

A view on time through the eyes of Luhmann's theory of social systems

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In this chapter, we will look at time from the viewpoint of sociologist Niklas Luhmann (1927-1998). Luhmann's theory was not invented with time use research in mind, but, as I aim to demonstrate, it offers a complex framework for understanding social relations in modern society. The chapter can be read as an introduction to Luhmann's versatile social theory with a special focus on time and temporal structures. In addition, it is also an invitation for time use researchers to engage with a complex theoretical analysis of modern society that offers unconventional insights to interpret empirical patterns. The aim is to add some theoretical underpinnings of empirical observations in the wider frame of how modern society and its subsystems operate, and what this means for the time management of individuals within and outside of organisations.

In the analysis of time that follows, I draw largely on Luhmann's theories of social systems and society, and some generalisations about organisational behaviour based on Luhmann's own observations while working in public administration. What I want to show is that social systems are temporal: they exist only in and through time and, therefore, social order is primarily a temporal order. Modern society is characterised by a multitude of temporal orders that give rise to problems of synchronisation and coordination that produce time scarcity in the first place. In a nutshell, time scarcity is a result of the structural features of modern society.

Although this chapter is about systems theory and time, I need to dedicate considerable space to introducing several concepts and theoretical claims that may on the surface have less to do with time. In the first section, I give a brief introduction of some of the core elements of Luhmann's general theory of social systems that are relevant to his understanding of time: the shift from action to communication, autopoiesis, and meaning. The second section applies Luhmann's general social theory to the analysis of modern society as a functionally differentiated society. Function systems such as the economy,

science, polity, and law, each operate with their own logic and in their own time frames. This structure leads to problems of coordination and synchronisation. The third and fourth sections look at how organisations and our everyday lives are affected by the need for coordination. Coordination makes time scarce and this has repercussions for decision-making and problem-solving. For individual decision-makers, time scarcity is a problem and a resource at the same time.

Temporalisation of social reality

Social systems before time

Luhmann is one of the most important continental European social theorists of the late twentieth century, being particularly influential in the German-speaking, Latin American and Scandinavian communities; but he has increasingly gained a standing in the Anglo-Saxon world. In order to appreciate the central role the notion of time has in Luhmann's vast oeuvre, let us start with a brief historical and theoretical detour. In the early 1960s, Luhmann spent a study year at Harvard University that turned out to be pivotal to his future contributions to sociological theory. At Harvard, Luhmann met Talcott Parsons and devoted substantial time studying Parsons' work. The latter had developed a general social theory based on a systems theory of action. In the tradition of classical action theorists such as Max Weber, Parsons considered the basic unit of social reality the "social action" performed by an individual. At the same time, he regarded actions integrated in a cultural and normative social context, in this way famously criticising utilitarian and contractual explanations of social order. While Parsons in his "voluntaristic theory of action" of 1937 spoke of the "unit act" as the basic element of social reality, he later reformulated his early ideas and incorporated them into a general interdisciplinary framework of systems theory. The outcome was a series of books (Parsons, 1951, 1963; Parsons & Shils, 1951; Parsons & Smelser, 1956) in which he conceptualised social action as being embedded in a complex web of analytic systems (the cultural, societal, personality, and biological systems). This overarching web of systems received the name "action system". Within this general systems-theoretical frame, any social system could be analysed with the same conceptual tools.

Luhmann was intrigued by Parsons' elaborate conceptual framework. In his own writings, Luhmann made use of many terms that had their origin in Parsons' work, such as functional differentiation, function system, symbolically generalised media of interchange, interpenetration, or double contingency.

However, it would be quite wrong to consider Luhmann's own theory as a Parsons 2.0 or a variant of neo-functionalism (Alexander & Colomy, 1985). Actually, Luhmann considered Parsons' grand theory a failure and said he wanted to understand how and why Parsons' grand theory was failing (Luhmann, 2013a).

While Luhmann did integrate concepts of Parsonian origin into his own theories, he did so in a critical and counteractive way. Quite often the words are the same but the meaning or function within the framework has shifted. Most importantly, this is the case with the concept of the "system" itself. Like Parsons, Luhmann considers social reality organised through systems, but – diverging from Parsons – Luhmann's systems are empirical entities, not analytic constructs. In his earlier texts Luhmann still spoke of action systems, but from the 1970s onwards he replaced action with communication as the primary element of social systems. As Luhmann explained later (Luhmann, 1992), the reason for this move is that actions could, in principle, be executed in solitude, without any reference or relation to other people. Communication, in contrast, can take place only between at least two agents, so it is *social by definition*, whereas action is not. Luhmann argues that communication, and not social action, is the truly sociological concept. In this regard, Luhmann's theory is compatible with conceptualisations of the "social" that stress its interactive reality – for example, Simmel's *Wechselwirkung* (Simmel, 2009) and Mead's and Blumer's *symbolic interaction* (Blumer, 1986).

Influenced by developments in the interdisciplinary literature on systems theory, information theory, and cybernetics of the period between the 1950s and the 1980s (Bateson, 1972; Von Bertalanffy, 1968; Von Foerster, 1984), Luhmann became convinced that concepts such as self-organisation, self-reference, and operational closure are useful for analysing social systems, not least because of their high compatibility with communication as the basic social unit. However, it was not until Luhmann became acquainted with the works of the Chilean biologists Humberto Maturana and Francisco Varela that all the puzzle pieces started fitting together. Maturana and Varela (1980) were interested in the processes that are necessary to make biological cells live. Maturana coined the term *autopoiesis*, which would become central to Luhmann's theory. Autopoiesis refers to the idea that the living cell produces all the components it requires for its operation of "living" through a network of these components: it literally makes itself.

Operational closure: what autopoiesis means to social systems

Despite Maturana's concerns about the applicability of *autopoiesis* to non-biological processes, such as societies, Luhmann imported it into his mature version of social systems theory as outlined in his magnum opus, "*Soziale Systeme*", of 1984 (published in English in 1995). Luhmann claims that society – like cells – also produces itself through its own elements. According to Luhmann, Maturana's mistake that many mainstream sociologists also make is taking for granted that human beings are the elements of society. If that were the case, applying autopoiesis to social systems would indeed not make sense (Mingers, 2002). However, if one regards communication as the central element of social systems, Luhmann suggested that the equation would work out. One of Luhmann's bold theoretical moves was to place human beings in the environment of social systems. It sounds radical but it is only logical and consistent with the idea that the primary element of social systems is communication.

This defining decision has caused many misunderstandings and unjustified criticism (Kihlström, 2012). Centring on communication and, thus, placing the human into the environment of social systems does not render human beings irrelevant, as critics have claimed. From a Luhmannian systems theory perspective, this criticism seems non-sensical (for an explanation, see Schirmer & Michailakis, 2015) because human beings and their consciousness – Luhmann speaks of "psychic systems" – are as necessary to society as their bio-physiological organisms are for their consciousness. Society is not possible without human beings, but, as Luhmann (2002, p. 157) put it: "It is also impossible without carbon, without moderate temperatures, without the earth's magnetic field, without the atomic bonding of matter".

Human beings with their psychic systems participate in social systems, but they are not the elements. Like social systems, psychic systems are autopoietic, operationally closed systems. This means that our consciousness can perceive, feel, and think but it cannot escape the limits of its own operations. Thinking as such does not do anything in its environment – it may help trigger an action or communication, but it does not *do* it. At the same time, our consciousness does what it does: thoughts permanently induce new thoughts, and it is hard not to think of anything when we are awake, while it is equally hard to control our thoughts as in only thinking about the things we want. Like a "stream of consciousness", one thought connects to the other without necessarily knowing where any of them came from.

The operational closure of psychic systems is the reason why communication is necessary in the first place. Thoughts cannot directly connect to communi-

cation and vice versa. We can think of thoughts such as “What a warm and sunny day”. However, if we do not say it out loud (or write it down) for others to hear (or read) what we think, our thought stays in our consciousness but never becomes a part of a social system. Once we utter the thought through a spoken sentence, it enters communication. Then, however, it follows the dynamics and logics of social systems that defy the dynamics and logics of the consciousness. If I say “What a warm and sunny day” to another person, this may lead to a plethora of different replies, varying on what they were thinking right before I say it, on what was said by (an)other participant(s), or if it was I who started the conversation. More importantly, it will also depend on other characteristics of the social system in question. It makes a difference if I say this sentence to a stranger in a coffee bar or at an academic congress on climate change in times of prolonged drought. Furthermore, my own intention with making my thought public (small talk, an opening line to initiate romantic interaction, a sales pitch, dramatic effect in a scientific debate) may be irrelevant to what happens next. Most likely, the other's psychic system will be triggered, and they may say something in return – for instance “yes, it is” – which may or may not represent what they were actually thinking. Possibly they are polite and adjust to the rules of the current social system.

Operational closure of social and psychic systems means that each follows its own operational dynamics depending on its systems' history (what happened before) and their expectation structure (what is supposed to be said next and what is not). As Luhmann put it, a social system cannot think, and a psychic system cannot communicate. They are opaque to each other. Our thoughts remain our own and are inaccessible to others. While I am typing these words, I may be thinking about things completely unrelated to the topic and you will never know them. Likewise, I will never know what you think while you read these words, and even if you happen to tell me, there is no way to assess whether you really had that thought or meant it that way, because you would have to use communication, which, again, follows its own dynamics and rules. So, while I cannot reconstruct or predict your exact thoughts, it is likely that, by now, you will have wondered if any of this has to do with the sociology of time at all. The possibly unexpected answer is that time was present all along throughout the previous paragraphs – albeit only implicitly.

Time and the dimensions of meaning

Let us make the link to time more explicit. For starters, the concept *autopoiesis* makes sense only if there is time. Autopoietic systems reproduce through their operations that exist only as emergent entities *through time*. While a

technical system (such as a washing machine) still persists when it is turned off, autopoietic systems end their existence when their operations fail to continue. To persist, living systems (such as cells or organisms) live, psychic systems think, and social systems communicate. Psychic and social systems do not even take up space in the physical world. Their basic elements are events of very short duration. Thoughts and communicative acts decay the moment they are made, and the respective system constantly needs to reproduce itself by creating and connecting new elements. Understanding elements of social reality as events implies a “radical temporalisation”, as Luhmann (1995) put it.

Psychic and social systems also differ from living systems insofar as they observe or experience their environment through the medium of *meaning* (not through electric impulses like neuronal systems; not through electromagnetic or mechanical waves like machines, not through binary codes like computers). Social systems reproduce through communicative events (utterances) that are recursively interconnected to one another through meaning. As will become clearer in the following paragraphs, meaning is what keeps these events together while also making them possible in the first place. Therefore, Luhmann regards meaning as a basic concept of sociology (Luhmann, 1971).

Luhmann conceives meaning as the difference between *actuality* and *potentiality*. Whatever I think (psychic system) or say (social system) carries with it a depiction of what is currently meant (actualisation) and what is possible based on this actualisation (potentiality). For instance, let us assume I am thinking that I am hungry (actualisation of meaning): this could make me think of what I will eat, when I will eat, with whom I will eat, how I will get food, whether I will be thirsty, too, whether I just ate something, whether I eat too much in general (all are potentialities of meaning), and many other things. If they are actualised in the first place, each of these potentialities will have their own future potentialities.

What becomes apparent is a “surplus of reference” (*Verweisungsüberschuss*): when a consciousness processes meaning, there are also many more potentialities to the one current actualisation. The same is (in principle) true for social systems. There is always more possible than actualised. Processing meaning requires *selection*. If you ask me what time it is (present actuality), I might answer and tell you it is half past three, or three thirty, I might not answer at all, I might question your right to pose your question (or otherwise change the topic). Which of these potential responses I choose (which response gets actualised) determines what is now possible; it selectively makes some connections more likely and others more unlikely. Let us consider two examples.

(1)

A: What's the time?

B: It's half past three.

A: Damn, I need to hurry to get the kids.

B: Hope you get there in time; see you tomorrow.

A: Thanks, bye.

(2)

A: What's the time?

B: Why are you asking? You haven't done much yet.

A: I need to know how long I've worked already.

B: Not long enough to ask. There's a long day ahead, no matter.

A: Oh, c'mon.

In these two examples, we can see how meaning in social systems unfolds along three different dimensions that each deal with the different actuality or potentiality in a different manner. Luhmann distinguishes between the *fact dimension*, the *social dimension*, and the *temporal dimension*. For the topic of this chapter, the last of these is most important, and it is dealt with more extensively. Before that, we briefly discuss the other two.

The *fact dimension* (*Sachdimension*) refers to what the communication is about, for instance, a topic, a certain purpose, or the social setting. The circumstance that the communication partners disagree in example (2) makes the *social dimension* of meaning visible. We can assume that both speakers interpret the situation very differently. Communication partners permanently need to reckon with the incongruence of perspectives. Meaning is selected along the social dimension with concern about whether consensus and mutual agreement are necessary or can be ignored.

In social systems, every new actualisation changes the horizon of new potentialities in the fact dimension (did the topic change?) and in the social dimension (can people agree?; is agreement still necessary?). The relationship between actualisation and potentialisation is most apparent in the *temporal dimension* because it deals directly with the relationship between past and future. What is actualised in the present moment has an impact on potential future actualisations. What is actualised at the moment is also the (contingent) result of past selections. The temporal dimension of meaning reflects this difference between past and future. Events are selected through recursive anticipation of currently in-actual but potential time horizons, both into the future and in the past. What is in the past is no longer actual and what is in

the future is not yet actual. Past and future are in-actual but they narrow down what can be actualised in the present.

If we revisit examples (1) and (2) from above, we can see in both cases that from the second turn onwards the question “What’s the time?” is already past but limits the frame of what can be said afterwards (which is still a lot but not just anything). The second turn in both examples refers to the same first turn, but each anticipates and enables a different future (turn 3), seen from which turn 2 appears as past and turns 4 and 5 as anticipated future. In example (1) it is a time frame of conflicting futures depending on whether person A makes it in time or not. In example (2) the future time frame is about work that must be finished, but also about who has the final word (social dimension).

Sequentiality of meaning through time

Time plays another important role in processing meaning. The actualised events themselves are of minuscule duration and disappear the moment they came into being. Meaning is what connects these events while, at the same time, meaning is produced through a chain of single events. In other words, meaning, too, only unfolds in time, just as individual tones receive their meaning only in the melody of a piece of music. The individual tones are meaningless without a relationship to one another. This relationship unfolds only in time, in what happened before, what happens now, and what will happen next. The present of the concrete tone (or conglomerate of frequencies) persists only at the moment itself and is replaced by the future present of the subsequent tones. It disappears the moment it comes, but it receives its meaning in the unity of before and after.

Similarly, the future and past constrain the present in psychic and social systems. As an example of the former, we mentally simulate different scenarios, intend to achieve certain outcomes, and observe ourselves through the viewpoint of the others (see also Mead, 1934) in order to anticipate possible reactions that we can try to avoid or invite. Likewise, the past can co-determine the present. If you play a well-known sequence on a piano and leave out the last tone, or play a wrong note, the whole experience is rendered into something that our brains experience as dissonant or unpleasant.

The same applies to social systems. What I say at the moment will influence what you say next and what you just said will affect what I can say next. If normative expectations are disappointed – for example, when my question fails to prompt your answer or my “thank you” is not met by your “you’re welcome” – there may be psychological reactions akin to the experience of dissonance and

displeasure and social reactions manifesting this discontent, and possibly even claiming Goffmannian correction rituals (Goffman, 1967).

The sequential operations of social systems can be seen ideal-typically in face-to-face interactions – for example, in the two examples above. Interaction systems must unfold their complexity through time in a sequential order because they can actualise only one element or event at a time. Only one person can speak at a time. If two or more speak at the same time, as regularly happens in the case of heated discussions, communicative disorder or chaos occurs.

The usual solution to avoid this in the social dimension is turn-taking: each interlocutor waits for their turn to speak and remains silent during the other moments. However, this is an idealised image because waiting takes mental effort, particularly in emotionally intense interactions. As a result, the time horizon of psychic and social systems is often out of sync: communication can happen either too fast or too slow in relation to the involved psychic systems. We may find it hard to follow because the other person speaks too quickly or makes incomprehensible logical leaps. Mostly, however, the tempo of communication is too slow and we catch our thoughts running ahead or drifting elsewhere, because the autopoiesis of psychic systems is usually much faster than the autopoiesis of social systems. We can think many more things than we can put into words; and we will think many things, related or unrelated, while having to wait for our turn. It is difficult to keep the thought in mind for a while and then utter it in the intended way. Once a thought is transformed into a communicative utterance, it obeys the selectivity of communication systems, which means the past actualisations and future potentialisations of the communicative reality. Whether other people react to it, whether they react in the intended way, what they reply to it, may render the intended meaning into something else. Something that often happens in meetings with turn-taking order is that we form a thought that could contribute to the discussion but it is rendered irrelevant because the communication has already moved on, in both the fact and the temporal dimension.

So far, we have covered large, abstract terrain. We had to introduce the basic tenet of Luhmannian systems theory that psychic and social systems are operationally closed autopoietic systems. The link to time is indirect, but, as demonstrated, time plays a central role in the background as one of the three dimensions of meaning. This is archetypically the case in face-to-face interaction systems with their sequential order. In the next sections, we consider how this plays out in society.

Theory of society: functional differentiation and time

What is functional differentiation?

Face-to-face interaction has been the dominant form of social systems throughout most of human history. In the oral cultures of the past, social reality and the reality of face-to-face interaction were the same thing. The invention of written language has changed this fundamentally – slowly at first, but ever more radically in the past few hundred years. Today's society is largely based on mediated communication, through printed and digital documents, letters, telegraphs, radio, television, emails, blog posts and many others.

With its emancipation from face-to-face interaction, society is no longer bound to the co-presence of speaker and audience in the here and now. Social reality is no longer reproduced through oral traditions that need to be repeated or forgotten for good, and the procession of meaning is stretched ever further into its three dimensions. We can read books written by people who died 2,500 years ago and interpret their analyses of social life in ancient Greece to the benefit of today's social problems. The same communicative element (such as a text, a tweet, or a payment) could have a completely different meaning and consequence, depending on which social system processes it in which historical context.

According to Luhmann, this co-occurrence of multiple, simultaneous social realities is a key feature of modern society. A prime element of Luhmann's theory of society (as a special application case of his general social systems theory) is that society is characterised by *functional differentiation*. Luhmann incorporated the concepts "functional differentiation" and "function systems" into his own theory of society (Luhmann, 2012, 2013b), but he conceived of the systems as empirical entities (not analytical constructs) and suggests many more than Parsons did. Like Parsons, Luhmann speaks of a political system and an economic system, but he also posits the function systems of science, religion, media, art, law, health and illness, love, family or kinship, education, and social help.

Each of the function systems follows a unique rationality and operational logic that is related to the function they fulfil for the whole. For instance, the function of the economy is to deal with the allocation of goods and services under conditions of scarcity. From the viewpoint of the economic system, the world appears as a big market within which everything is a potential commodity that can be bought and sold if the price is right. From the viewpoint of the political system, the world appears as a matter of power distribution, domination, coalitions and alliances, majorities, and followership. The system

of science regards everything as a potential research object to be examined, analysed, and explained. For law, everything is a matter of legality and illegality, for the media a matter of newsworthiness, and for religion a matter of sin, sacredness, and supernatural forces.

In contrast to Durkheim and Parsons, Luhmann refused to see functional differentiation as well integrated, unity and the foundation of cross-societal solidarity built from mutual dependence on the parts. Instead, he took both the differentiation concept and the assumptions of operational closure and autopoiesis seriously by focusing on how each of these function systems creates its own version of social reality as separate “frameworks of meaning” (King, 2009). This understanding of functional differentiation is comparable to Max Weber’s ideas about the “polytheism of value spheres” such as art, love, religion, science, and politics. All these spheres adhere to their own values, grounded only in themselves and not in some overarching, transcendent order. As an outcome, they follow an *Eigengesetzlichkeit* (Weber, 1968) and are indifferent and (possibly) incompatible with one another. To give an example, the aesthetic value of a work of art depicting human beings having sexual intercourse does not translate into its economic price and does not predict the level of moral outrage.

A functionally differentiated society, thus, is more of a paradoxical unity: its unity is the multiplicity of incongruent function systems. The important insight from differentiation theory is that each of these systems processes and constructs different social realities, whereas an overarching shared logic value system, or rationality that applies all at once, is absent. As Luhmann put it, society lacks an “Archimedean” standpoint from which the world could be grasped in its entirety. Instead, we have something that could best be called “multiperspectivity” (Nassehi, 2003; Schirmer & Michailakis, 2019). We touched on this idea briefly in the previous section when discussing the social dimension of meaning, namely, that different participants may not share the same view on things. At the level of society, this problem is exacerbated because it goes beyond the question of whether consensus can be reached between communication partners. Multiperspectivity at the societal level means that there are incommensurable, potentially incompatible perspectives on the world that perceive, process, and construct the world in fundamentally different ways, and there is no single one of them that is more adequate or important than the others.

Time in a functionally differentiated society

The differentiation of functions is an expression of incongruence in the fact dimension of meaning; the differentiation of perspectives marks an incongruence in the social dimension. However, there is also an incongruence in the temporal dimension that has important implications for a sociological understanding of time. Sociologists of time speak of a “social time” as opposed to a natural time and argue that social time is collectively shared (van Tienoven, 2019). We share the same calendar and time division. When two people agree to meet at 15:30 tomorrow afternoon, they can assume mutually that either understands what it means and that both will be there at that time. In the Western world, we divide our weeks into seven days and the year into twelve months. Although these divisions have some correlation in geographical and astronomical material substrates, they are socially constructed (Zerubavel, 1982).

From a Luhmannian perspective, the term “social time” can be sharpened to account for a society that is structured by an order of co-equal operationally closed function systems and the absence of a unifying centre. Function systems maintain a boundary to their environment by constituting their own function-specific meaning, for instance, based on money (economy), power (political system), truth (science), and legality (law). What falls outside their scope is irrelevant to them, akin to the Weberian value spheres. In Luhmann’s terms, the systems cannot gain resonance for things their codes and programmes are blind to. This means that function systems do not automatically react to everything going on in the world: a scientific publication on human evolution may or may not trigger a reaction in the religious system and a crash in the stock market may or may not affect the political system. But even if these events in the environment are considered relevant by the system, the system does not simply react immediately and automatically as if it were a stimulus-response mechanism. Any reaction of a functioning system to an event in its environment has to be translated into its own operations following its own rationalities: Does a scientific publication require a new interpretation of sacred texts or the way worshippers need to approach their spirits? Does a stock market crash require decisions by the government, or will non-decision be attributed as a failure to act that will be exploited by the opposition?

While all of this happens in real time (a month takes a month), it also happens in the system-immanent time the systems themselves create through their operations, through selections of (communicative) events that connect to each other recursively. Only the system itself defines which events in the past are elements of its own. To illustrate this, let us imagine an armaments

manufacturer that sells several artillery rocket systems to the government of a foreign country. The payment and delivery of the goods are economic operations that entail the circulation of money from one actor to another, and the goods in a reverse direction. For the economic system, this brings about a shift in spending power and goods that possibly affect future supply, demand, and prices on markets, determined by past supply, prices, and demands. The arms sale is most likely preceded by several legal processes in the recipient country and the home country of the manufacturer (among others matters, regarding constitutional laws, international agreements of weapons proliferation, contracts about the modalities of production) that have repercussions on future legal procedures. More obviously, an arms sale requires decisions by the political system that need to consider national security interests, the dynamics between government and opposition in the respective countries, party politics and ideological debates about supporting or jeopardising peace by weapon deliveries.

If we analyse time through the lens of functional differentiation, the same event (armaments sale) takes place at the same absolute, socially shared moment in time. However, it receives a different selective interpretation by each involved system because each of them operates within its own time frame in line with its own history of past operations, semantics, decisions, and routines. This means that the same event is processed differently by each system because different past events are differently relevant and different futures are projected.

The system-specific time frames differ from system to system in a way that is not covered by generic distinctions such as “social time” versus “natural time”. Moreover, there is not just one single time frame within a functioning system. In the economic system, there is the business perspective which concerns the availability of components in markets, production time, delivery, and workforce that define time frames of operational planning and future investments, also considering past and future prices. There are also processes that run along very long cycles of growth and recession, such as Kondratieff cycles (Wallerstein, 1984), but in the business world the period of quarter years is more important when the CEO has to be evaluated based on key performance indicators.

In a similar vein, the political system of parliamentary democracies is largely determined by election cycles (such as presidential elections and midterms) and terms of office (often four or five years, depending on the country). Political decisions are made or postponed with an eye on how the electorate may react. If the ruling parties believe they can benefit from pushing through the arms delivery (presenting themselves as peace brokers or supporters of the local industry), they may go for it before the elections. If they fear their decision is too unpopular in current public opinion and could shift power balances to

their detriment, they may wait until after the elections. The opposition will adjust their actions with the same target in mind, but with inverse goals.

By creating their own “social times”, function systems gain autonomy from their environment also in the fact dimension (Luhmann, 2013b). If a system automatically reacted immediately after events in the environment, it could not *select* its reactions. Delaying reactions and reacting selectively at its own pace opens space for system-specific strategies. Consequently, the time frames of different function systems will most likely differ from those in their environment.

As our armaments example indicates, however, events and time frames in one system may affect the events and time frames of other systems. If the election cycle in one country determines when (and if) an arms manufacturer may sell his merchandise to the government of a foreign country, this may delay or hamper the beneficial timing of operations on the battlefield. If international regulations that affect manufacturers in some countries need to be adjusted first (which requires time-consuming legal procedures and political efforts), companies under the jurisdiction of these regulations may be disadvantaged with regard to future market situations compared to companies that are not.

If function systems operate, in principle, autonomously with regard to time, functionally differentiated society as a whole is characterised by a temporal incongruence – the problem of *synchrony* and *diachrony* arises (Brose & Kirschsieper, 2014). On the one hand, the shared social time – “time Esperanto”, in the words of Sorokin and Merton (Sorokin & Merton, 1937) – applies to all social systems simultaneously. January is January and 14:30 CET is 14:30 CET. In this regard, the systems operate in synchrony. News media or social media spaces can create a form of simultaneity around a certain topic: for instance, a terrorist attack of global significance, such as 9/11, the outbreak of a global pandemic, or a stock market crash – and in this way create “joint topics” that every system reacts to simultaneously so that we can speak of a “joint present” as a moment of synchrony.

On the other hand, even if the same event happening at one moment in time sets the trigger for operations in the surrounding function systems, each of these deals with it diachronically in its own time and time frame, as argued above. The diachrony creates synchronisation problems because the relative rigidity of different time frames of the involved function systems requires each of them to wait for something to happen in the other – such as federal elections, verdicts by the European Court of Justice, quarterly reports companies of too big to fail, announced visits by the Pope, or football world championships.

At a more general level, diachrony entails that in a complex society many different things happen simultaneously. When things happen simultaneously

in the environment, they cannot be causally controlled by the system (and vice versa). Instead, the system needs to prepare for “eventualities” as unforeseen risks in a way that takes time into account: the system needs to be able to delay or accelerate reactive operations at a moment when something else is already happening. A business may prepare for sudden changes in the future by deploying product diversification and operational units with flat hierarchies that can react flexibly when a technological innovation threatens to disrupt entire markets. In contrast, the legal system cannot act as quickly because it needs to apply currently valid laws in order to evaluate the legal corollaries of the technology, while laws that could adequately capture the situation need to be projected into a more distant future because political opinions among elected legislators have not been formed due to a lack of cognitive comprehension, and because the scientific analyses necessary to determine legally relevant social or health implications of the new technology take their due time (e.g., writing and evaluation of grant applications, ethical reviews, research, publication).

How time becomes scarce

Time in past societies

Functionally differentiated society differs from past societies because of its complexity in the factual, social, and temporal dimensions. Owing to the simultaneousness of social processes and the diachronic time-processing within function systems, coordination between social processes across systems is necessary. Coordination requires waiting, adjusting, accelerating, delaying operations, and this is what ultimately makes time scarce and creates time pressure.

To appreciate how time scarcity and time pressure became inherent characteristics of modern societies (Rosa, 2013), it is useful to contrast modern with archaic societies of low complexity. In the latter, time is experienced as a repeated rhythm of recurring profane events such as hunting ventures and raids in addition to recurring sacred events such as religious rituals (Durkheim, 2001 [1912]). Social life is based on ephemeral, oral communication and it circles around the present with a limited focus on the past and the future. Furthermore, there is no extreme discrepancy between the events and things that are objectively happening and their subjective experience. Durkheim argued that there is a large overlap between collective and individual conscience. Expressed in Luhmannian terms, there is no considerable differentiation between the factual and the social dimensions. Whatever is objectively happening in society

can easily be integrated into the subjective time horizon of its members. The coordination of different time horizons (for instance, between those involved in hunting and defence, on the one hand, and those involved in gathering and childcare, on the other) can be resolved relatively easily. As a result of both features of archaic societies (circularity, the overlap between objective and subjective experience), time is not perceived as scarce.

Larger societies such as chiefdoms and kingdoms must temporise their complexity and expand their time horizons further into the past and the future. Because such societies are mainly built around horticulture or agriculture, the overall understanding of time in daily life is still circular, in line with cycles of meteorological seasons and a rhythm of sowing and harvesting, which require at least some coarse timing and moderate coordination (allocation, administration, storage). Despite the general circularity of temporal experience, highly stratified societies extend their focus on the past and the future to justify the political domination they are founded upon. This can be achieved, for instance, by reference to a century-old history of dynastic rulership and future expectations in the name of an eternal godly order. The invention of written language is helpful because it allows us to build up more persistent and reliable memory of the past than mere oral tradition ever could. Writing allows the past to be transformed into “written history” which is documented in holy books that describe the origins of cosmological orders and provide legitimacy.

In modern society, time is scarce

The functional differentiation in modern society breaks radically with the factual, social, and temporal orders of past societies. At the societal level, past and future are no longer perceived as cyclical repetitions but are determined by non-teleological evolution, disruption, and uncertainty. Factual, social, and temporal orders are experienced as contingent, malleable, and unstable: the knowledge that was true yesterday may no longer be true tomorrow. At the same time, there is now a multiplicity of cyclical repetitions imposed by the temporal orders of function systems. As a consequence, the subjective experience of time becomes overburdened by diverse expectations because there are too many relevant pasts and possible futures to be considered for decisions under the condition of uncertainty. Each function system follows its own rationalities and logic, while there is no overarching, integrating social pulse generator. Synchrony between the function systems can be realised punctually and with great coordination efforts, for instance, only by organisations that operate in the context of the function systems. Examples of the latter are businesses and banks in the context of the economy, governments and administrations in

the context of politics, or universities in the context of science (Schirmer & Michailakis, 2019).

Many different, incongruent things happen at the same time, which implies that objectively expectable events cannot be integrated into the subjective, diachronic time horizons of specific social systems. Simultaneousness – the fact that different things happen at the same time – makes time scarce in the first place. This problem is particularly pertinent in organisations, which, owing to internal differentiation into sub-units, can process meaning in parallel (unlike interactions that can process meaning only sequentially). While parallel procession allows for dealing with much greater complexity, it requires an integration of multiple, simultaneously happening decision procedures into a joint temporal order. Joint temporal orders are difficult to achieve among function systems, but they are possible among and in organisations (Nassehi, 2005). Joint temporal orders are dependent on coordination through appointments and deadlines, which in turn exacerbate the time pressure. Something in the other subsystem that should be considered is already happening – or the inverse: the other event cannot happen yet because it has to wait for something to happen in the system first. The longer the wait, the less time is available for the own operation.

Time pressure can be a decisive factor in everyday life in organisations even when it is not intended in the procedural decision structure. It is an “undecided decision-premise” (Luhmann, 2018), which means it does not appear on any flow chart or organogram. Nevertheless, time pressure has a tight grip on the daily reality of decision-making (Luhmann, 2007) because it renders some issues more urgent than others and urgency (mistakenly) becomes a placeholder for importance.

Urgency arises as a corollary of coordination through appointments and deadlines. The advantage of appointments and deadlines is that they refer to an objective, socially shared time which ensures that nobody can legitimately claim not to understand what it means that the deadline is Wednesday next week at 10 o'clock. Appointments and deadlines determine the rhythm of work and the choice of its content: until when does what need to be done? Tasks will be prioritised according to what must be ready by tomorrow, next week, or next month. Time pressure and urgency vary and thematic preferences and priorities shift accordingly. Appointments create new appointments for preparation, coordination, follow-ups, each of which reproduces the time pressure. By setting appointments and deadlines, even organisational behaviour that is undetermined by time can come under time pressure, for instance as preparation for appointments or because time needs to be made between appointments; everything that is not covered by appointments can

be postponed, has no urgency, and in this way is rendered less important (for now). What hasn't been accomplished now may be forgotten until it suddenly becomes urgent at some later point.

The prioritisation of deadlines also has a disciplining effect because it shifts the focus to the controllable aspects of behaviour. If someone misses a deadline, they may be scapegoated for the overall failure of a project – which deflects attention from the complexity or quality problems in other realms. The purported argument would be: we didn't succeed because you missed the deadline. Under such circumstances, it becomes rational for individuals to make their deadlines the highest priority at the cost of finding better solutions or delivering more thorough work. As a result, time pressure drives a wedge between personal and organisational preference hierarchies.

Another reason for urgency to arise within organisations is the interdependence of the three meaning dimensions. Complexity in each meaning dimension creates scarcity in the interrelation with the other dimensions. The complexity of fact structures would be not a problem if there were enough time to gather and process all the information or if consensus among incongruent perspectives (social dimension) were guaranteed (Luhmann, 2007). A socially complex world makes consensus more difficult, but finding consensus would be less of a problem if there were enough time. Problems in the fact dimension – making the right decision – are, therefore, regularly rendered into a problem in the temporal dimension and the social dimension: if only there were more time, more information could have been taken into account and a more rational decision could have been made. Decisions about complex matters may require information from several specialist contributors (or systems) whose knowledge is incomplete and scattered. Because an incongruence of perspectives (social dimension) makes an agreement in the fact dimensions unlikely, the typical solution is to negotiate towards a consensus based on the premise that we cannot know everything. Negotiations of consensus cannot go on eternally either. Not everybody can be heard at length, not everybody can answer to everybody, and not everybody has enough knowledge to evaluate the state of the matter. The mere time lapse does not automatically lead to consensus: just because we discussed the matter all day on Monday, and it is now Tuesday, does not make everyone agree.

However, the mutual dependence of the meaning dimensions on each other can, inversely, also lead to a mutual unburdening that organisations can make use of. For instance, meaning can switch to the temporal dimension (Luhmann, 2012) by reference to time pressure and urgency. We need to reach a decision now; we cannot discuss it any longer. Time pressure is therefore a means to reduce complexity. Reference to the temporal dimension can be a

communicative tool to dismiss claims, and the outcome is what March and Simon (1993) famously called a satisfying, not optimal, solution.

Because everyone in the organisation orients to deadlines, an informal "ideology of pace" (Luhmann, 2007) emerges that forces members to avoid the impression of having too much time. Too much time implies poor performance or low effort. In contrast, the ideology of pace in a temporal order of time scarcity and urgency offers the clever employee several communicative tools for tactical manoeuvres. For starters, it allows them to dismiss claims and requests by using the institutionalised excuse "I'm on a deadline". Moreover, those in a higher status position usually have more freedom to dispose of their own time and push appointments onto others. Time scarcity can be exploited by filling one's own agenda with appointments at certain dates to avoid participation in others and in doing so evade the time pressures set by others. A full agenda at the right moment offers socially acceptable excuses for absence and withdrawal when others expect cooperation. In the same vein, those in a position of power can set appointments (their own and those of others) to accelerate or delay certain processes depending on their own micro-political agenda – for instance, by setting tighter deadlines for personally important projects or by granting appointments late for unpleasant issues in the hope they may disappear if only enough time has passed.

Decision-makers with less formal power can also play tactically with time scarcity and urgency. For example, they can prepare materials for a decision-making meeting that are too complicated or unusable so that it would take too much time for everybody to understand them; or they may request the cooperation of parties without expertise on the matter who do not know how to contribute. That way they can increase the time pressure because the deadline is drawing closer and a decision needs to be made. Then they can present their own ideas as an acceptable solution that goes uncriticised because there is no time left for substantial changes.

Luhmann made some of these observations during his service in public administration before he started to work as a theoretical sociologist, but they fit neatly with the main claim in his works on social systems, functionally differentiated societies and organisations: that time pressure is a modern phenomenon that arises through the differentiation of the factual, social, and temporal dimensions of meaning, with simultaneousness and complexity. It also arises from the need for coordination in a society that lacks an integrated Archimedean perspective and is characterised by diachrony more than synchrony.

Time pressure in everyday life

Simultaneousness and the need for temporal coordination create time pressure in social systems. In the previous section, we illustrated this with a focus on decision-making in organisations. Now, we briefly address how functional differentiation creates time pressure in the everyday life of individuals. The way functionally differentiated society resorts to human beings, again, marks a break with pre-modern ways of social inclusion. In archaic segmentary societies, people were included as a “whole person” into one societal segment (their tribe, village, or clan). In ancient and medieval stratified societies, they belonged as a “whole person” in their estate (noble, clergy, peasant, serf), where membership almost completely predefined their societal place and life. In both cases, people are included in one societal subsystem at a time.

Modern society, in contrast, is characterised by functional differentiation, where the primary subsystems arrange themselves around functions, not segments of people. Now individuals can be included in all subsystems at the same time, albeit not as “whole persons”. Only those psychological and social properties relevant to the specific function are included and the “rest” of the person is excluded. In an economy, individuals are relevant for their spending power or credit status; in the political system as voters; in the legal system as defendants with legal track records; in the educational system as students with academic track records; in the media as audience or target of attention; in medicine as patients with medical track records. On top of that, some people also inhabit a specific “performance role” (Stichweh, 1988) in one or more function systems that help to execute the respective function, such as trader or business person; politician or officebearer, lawyer or judge; teacher; reporter; researcher; doctor, etc.

Whatever their “whole person” may be, it exists outside of, not within, function systems. It is up to the individuals themselves to integrate their different roles, social expectations, and psychological experiences through participating in several function systems at the same time. Figuratively speaking, functional differentiation *cuts right through* individuals, leaving them to their own devices. This unique structural position of the individual vis-à-vis social systems has profound implications on the experience of time. As argued earlier, function systems create their own, system-specific time frames and constructions of past and future. Functional differentiation means that there is a multitude of such function systems and their organisations that operate simultaneously, each imposing their own time frames onto their environment, leading to synchrony problems at the societal level.

Individuals need to navigate the temporal imperatives of the social systems they are included in, via performance roles, lay roles, or client roles. This requires them to constantly coordinate and integrate conflicting demands. This problem has often been described as a work–life balance (Guest, 2002) or work–family conflict (Byron, 2005). Through the link to performance roles, paid work is as central a mechanism to economic reproduction as is family or kinship to socio-emotional reproduction. Moreover, both domains are key mechanisms for social inclusion (Schirmer & Michailakis, 2018), which possibly explains the strong focus on conflicts between these two domains. Both clash not only in the temporal but also in the factual dimension; where they impose on the individual contradictory rationalities, one of which follows a Weberian *vergesellschaftungs*-logic (economy) and one a Weberian *vergemeinschaftungs*-logic (family) – a contradiction typical of modern societies that also affects the quality of romantic relationships (Glorieux, Minnen, & van Tienoven, 2011).

Concepts such as work–family conflict raise a justified point, but seen from a Luhmannian perspective they fall short because they refer to only one (albeit important) aspect among potentially many such conflicts or “balances”. Individuals need to take into account the temporal structures of several function systems and organisations that, each for themselves as well as in conjunction with one another, impose a mixture of what Zerubavel (1982) called institutional, cultural, and normative temporal structures. These deeply affect what can be done when, has to be done until when, and what cannot be done when. For instance, educational organisations have their opening and closing hours to which parents of school-age children need to adhere. This temporal structure is both institutional (set by the organisation and the education system) and normative. Parents and carers cannot bring the children to school either too early or too late or they will face sanctions of some kind – both within and outside of the institution. Similarly, public office hours and business opening hours are set based on institutional and cultural premises with normative implications. The prolonged opening times of supermarkets are a (politically and legally) induced adjustment of the economic system to cater to the needs of the working parents, who pick up their children from school after work and have time to do their shopping for groceries only in the evening.

At a macro-level, these temporal structures follow their respective (function-)system specific logics but are also coordinated with one another – in part by self-organisation and in part by regulation. At the micro-level of everyday life, individuals juggle all these temporal structures. They experience their time as scarce to the extent that they need to fulfil conflicting demands in the factual dimension of different systems (work, family, education, leisure activities, legal appointments, cultural, religious or sports events) that cannot

be dissolved in the temporal dimension because they happen simultaneously. Time scarcity for individuals emerges when different demands in the factual or social dimensions need to be coordinated via the temporal dimension. Time scarcity may cause time pressure and psychological stress to keep up, leading individuals to be constantly on the verge of being late. As time use researchers have shown (van Tienoven, Glorieux, & Minnen, 2017), individuals revert to routinisation strategies, trying to integrate all conflicting demands in a brittle sequential order where every element needs to fit into the other akin to just-in-time production in the industry and where any disturbance – such as the illness of a family member – threatens to collapse the whole scheme.

Next to first-hand experience of time pressure, there is also a second-order time pressure that occurs when individuals need to adjust to the time pressures of others. For instance, birthday parties for children often have to be scheduled at the weekend to accommodate the schedules of invited guests' parents. Some long-term romantic couples need to arrange "date nights" to make time for institutionalised quality time. Such adjustment to the scarce time of others is important because the meaning people attach to activities is highly contingent on whom they spend them with (Glorieux, 1993). Even here in everyday life we can observe the "ideology of pace" that Luhmann noted within organisations (see previous): individuals who have too much time, are too flexible for appointments, or can afford to engage in non-duty-related activities raise suspicion or envy. However, this perceived "ideology of pace" can be subverted and turned into a resource towards increased freedom and autonomy. Unpleasant obligations or requests in one domain can be fenced off with reference to time-sensitive obligations in other domains ("I need to hurry to get the kids") or generic time pressure ("I'd like to have a beer with you tonight, but my boss wants me to finish this report by tomorrow ...").

The specific way functionally differentiated society includes people as role-specific parts into its subsystems while leaving the "whole person" outside allows savvy individuals to play different temporal structures against each other: demands in one system can be used as legitimate excuses for demands in others with explicit reference to a lack of time. Given the lack of any overarching Archimedean position in society, nobody really knows (or has the right to know) what is going on in one's life beyond the functionally relevant parts. We could conclude that the functionally differentiated structure of modern society is both a cause of and a solution to the experience of time scarcity and time pressure.

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