ageing, men's and women's time-use profiles approach each other, and the time spent at home increases. In the future, then, we shall see how business reacts to the changing age structure effecting further increases in the time spent at home (Molitor, 2008a & 2008b).

### Concluding Remarks

Toffler was ahead of his time. This is one of the main findings of the current article. Interestingly, the views presented in *Future Shock* fit quite well with the epistemological and ontological outlines of rhythm analysis, stressing both cyclic nature and multiple orders of everyday life. Somewhat paradoxically, Toffler's book *The Third Wave* (1981), in which one of the key maxims was "change is non-linear and can go backwards, forwards and sideways", is more a linear/progress account<sup>14</sup>. Three types of societies are identified based on the concept of 'waves' - each wave pushes the older societies and cultures aside. The First Wave is the society after agrarian revolution and replaced the first hunter-gatherer cultures. The Second Wave is the society during the Industrial Revolution (ca. late 1600s through the mid-1900s). The main components of the Second Wave society are the nuclear family, factory-type education system and the corporation. The Third Wave is post-industrial society, with demassification, diversity, knowledge-based production, and the acceleration of change<sup>15</sup>, the aspect Toffler studied in more depth in his earlier book.

Seemingly simple observations made by Toffler in 1970, have not been primarily addressed in other macrohistorical studies. One straightforward reason might be the fact that the scales of civilizations and everyday life differ in a radical way. Another reason could be related to the fact that conventionally in historical studies, the layer of everyday life has been characterized as a sphere of "stagnant history", where repetition is the rule (Pantzar, 1989). Braudel (1973), one of the most famous historians of everyday life, for instance, suggests that the domain of capitalism wherein irreversible developments are recorded and where no two days are similar, is almost the opposite to the domain of everyday life<sup>16</sup>. In contrast to Braudel and macrohistorical views paying scant attention to everyday life, both Toffler (1970) and rhythm analysis claims that everyday life contains different and possibly complementary logics, that of stagnant history (e.g. routines and spontaneous behavior without any recognizable outcomes), and the one where change and accumulation are extremely important (both in the short and long run).

In the early 1970s, Alvin Toffler started an important discussion on the way changes in our time use and accelerating social rhythms steer the changes in society. The overview of time-use research and rhythm analysis presented above indicates that there is still plenty of work to do. In the future, if we believe in Toffler, many of our repetitive everyday life routines will disappear as our weekly rhythm of work breaks up, with the new communication technology accelerating our pace rather than relaxing it. The duration and number of episodes, their overlaps and mutual couplings, their construction and placement in time and space, and opportunities to affect the placement of activities are, to the greatest extent, wellbeing issues. Toffler realized this almost forty years ago when writing about time shock, and his book has lost none of

its topicality as new research findings, methods and theories of rhythm have come along.

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## Notes

1. This paper is based on a presentation at the 11<sup>th</sup> International Conference of Finland Future Research Centre and Finland Futures Academy: Future of the Consumer Society, keynote lecture on the 29<sup>th</sup> May 2009, Tampere. I have been fortunate to receive the comments of the following on earlier version of this article: Elina Hiltunen, Minna Lammi, Anu Raijas, Petteri Repo, Dale Southerton, Päivi Timonen and Johanna Varjonen. I also acknowledge the comments of three anonymous referees. This project is financed by the Academy of Finland and Aalto University.
2. The Finnish version differed from the original American one in that dozens of pages of endnotes and references had been omitted. I read the book when I was a 15-year-old schoolboy, and I even wrote an essay on the subject without a single reference to Toffler!
3. The United States and Great Britain are exceptions in that among their people free time has decreased rather than increased (Jacobs & Gerson, 2004; Schor, 1992).
4. In the light of these explanatory dimensions, one might imagine that Finland would be a world leader in frenetic rhythms. And indeed, on the world map of innovation economies, Finland is already a superpower, as John Kao, for instance, argues in *Harvard Business Review* (March, 2009). Similar findings (about Scandinavian countries) have been reported as well in Richard Florida's studies (2002) of the creative class. The logic or empirical claims of the Creative Class or Innovation Hot Spots could be criticized for various reasons. Studies like these reflect, however, interest in different rhythms and interaction patterns in capitalistic economies.
5. Rosa's sociological account (2003) relates acceleration to society's structure, culture, personality type and relationship with nature. According to Rosa, technological acceleration is a crucial feature of modern society's relation to nature, while the acceleration of the pace of life is of overriding importance for the late modern personality. Furthermore, the overall acceleration of social change is intimately related to both cultural and structural transformation.
6. And one should not forget the Swedish-origin time geography, which was originally developed as early as the 1950s for the needs of the (social democratic) administrative machinery, but then discarded for a few decades because of its empirically cumbersome

data sets. With the new sorts of time-place data, we could now predict a revival of time geography (see Ellegård, 1999; Ellegård & Vilhelmson, 2004; Lenntorp, 1999).

7. Generally, however, telecommunication has been unable to cut down the need for mobility; rather, it has given rise to new needs in that area (Grübler, 1990).
8. The finding that women's time and men's time are quite different finds support in Finnish research, too. Men's working hours are freer than women's, at home as well as in paid work. For example, 63 % of Finnish male wage earners but only 50 % of female ones are able to influence their times of coming to work and going home (Nätti *et al.*, 2005, p.56). The effect of small children on the amount of mothers' overtime is the opposite of that of fathers: with women, a small child reduces the amount of overtime, and with men, a small child increases it (Nätti *et al.*, 2005; cf. Jacobs & Gerson, 2004). Observations like this bring up not only the architecture of time use but also the cultural meanings of time use through which urgency and forced readjustment are interpreted.
9. Workers in the field of IT encounter more people daily and move in more unpredictable ways than other people. Economists' calculations have shown that a higher level of education (cultural capital) clearly increases the number of daily activities and, in particular, the need to manage many overlapping activities simultaneously (multitasking). Time use, too, is variable among highly educated people. The variability is not affected by children or the amount of steady income. Income level does not explain the level of simultaneous activities, but the number of children does. An academically educated mother of a family with children is responsible for 36% more activities daily than a man with children (Ruuskanen, 2004).
10. McNeill emphasizes the role of music and rhythm in ancient work processes, for instance. The musical offerings of the computer can be thought to be a manifestation of such rhythming. I, for one, listen to music while I write.
11. "Yet, so far I can discover scientific investigation of what happens to those engage in such behavior remains scant and unsystematic" (McNeill, 1995, p.5). McNeill's notion that joint physical motion preceded verbal communication in the evolution of humans has an interesting connection with the non-representational theory described by Nigel Thrift (2008), which emphasizes, in the light of brain research among other things, that articulation and verbal representation always come with a slight delay in relation to the reactions of the brain muscles. Thrift's understanding of practices is based a special attention to the minuscule 'performative fragments' of routines (spooning, swallowing, digesting, etc.).
12. Miller's personal experience of disc jockey work is vital for his thinking: "Each an every DJ is a walking radio station transmitting his own style...sampling is a new way of doing something that has been with us for a long time: creating with found objects" (Miller, 2004, p.25) "...sampling is dematerialized sculpture" (Miller, 2004, p.29). Despite their different backgrounds, Miller would surely agree with Lefebvre on the importance of multiple sensing.
13. So far, research findings reveal some conflicts: What would Finns like to use their increasing free time for? According to a time-use study carried out in 1987-1988 (Niemi & Pääkkönen, 1989, p.61), they would like to use it primarily for housework (women 23%, men 17%) and secondarily for exercise (women 15%, men 16%). According to provisional estimates, the latest time-use study carried out in 1999-2000



- (Niemi & Pääkkönen, 2001) suggests that exercise has become the favorite filler of increased free time. Has the ideal of homebuilding given way to bodybuilding?
14. Simplifying a bit, we could think that what is behind trends (linearity) is a sort of mechanical world (view) steered by factors that are external and exogenous in relation to the phenomenon itself. Such a world view is represented and promoted by economists, for example, who explain changes by reference to changes in needs or technology but make no reference to the way economical processes themselves change technology or people's needs. In contrast, the rhythms, as analyzed in rhythm analysis, tell us about the self-directedness of living systems, and our conceptual maps of them not only describe the world but also change it.
  15. "On a personal level, we are all besieged and blitzed by fragments of imagery, contradictory or unrelated, that shake up our old ideas and come shooting at us in the form of broken or disembodied "blips". We live, in fact, in a "blip culture". (Toffler, 1981, pp.181-182)
  16. Braudel depicted modern capitalism as a result of multilevel evolution, i.e. evolution of several economies. Evolutionary tendencies of different and relatively isolated levels draw upon each other for support, and also contradict each other. The three levels of economic activity – the domain of capitalism (giant merchants with power to affect markets); the market economy (production and exchange subject to market demand); and the level of material (everyday) life, the self-sufficient subsistence economy – are very different in the way things go forward.

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