

Philosophy of Mental Time — A Theme Introduction

Lajos BRONS* and Takashi IIDA**

The notion of “mental time” refers to the experience and awareness of time, including that of past, present, and future, and that of the passing of time. This experience and awareness of time raises a number of puzzling questions. How do we experience time? What exactly do we experience when we experience time? Do we actually experience time? Or do we infer time from something in, or some aspect of our experience? And so forth.

These and many related questions in the “philosophy of mental time”, the topic of this special issue of *the Annals of the Japan Association for Philosophy of Science*, are not purely philosophical questions. Or at least, they are not likely to be satisfactorily answered by philosophers alone. Rather, they also need the input of neuroscientists, psychologists, physicists, linguists, and others. And conversely, answers to these questions may have implications outside the scope of philosophy. The papers in this special issue illustrate this inherent multi- or interdisciplinarity of the philosophy and science of mental time. In this theme introduction, we want to give a few more examples to illustrate this interdisciplinarity, but also to point out that much of the field is still wide open—that is, these illustrations raise more questions than answers.

What do we experience when we experience the present? Many different theories have been proposed to answer this question, but they can be classified into two main groups: extensional and non-extensional theories. Theories in the first group assume that the experienced present has duration; those in the second assume that it doesn't. There are substantial differences between the theories within those two groups, but we'll ignore those differences here.

According to extensional theories, we are conscious of short periods of time, often called the “specious present” after William James (1890). The positing of a specious present is usually defended by the claim that we are conscious of movement and of multiple notes of a melody in a single act of consciousness. According to non-extensional theories, on the other hand, the present has no duration. This doesn't

* Nihon University & Lakeland University
E-mail: mail@lajosbrons.net

** Professor Emeritus, Keio University
E-mail: iida386d3@gmail.com

necessarily imply that our experience of time is continuous, however. In either kind of theory the experience of time may be discrete and sequential—somewhat like a sequence of movie frames.

The two kinds of theories are not necessarily incompatible either—they may apply to different aspects of our experience and processing of time (or temporality, or something similar). Much processing by our sensory systems and brains takes place before something reaches conscious experience, and it is not *prima facie* impossible that different steps or phases in that process resemble different theories of temporal consciousness. Of course, the notion of temporal *consciousness* implies that these theories refer to the last, conscious stage in that process only, but earlier stages may restrict that last stage in important ways, and it is, moreover, not completely clear whether all of the proposed theories of the experience of the present are indeed about *conscious* experience. For example, even if our direct, unprocessed sensing is a bit like a sequence of movie frames (as in the cinematic theory), we are not conscious of such a rapid succession of atomic experiences, but only of the continuous stories our mind concoct to connect those “frames” in a coherent fashion. If something like this is right, then our pre-conscious, bare sensing would be discrete, but our conscious awareness continuous, and therefore, different theories explain pre-conscious sensing and conscious awareness of the present.

Neuroscience and psychology suggest that something like this might be the case indeed, but before we turn there, let’s briefly address the question whether these discrete, bare sensings (as they are pre-conscious, they cannot be called “experiences”) have duration. Again, non-extensional theories argue that they don’t, while extensional theories claim that they do. Arguments for the “specious present” and against durationless conscious experience as assumed by non-extensional theories typically appeal to our conscious experience of movement as movement (rather than as a series of different locations) and musical sequences. Such arguments rely heavily on introspection, but it is by no means clear that this is a reliable source of information. It is at least in principle possible that much of our temporal consciousness is constructed or even illusory. The mind is much more opaque than commonly assumed (e.g. Carruthers 2011).

There is a much more fundamental objection against durationless experience, however; namely, that it is physically impossible. Sound (we hear), light (we see), and temperature (we feel) all require time. There is no sound at a (durationless) point of time, nor light (and certainly not light of a particular color), or temperature. Sound, light, temperature, and many of the other “things” we sense require duration. A sensation of any of these must have some duration. These bare sensings can have a very short duration, however, and their lengths may very well differ between sense modalities.

Recent research by neuroscientists suggests that our visual sensory system pro-

duces sequential, discrete samples with a length of 50 to 100 ms (i.e. at a sampling rate between 10 to 20 Hz; e.g. Dubois & VanRullen 2011; Kitazawa 2013), but a quick probe of some of the literature on the topic teaches that there are various other closely related sampling rates and that sampling rates may differ from person to person and from occasion to occasion. In any case, 50 to 100 ms is much shorter than the supposed length of conscious blocks that are typically assumed in extensional theories of temporal consciousness. The supposed duration of the “specious present” is around 1 s, for example (i.e. 10 to 20 times longer). And there is (at least) one other puzzling fact that somehow needs to be taken into account: patients suffering from motion blindness have conscious visual experience that is sequential and discrete at a significantly lower rate (around 6 Hz; see Hess, Baker, & Zihl 1989).

Could this mean that the sensory samples (of 50 to 100 ms) are first grouped into longer, semi-conscious units of 150 to 200 ms, which then are collected at a next level in longer specious-present-like “blocks”? Perhaps; or perhaps not. The point in asking this question here is mainly to illustrate that figuring out what our experience of the present really is like is not just a problem for philosophy, but for psychology and neuroscience as well, and that it is unlikely that any of these areas can find a complete and satisfactory answer on its own.

Some scientists and philosophers have suggested that the languages we speak influence our experience and perception of time. This is a controversial topic, however, but much of the controversy is as interesting as the topic itself. Probably the best known controversy with regards to mental time and language is the Hopi Time Controversy. The “standard” view of that controversy seems to be something like the following: On the basis of insufficient evidence, Benjamin Lee Whorf (1956) claimed that Hopi lacks words and grammar referring to time, and that because of that, Hopi speakers have no concept of time, but Ekkehart Malotki (1983) showed that Hopi does have tense and words referring to time, and that Hopi speakers do have a concept of time.

There are several flaws in this story, however. Firstly, as John Lucy (1992) and others have pointed out, Whorf’s claim wasn’t nearly as extreme as it is usually presented: he merely claimed that Hopi has a *different* way of dealing with time and that Hopi speakers have a *different* conception of time. Secondly, the tenses that Malotki identifies in Hopi are more like a realis/irrealis distinction—and thus modality—than like tense (e.g. Comrie 1984). And thirdly, David Dinwoodie (2006) has pointed out some serious methodological problems in Malotki’s research and argues convincingly that Malotki failed to support his claim that Hopi speakers have the same conception of time as speakers of English. If we discard the strawman arguments and methodologically flawed studies, we are left with almost (?) nothing. Perhaps, Hopi speakers have (or had) a (subtly) different conception of time, and perhaps this is because

of a linguistic difference, or perhaps they don't (and didn't), but for now there is insufficient reliable evidence for either view.

There is evidence that language influences thought and ways of perceiving the world, although the effects are generally much more subtle than what some philosophers once believed. Speakers of a language that employs cardinal directions rather than the left/right distinction, for example, always have to pay attention to their spatial orientation. And asking an adult speaker of such a language whether she can point north is about as insulting as asking an adult speaker of English whether he can tie his shoe laces.

One of the most influential theories of a supposed grammar-based influence of language on thought is the Mass Noun Thesis, the idea that languages that lack articles and plurals only have mass nouns and, therefore, that speakers of those languages perceive the world as consisting of stuffs rather than of objects. Both of us have argued against aspects of the Mass Noun Thesis elsewhere (Iida 1998; Iida in press; Brons 2014), and the thesis—at least in its extreme form—is almost certainly false, but there is some evidence that the lack or presence of articles and plurals in a language subtly but statistically significantly influences the classification of ambiguous cases by children as either objects or stuffs (Imai & Gentner 1997). And there is an interesting analogy between that case and the Hopi time case.

In case of the Mass Noun Thesis, interpreters with a two-category language and folk-ontology (with objects and stuffs) attributed a one-category language and folk-ontology (with just stuffs) to some others. Upon closer inspection, it turned out that those interpreted others also have a two-category folk-ontology, and that the difference between the interpreters' and the others' conceptual schemes is merely a difference of the relative “gravitational pull” of the two categories: the interpreters have folk-ontologies that very slightly gravitate towards classification as objects in ambiguous cases; while the interpreted others have folk-ontologies that very slightly gravitate towards classification as stuffs.

In case of the conceptualization of time, the two competing models are linear and cyclical time, and interpreters that have both conceptions of time attribute a one-conception-of-time view with just cyclical time to some others. That speakers of English have a cyclical conception of time in addition to a linear conception follows from the fact that there is nothing peculiar about talking about “the return of spring” or saying that “it will be Christmas again next year”¹. As in the case of the Mass Noun Thesis, the perceived difference between interpreter and interpreted other is probably exaggerated²; that is, the interpreted other has both conceptions of time

¹ For other evidence for the cyclical conception of time in case of native speakers of English, see Chrysikou & Ramey (2006).

² And like the Mass Noun Thesis, this is probably an example of “othering”, the construction of an essential division between self and other or in-group and out-group by

(like the interpreter), and the difference is merely one of focus or “gravitational pull”. Dominant *spatial* construals of time appear to be universally linear—although not necessarily straight, and there is considerable other variation—which suggest that linear conceptions of time are universal as well.

If there is a single decisive factor in the gravitation towards cyclical or linear conceptualizations of time, then that factor probably is the context of discourse. If that context is seasonal or otherwise focused on recurring events (such as rituals), then—most likely—a cyclical conceptualization of time is brought to the foreground, while in relevant other contexts a linear conceptualization dominates. Perhaps, this explains the different findings by the linguist Malotki and the anthropologist Dinwoodie in the Hopi case (see above). The difference in focus between anthropological and linguistic research may lead the research subjects to foreground a different conception of time. All of this is rather speculative, of course, but our aim here (again) is to illustrate interdisciplinarity (in this case involving linguistics, psychology, and anthropology, as well as sociology of science) and to raise questions.

We do not experience the future, of course, or not yet, at least. But we certainly have attitudes towards the future, and we are aware that we have a future and that it is going to end some day—that is, that we are going to die. The awareness of death appears to play an important role in moral motivation (e.g. Brons 2016), but the projection of ourselves into the future may have broader ethical implications.

Utilitarians believe that the rightness or wrongness of an act at least partially depends on how much suffering it causes, but suffering plays a central role in many other moral theories and in common sense morality as well. Suffering is a somewhat ambiguous notion, however. Outside Buddhism³, the concept of suffering is most central in medicine and nursing, so that would be an obvious place to look for insight. The dominant understanding of suffering in the medical and nursing literature distinguishes suffering from pain and is based on Eric Castell’s definition of suffering “as the state of severe distress associated with events that threaten the intactness of a person” (1982: 640; 1991: 33)⁴.

Interestingly, in the case study that Castell uses to introduce and illustrate his argument he writes that the patient “feared the future” (1982: 639). Indeed, suffer-

interpreting the other as inferior and or radically alien. See Brons (2014) on the Mass Noun Thesis as an example of othering and Brons (2015) for an analysis of othering in general.

³ It is controversial whether “suffering” is a good translation of the Buddhist core concept of *dukkha*, but it remains the most common translation.

⁴ Although this definition is widely accepted in theoretical work (and purported refutations are really just amendments), actual medical practice is more often informed by an identification of suffering with observable indicators of pain, or by medical workers’ preconceptions of what circumstances would count as resulting in suffering.

ing is a kind of fear more than a kind of pain. “Suffering occurs when an impending destruction of the person is perceived” (1982: 640; 1991: 33). Castell’s conception of a “person” is a self-concept. It is the sum-total of the “things” (in the broadest possible sense) that matter to someone: life, body, relations, roles, self-images, and so forth. The perception of the impending destruction (of a part) thereof involves a projection of the self into the future. Suffering, therefore, is a kind of fear associated with self-projection into an undesirable future. And since projection of oneself into the future is a kind of mental time travel, this means that the ability to suffer depends on the ability of mental time travel.

If this is right, then it has obvious implications for animal ethics (and possibly also for moral questions with regards to infants). If moral status depends on the ability to suffer, as famously argued by Jeremy Bentham (1789), for example, then the moral status of animals (and infants) depends on their ability to suffer. And the ability of an animal to suffer (in addition to the ability to feel pain, which may also be morally relevant) depends on its ability of mental time travel. By implication, answering the question whether some kinds of animals have the ability of mental time travel matters a great deal to how we relate to, and how we should treat those animals.

Answering that question is not easy, however—not just because of experimental difficulties, but mostly because there is a further conceptual issue: it is not exactly clear what it means to project oneself into the future (or the past), and especially how sophisticated and/or articulate the projected self-concept needs to be⁵. Cameron Buckner (2013) has pointed out that philosophers and scientists have a tendency to assume a lot about human cognitive abilities (often based on introspection) while demanding ever stronger evidence for the capabilities of animals. As already pointed out above, our minds are not as transparent (to ourselves) as many of us believe, however (e.g. Carruthers 2011), and our beliefs and concepts including our self-concepts may not be as sophisticated as we’d like to think either. Demanding the conceptual sophistication we *think* we have from animals before considering to attribute them the ability of mental time travel is an example of the kind of “anthropofabulation” Buckner argues against.

Again, our aim here is not to answer difficult philosophical questions, but to illustrate the inherent multi- or interdisciplinarity of the study of mental time. As in the previous two examples, different sciences and branches of philosophy need to work together to find answers. Much the same applies to the papers in this special issue. In those as well, insights from neuroscience, psychology, physics, and so forth are employed in attempts to shed some light on philosophical questions. And con-

⁵ Perhaps the ability to fear is sufficient. Fear requires at least some rudimentary self-concept and projection of that self into the future, and there are many animals that appear to be capable of fear or something that looks very much like it.

versely, we hope that these attempts will also somehow help those working on related questions in other branches of science dealing with mental time. As the three cases in this introduction illustrated, there still is plenty to explore.

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