What Kind of Episodes are Stored in Episodic Memory?

On the Concept of Memory in Cognitive Science

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> Our memory is our cohesiveness, our reason, our activity, our feeling. Without memory we are nothing.
>
> Luis Buñuel

1. Introduction

Contemporary Cognitive Science has evolved as a transdisciplinary endeavor combining knowledge from various diverse fields, including psychology, brain sciences, computer science and artificial intelligence, system sciences and cybernetics, linguistics, and philosophy. Recent extensive achievements of lived brain scanning, artificial models of neural networks, and last but not least, the recent turn in philosophy towards phenomenology and consciousness studies[1] brought forth quite a few new ideas penetrating through most of the mentioned disciplines. Besides that, also some long-standing fundamental concepts appear in a new shape. Among them, the concept of *memory* is the most pervading and most relevant.

The principal use of the term memory relates to human individual memory—part of our daily experience of keeping in mind various facts, general as well as concrete ones, and being able to recall our past experiences. However, the term has found many other uses, originally figurative but gradually becoming a technical term in various areas where they are now used as if in the literal sense. It is used this way not only in cognitive science proper, but also in historiography, cultural studies, evolutionary biology, genetics, and even geology. And of course, in computer science. There, interestingly, the term "memory" was first metaphorically transferred from humans to computers, and later, when computers and computing processes became better known, the term was taken back from computer jargon to language on human thought processes.

In this essay I will discuss several ideas related to memory, especially to so called episodic memory, and especially the episodic memory as it is perceived in the first-person, subjective perspective. My primary concern is the multimodal structure of episodic situations that memories are about. I will introduce two new related concepts, that of "hybrid memory" as a hypothesized intermediary between semantic and episodic memory, and of "panorama of life" capturing the idea of the aggregate of all episodic situations that are, or may be the contents of the episodic memory of a concrete person.[2]

This essay may serve two purposes, first, to acquaint a wider audience, including historians (the anticipated readers of the present volume), with several key ideas pertaining to human episodic memory, and second, to propose at least tentatively some new concepts that are often implicitly conceived but hardly adequately thematized.

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[1] From the vast literature in this area, let me just mention two journals: *Journal of Consciousness Studies* (Imprint Academic) and *Phenomenology and Cognitive Science* (Springer).

[2] The research was sponsored by the Research Program CTS MSM 021620845. Parts of this paper are based on my previous article in Czech: "Prožívání epizodických situací" (Experience of Episodic Situations), in: *Myseľ, inteligencia a život* (Mind, Intelligence, and Life), ed. V. Kvasnička et al. (Bratislava: STU, 2007), 27–70.

2. The Psychological and Phenomenal Concepts of Episodic Memory

Psychologists and cognitive scientists distinguish several types of memory systems. First, there is *working memory* needed for complex cognitive tasks during the time they are performed. There is a lack of conceptual unity among theoreticians about working memory and its identification with the (somewhat older) concept of short-term memory, the various conceptions being mostly dependent on the concern with, and preference of, issues related to different cognitive skills like learning, reading, comprehension, reasoning, and retrieval of old material from long-term memory.[3] This retrieval is, for our purposes, the most relevant function of working memory; it is enough to emphasize just two of its aspects, namely its limited scope and accessibility to consciousnes.

Among long-term memory systems, so-called *procedural memory* is considered to be that which stores various skills and behavioral patterns, not very distinct from those performed also by non-human animals. We shall not be concerned with procedural memory here.

Distinct from procedural memory, *declarative memory* (also called *explicit* memory) is the aspect of human memory that relates to facts. It is called "declarative" since it refers to memories that can be consciously discussed and possibly declared as true or likely true. It applies to standard textbook learning and knowledge, as well as memories that can be "travelled back to" in one's "mind's eye". Declarative memory depends on the integrity of the medial temporal lobe[4] and is subject to forgetting, even if frequently-accessed memories can last indefinitely.

Declarative memory is further divided to semantic and episodic memory. This distinction was originally made by the well-known psychologist, Endel Tulving[5] and has become quite common in psychology, neuropsychology, and cognitive science.

Semantic memory deals with general, or "encyclopedic" knowledge of objects, concepts, words with their meanings, and facts, without being connected to any particular time or place. Even if the scope of semantic memory depends on the individual's experience, its core is shared among individuals in a given culture.

Unlike semantic memory, *episodic memory* (also called *autobiographic memory*) enables storing and recalling events that were actually lived through and experienced by a person. Thus it is not only specific to times and places, but also to the individual. According to Tulving,[6]

> Episodic memory is a recently evolved, late-developing, and early-deteriorating past-oriented memory system, more vulnerable than other memory systems to neuronal dysfunction, and probably unique to humans. It makes possible mental time travel through subjective time, from the present to the past, thus allowing one to re-experience, through autonoetic awareness, one's own previous experiences. […] Episodic memory is subserved by a widely distributed network of cortical and subcortical brain regions that overlaps with but also extends beyond the networks subserving other memory systems. The essence of episodic memory lies in the conjunction of three concepts—self, autonoetic awareness, and subjectively sensed time.

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[3] Cf. A. Baddeley, "Working Memory," *Science* 255 (1992): 256–259.

[4] L. R. Squire et al., "Recognition memory and the medial temporal lobe: a new perspective," *Nature Review Neuroscience* 8 (2007): 872–83.

[5] E. Tulving, "Episodic and semantic memory," in *Organization of Memory*, ed. E. Tulving and W. Donaldson (New York: Academic, 1972), 381-403.

[6] E. Tulving, "Episodic memory: from mind to brain." *Annual Review of Psychology* 53 (2002)" 1–25.

Owing to episodic memory you can recall a concrete situation or event from your past life. It may be, for instance, an event from your childhood, a party, the wedding ceremony, your yesterday's search for a lost key. We shall call any such event, in general, an ***episode*** of life.When we later recall such an episode, whether vividly or not, we in fact do not ***repeat*** our original living through it; our present experience is an experience of something else: an experience of ***recollection*** of the past episode.

Note that in the above quotation from Tulving the brain scientific discourse is somewhat carelessly mixed with a subjective mental discourse. This is typical for neuropsychological analyses and it is advisable always to keep this fact in mind. For instance, some authors mention "preservation of some sort of place keeping and time tagging" as a central characteristic of episodic processing.[7] In my view, however, there is no a priori temporal coordinate that would make such a "time tagging" objective. We may, and often do, forget any temporal assessment of concrete episodes of our life—even if we may remember them very well. In spite of that, we feel that such an assessment makes sense in principle and hence we intuitively apprehend the past episodes of our lives as if they were, so to speak, spread over a certain time-line. I will say more about the aggregate of such episodes in the last chapter.

Our next observation applies to the individual structure of a typical episode, above all to its inner temporal order. An episode can have a smaller or larger extension over time and a certain narrative content. Normally the existence of the narrative content is characteristic: think, for instance that you are meeting with a friend, have a lecture, write a letter, enjoy a view of the ocean surf. Such episodes comprise many additional features: spatial extension, scene, other participating persons, things, processes, events, and last but not least yourself—your body and your mental states. I will discuss this in the next chapter.

Both duration and spatial extension of an episode are not unlimited, even if there are no sharp boundaries of its internal, episodic time and space. They do not surpass the ***subject-related horizon*** of the episode: the position of the subject, his range of perception and action, his interests and intentions, and, in general, his sense of significance of things and events pertaining to the episode.

Think about one's presently lived actual episode. From its perspective one can experience other, non-actual episodes ***indirectly,*** through intentional recollection or imagination. They are beyond the horizon of the present episode. Thus if one recalls, say, a past episode of one's life not just by reference but by re-experiencing it, one lives, so to speak, in two times (albeit in different modes): you live in the virtual replayed time of the episode that you are recalling and concurrently you live in the time of the present episode in which you carry out the recalling. In fact, there is also a third time, the seldom-reflected background time of the autobiographic panorama which links together all episodes of your entire life (see Chapter 6.).

It is worth noting that the distinction between episodic and semantic memory is supported by recent brain studies. For instance certain pathologies may help to reveal a neural basis for episodic memory:[8]

> In patients with damage of temporal lobe cortex, years and even decades of autobiographical memory can be expunged irrevocably. […] The patient inhabits a permanent present, unable to remember what happened a minute ago or 20 years ago.

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[7] Cf. e.g. K. Pribram, *Brain and Perception: Holonomy and Structure in Figura Processing* (New Jersey: Lawrence Erlbaum Associates, 1991), 262.

[8] A. R. Damasio, "Remembering when," *Scientific American* (Sept. 2002): 48–55, quote p. 51.

Without semantic memory we are animals, without episodic memory we are nothing. Well-known neurologist, Oliver Sacks reports on his patient with Korsakov's syndrom:[9]

> [He was] continually creating a world and self, to replace what was continually being forgotten and lost. Such a frenzy may call forth quite brilliant powers of invention and fancy – a veritable confabulatory genius—for such a patient *must literally make himself (and his world) up every moment*. We have, each of us, a life-story, an inner narrative—whose continuity, whose sense, is our lives. It might be said that each of us constructs and lives, a 'narrative', and that this narrative is us, our identities.

3. Multimodal Structure of Episodic Experience

Considering *episodes* or *episodic situations* as the characteristic content of episodic memory—i.e., the *memories* of a person—brings us to ponder in more detail over certain, more or less general, structural properties of episodic experience.[10]

Episodic situations (hereafter shortly *episodes*) are considered to be the basic elements of human lived experience[11]. As indicated above, each episode is inherently associated with a person who lives it through (hereafter to be called the *subject* of the episode). For the subject the episode is a unitary, complete piece of his or her own experience, with a distinctive meaning and as such worthy to be remembered, verbalized, reflected upon, and possibly narrated in the first-person singular. Every episode has a certain temporal and spatial architecture, its own micro-world, and it can be distinguished from other episodes or from the undifferentiated background. The temporal extension (duration) of an episode is typically short, but may also be moderately long; note that one larger episode may often be segmented into partial episodes that can be thematized (recalled, narrated) separately. A characteristic general feature of episodes is that they have no leaps in time, space, or flow of events.

When discussing episodic situations, two views can be distinguished**:** one view prefers the *first-person perspective*, i.e., a subjective phenomenal account of experience. The other view relies on the *third-person perspective*, i.e., on an objectified description of the episode behind such experience.[12] The former view is like from the eyes (and mind) of the experiencing subject, the latter prefers the detached view "from nowhere" and is typical for scientifically-minded observers. Note, however, that in our context both views are concerned with the episodic situation as it appears *to someone* (namely to the experiencing subject). In the former case we treat the episode as if it were experienced by *us* (more properly said, by *me*), with a privileged access even to our inner feelings and attitudes. On the other hand, in the case of third-person perspective, there is an assumed "someone", the central character of the situation, who may be referred to in the 3rd person singular pronoun *he* (or *she*). Neither of these two perspectives can be achieved in its "pure" form—if we choose one, the other always interferes.

Perhaps an illustrative example will be useful. It happens to be an episode from my own real life:

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[9] Oliver Sacks, *The Man Who Mistook His Wife for a Hat*. (London: Pan Books,1985), 105.

[10] The topic discussed in this chapter will be elaborated in more detail in my book in progress, *Experience of Episodic Situations* (tentative title).

[11] Note that the English word "experience" is somewhat ambiguous: it may be a one-shot *lived* experience (*Erlebnis* in German), as well as *life-long* experience (*Erfahrung*). Here I mostly use the word in the first sense and more or less synonymically with the term "conscious experience".

[12] Both terms are widely used in current literature as intentional allusions to linguistic forms.

> *I stand above the cliffs of the North Californian coast watching in awe for a long time—at least an hour—as the raging waves of the Pacific repeatedly launch unrelenting assaults upon the massive rocky cliffs, and how after each foaming failure, they bestir themselves to yet another attack from a different angle.*

I remember quite well the episode even now (it happened in 1990). I even remember my impressions, "what it was like" to perceive and enjoy the drama happening down the cliffs. Hence it seems more than appropriate to take up the first-person perspective. However, I have no way to describe my impressions to others and make them public in any way without at least partially converting them into a kind of third-person accessible narrative.

In fact, episodic situations are often presented in a third-person language as if it were somebody else's experience or viewed as if "from nowhere". This can be typically found in literary fiction, where it is on the reader whether to perceive a given situation as if in the shoes of the central character (or a chosen one). Consider, for instance, the following episode from the novel *Ignorance* by Milan Kundera:[13]

> *On the facing bench she saw a man and, after a few moments of uncertainty and surprise, she recognized him. In excitement she waited till their glances met, and then she smiled. He smiled back and nodded slightly. She rose and crossed to him as he rose in turn.*
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> *"Did we know each other in Prague?" she said in Czech. "Do you still remember me?"*

We can easily notice several structural features shared by both sample episodes, even if some of them may not be explicitly mentioned in the narratives. Some of the features appear to be sufficiently universal to be pinpointed as internal characteristics of all episodic situations. First, we may easily detect the *temporal* character of the episode (watching a long time; after a few moments before recognition, waiting for a glance) as well as its *spatial* character (above the cliffs; the space to be crossed to the facing bench). The space is not empty, there may be objects of various kinds making up the *scene* and its structure (rocky basin of cliffs, different angle; the facing bench). Further, we can guess a certain line of the story, a hint of a *plot* (unrelenting assaults, yet another attack; recognition of an old acquaintance). This involves a *sense of efficacy*, i.e., something bringing about something else (raging waves—foaming failure), and, in particular, the *sense of agency* of the subject, i.e., the authorship of one's own actions (she smiled, she rose and crossed to him).

I already mentioned the role of the subject, or central character, of the episode (myself in the first episode, "she" in the second—her name in the novel is Irena). Germane to such a subject is the *sense of selfhood*—awareness of one's own presence and involvement in the episode;and the *sense of own body*—the awareness of one's own bodily abilities. In the second example, there are two persons involved: the protagonist (chosen by us to be Irena) and her surmised old acquaintance. The plot of the episode is based on a gradual change of her attitude towards him, which implicitly presupposes a certain degree of empathy—anticipating his reactions and understanding them properly. This relates to the *sense of otherness* on the side of the subject. Obviously, there could be more persons present, so we may further consider also a *sense of sociality* (including communication, language, cultural habits, etc.).

To sum up, we may posit (at least) ten basic *modalities of episodic experience* (shortly *modalities*). Methodologically, the positing of various experiential modalities, and

[13] Milan Kundera, *Ignorance.* (London: Faber and Faber, 2002), 46, (transl. by L. Asher).

discriminating between them is intended to serve certain heuristic purposes—it is a cognitive guide in theoretical investigation of various patterns of subjective experience of episodic situations. Moreover, it offers a certain unifying conceptual framework for various disciplines pertaining to the study of human natural experience. However, one should keep in mind two things: first, that some of the modalities are interest-relative, and second, that discussing them separately may obscure their mutual interdependence (I will return to this point at the end of this chapter).

Whether described in the first-person or third-person perspective, the relatedness of the modalities to the subject of the episode is essential. In fact, we may view them as certain facets of subjective awareness of the episode and correspondingly I will treat each of the modalities as a *sense of something,* namely of a certain feature of episode, where the feature in question is more or less open to objective conceptualization. The purposeful hint to modalities of perception (different sensory faculties) is intuitively appropriate. Let us discuss the modalities separately.

(1) *Sense of time* (and of *duration*). Time is the universal condition of consciousness and thus temporality is the most important experiential modality of episodic situations. The conventional third-person conception of time is based on the idea of an absolute universal objective time line that is homogeneous, infinite, continuous, and linearly ordered. On the other hand, we experience time subjectively as a flow of events from the future through the present towards the past. This endows even the shortest episodes with a polarity, and also yields the intuitive difference between nonexistent only remembered past, the existent present, and nonexistent only anticipated future. In real life, when reflecting upon the temporal character of episodes, we actually use both views, the objective and the subjective one, in parallel; or to say it more precisely, in the background of our knowledge we are always aware of how to transit from one view to the other, or even better, how to oscillate between them.

(2) *Sense of space* (and of *room* for something). The second most universal modality of experience is the sense of spatiality. Lived events and episodes take place not only in time but also in space. The spatial extension of an episodic situation is circumscribed by whatever the subject of the episode can perceive, access or affect. Similarly as in the case of time, experience of spatiality can be reflected under the first-person as well as the third-person perspecive. However, unlike as in time, there is the characteristic *freedom in space*: except for special cases, the subject can willingly move around, possibly returning to the original position. Of course, moving and returning are unthinkable without time, but this should not discourage us from reflecting on time and space separately, as two different modalities of experience. In the third-person perspective we commonly resort to the idea of an objective three-dimensional space, open to measurements, transformations, and drawing maps; each object has its own concrete location, size, and shape. However, the first-person experiential account suggests a rather different concept of space. We, human beings, are free intentional agents, able to affect happenings in the environment. Thus for us the surrounding space is first of all a *room to act*. There are various kinds of human space-related action, like assuming a position, walking, occupying a place, moving objects, searching, approaching people, playing around, dwelling, and so forth. This concept of space as a room to act, incidentally, leads to a distinction of (at least) two types of episodic horizon: the typically more distant horizon of perception and the nearer horizon of action.

(3) *Sense of scene*. The space (or room) associated with natural episodic situations is hard to imagine empty; the episode has its *scene,* filled up with things, or *stage*, where events may happen. Thus the sense of scene and of the layout of things is closely related to, and

dependent on, the sense of spatiality. The term “scene” should stress more static relations (the dynamical aspects, making up the “plot” of the episode, will be discussed next). Accordingly, the term “layout” involves perceived positions and positional relations of things—especially those things that in one way or another are relevant or significant for the subject. Needless to say, for the experience of a scene and its layout the visual (and partly tactile) perception is the most crucial among the cognitive capacities of the experiencing subject. Of course, the subject of a sufficiently complex scene may not consciously perceive the scene as a whole; he may be only implicitly or marginally aware of some its parts, knowing that he could, by suitable shifs of attention or by moving around, bring them into his actual awareness.

(4) *Sense of plot*. As a modality of experience the sense of plot might be viewed as a counterpart to the sense of scene. The latter is more related to the static layout of things while the former to the dynamic flow of events. A non-trivial episodic situation would not be “episodic” if there were not a plot. (In this study I am using the term “plot” in a rather broad sense, broader than it is used in literary studies). Given an episodic situation, the plot associated with it should be understood as comprising everything significant for the subject that ***happens*** within the scope of the situation. Moreover, the above claim that the plot comprises everything does not mean that it is a heterogeneous collection of movements, changes, events, and perhaps even of several parallel component plots. As mentioned above, one of the characteristic features of episodic situations is their compliancy with the well-known classical rule of the unity of time, space, and action. In fact, instead of “action” I could quite appropriately say “plot”. Thus everything what happens in a situation from the point of view of the subject (i.e., at least marginally significant for him) is entangled, as it were, into a bundle of mutually related events. On the subjective side, the plot may be sensed with various intensities according to the degree of its significance for the subject and/or according to the degree of involvement of the subject in the affairs. In the latter case, the most basic degree corresponds to the subject’s passive and neutral awareness of what is happening around, how various objects change, move and mutually interact without interference of the experiencing subject. On the other side of the scale, the subject–protagonist is in a certain way deeply ***engaged*** in the plot (recall our example of Irena meeting a friend). There are, moreover, various kinds of engagement, ranging from having the plot entirely under one’s own active control up to the subject’s private thoughts and emotions merely induced by certain events. (In fact, we can alternatively think of the ***sense of engagement*** as of an additional modality of experience.)

(5) *Sense of efficacy*. This modality is a constituting element of the experience of plots. If temporality and spatiality provide episodic situations with a certain breadth, efficacy endows them with inner dynamics. Here the term “efficacy” is used in a rather broad sense of something having impact on or influencing something else. The most common case is ***causal efficacy*** —something is taken for a ***cause*** of something else, the latter being the ***effect*** of the former (the theoretical counterpart of it is the objective, lawlike ***causality***—the notion connected to the nexus that provides the principal basis for scientific explanations.) The naïve, uninformed sense of efficacy enables us to separate various types of source of change. Besides intra-episodic causation, there is the case when a certain happening is, or seems to be, entirely accidental or random. This distinction is related (but not equivalent) to differentiating between ordinary, easily predictable happenings and something that takes us by surprise. Furthermore, there is the possibility of some intra-episodic events being effects of some events in the extra-episodic world (beyond the horizon of the episode and therefore out of the subject’s concern or knowledge).

(6) *Sense of agency*. This is a special case of the sense of efficacy that is particularly relevant to the subject's engagement in the plot. It is the case when the initiator or originator of a certain event or happening is the subject itself. In general, we can easily recognize cases of efficacy in which we are, or at least we consider ourselves to be, intentional agents responsible for effects, and distinguish them from all other cases of efficacy. In particular, the sense of agency proper can be distinguished from the sense of *ownership of bodily movements*, the latter related more to the modality of embodiment. When I say: "It is my movement (the movement of *my* hand)," it is not the same as when I say "It is my movement (it was *me* who intended to move the hand and initiated it)." In both cases the sense of Self is involved, even if in a different way, which brings us to the next experiential modality.

(7) *Sense of Self* (or *selfhood*). This is inherently a first-person type of modality. When we referred to the subject as the protagonist (or the main character) of the episode we actually adopted the third-person perspective in which it is quite natural to count the subject as *belonging to* the episodic situation as if he were one object among others. On the other hand, in a proper first-person approach, we should either reflect upon our *own*, really lived episodes, or to contemplate about other people's episodes empathetically, as being in the shoes of their subjects. Thus any episodic situation that *I* actually experience *belongs to me*, in a sense I say, "this is *my* situation." When we are pre-reflectively absorbed in actual experience we are always at least marginally or peripherally aware of our experiencing Self. Even when we turn our reflective eye back to ourselves, we cannot inspect our Self as an object; we can only feel an unsurpassable inner horizon—a special kind of a fringe encircling a vanishing central point never to be reached. As the Czech phenomenologist Jan Patočka puts it:[14]

> Experience is like a tissue stretched between two horizons: one is my self, the other is the world. Experience is a kind of explication of these horizons, with the particularity that in order to explicate myself, I first have to stand on the ground of the world and only then can I return to myself.

In reflection we can perhaps imagine an absence of our body, but we can hardly imagine the absence of our Self. An interesting issue, in this respect, is the involvement of our actual Self in recollections of past episodes of our life. There is a salient continuity of the sense of Self between actually lived episodes and episodes retrieved from memory: our Self is always the *same* Self; in our recollections we hardly doubt that it was *us* who experienced the recalled episodes.

(8) *Sense of one's own body* (*embodiment*). Our body is in many important ways an interface between ourselves (our Self's) and our environment. It is located in space (unlike the Self) where it provides us with the egocentric perspectival frame of reference. It is one of the objects in the scene that (partly) appears in our perceptual field and, at the same time, it is involved in continual enaction[15] of our lived world as well as of the presently lived situation (for instance of the room to act). Without body we would not be able to manipulate with other objects and, in general, interact physically with the environment. In the first-person perspective we can make a clear distinction between consciously *attending to* one's own body and being *marginally aware of* it. For instance in the case of physical movements of the body

[14] Author's translation. Cf. Jan Patočka, draft of a lecture on corporeality (manuscript No. 1980/8), in: *Přirozený svět a pohyb lidské existence* (Natural World and Movement of Human Existence), ed. Ivan Chvatík (archive collection, Prague, 1980).

[15] F. Varela's term; cf. F. J. Varela, E. Thompson, E. Rosch, *The Embodied Mind: Cognitive Science and Human Experience* (Cambridge, MA: The MIT Press, 1991).

we are not conscious (and are aware of not being conscious) of the details of initiation and control of movement, especially when it is a complex movement involving cooperation of various parts of the body—we are conscious only of the whole act. In this sense our body becomes *experientially transparent* to us, at least to a certain degree depending on our past practice. There are two crucial concepts related to human body: *body image* and *body schema*. In Gallagher's formulation: [16]

> A *body image* consists of a system of perceptions, attitudes, and beliefs pertaining ot one's own body. In contrast, a *body schema* is a system of sensory-motor capacities that function without awareness or the necessity of perceptual monitoring.

As so defined, the body image and the body schema differ in that only the former and not the latter is accessible to the first-person conscious experience. When the subject is occupied with something in the surrounding scene and is entirely absorbed in it, then his body—its presence and role in perception—is passed over in favor of the perceived. Yet the forgotten body remains pre-reflectively and unthematically still around, always ready promptly to become the object of the subject's focused attention. Last but not least, it permanently provides for the perspectival view of the scene.

(9) *Sense of otherness*. There are episodic situations with other people physically present (like in our example with Irena). In such a case, the others may be, in various degrees, also engaged in the episode (take part in its plot); a particularly interesting case is when some of the others are significant for the subject of the episode—then *the sense of the Other* (or *otherness*) is worth being counted as a specific modality of experience. Dan Zahavi[17] outlines four different takes on the relation to the Other; two of them are applicable to episodic situations: (1) The face-to-face encounter with the Other is accompanied with a specific mode of consciousness called *empathy*; (2) The encounter with the Other (including empathy) is conditioned by a form of *alterity of the embodied Self* (not to be conflated with the alterity of the Other). We have met a face-to-face encounter in the example of Irena recognizing a friend (what is distinctive for the episode is the gradual elevation, in the eyes of Irena, of another person from the category of stranger to the category of her acquaintance). Incidentally, the sense of the Other may be associated with a person that is not physically present in the episodic situation. Whatever is the case, the attitude towards another person is not the proper third-person view (as it is towards non-human objects), but at the same time it is not the proper first-person perspective since the other is still the Other. Hence we might introduce a new concept, namely of a *second-person perspective*. An important component of the second-person view is the empathic understanding expressive facial and bodily behavior of the Other (smiles, glances, nods, frowns, and of course, language).

(10) *Sense of sociality*. Let us imagine an episode whose subject belongs to a certain group or community of other people, who typically share with you some intentions, interests, worldviews, rituals, etc., or who are, as a group, in a certain way significant to you. The subject may adopt a separate second-person perspective toward each individual member of the group, but this would not be a proper identification with the group. There is something more to it. First, the subject is related to the group *as a whole*, and second, the relation is of a specific type: the subject is a *member* of the group. Then the concept of *sociality*, as one of the experiential modalities of episodes, may be defined on the basis of these two relations. It

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[16] Shaun Gallagher, *How the Body Shapes the Mind* (Oxford: Oxford University Press, 2005), 24.

[17] Dan Zahavi, *Subjectivity and Selfhood: Investigating the First-Person Perspective.* (Cambridge, MA: The MIT Press, 2005), Chap. 6.

seems appropriate to associate sociality with a special perspective—that of a higher-level collective "we"; hence, to stay with our linguistic metaphor, we may talk about a *first-person-plural perspective*. An individual's sense of sociality actually involves two closely interlinked perspectives: the first-person view of the group from the standpoint of its member, and the first-person plural view of the world from the standpoint of the group as a whole. What was for the sense of otherness the face-to-face encounter, is for sociality the actual membership of, or identification with, a group. Note, however, that sometimes the group is associated solely with the episode in question, in which it may emerge and vanish, but often it is an extra-episodic entity and as such it is more something belonging to semantic memory (or hybrid memory—see Chapter 5).

Obviously each modality of experience is inherently linked with other modalities, for example the sense of efficacy is linked with the sense of Self and (often) with the sense of one's own body. As already mentioned the modalities of experience, as introduced here, are more or less heuristic notions. As such, and in spite of the fact that their distinctions can be supported by objective as well as phenomenal analysis, they implicate the explanatory and interpretive stance of a theoretician. In general, a conceptual analysis of an inherently complex problem can be often simplified using a "disentangle–and–conquer strategy" even in cases when the wholeness or unity of the object of study is substantial. The first phase of the strategy consists in decomposing the problem into several components that can be studied separately, one after another. In each separate study, however, one should not completely ignore the existence of other components; they should remain available to the extent they may contribute to the understanding of the component we are aiming at. In the second phase, after a certain familiarity with individual components is achieved, the attained knowledge is integrated into a deeper understanding of the whole. I believe that such a strategy may turn out to be useful, in particular, in the analysis of the structure of episodic experience (only the first phase is outlined in this essay).

4. Episodic Recollection

There are episodes within which we deal with recollections of other episodes lived through in the past. Consider, for instance, a situation in which you are searching for some lost object and are trying to recall your whereabouts when the object was still around. The following example is a verbal, willfully detailed report about my own experience, only slightly modified to serve our purposes:

> *I am looking for the key to our wine cellar. It may be lying in the usual place on the small table next to our front door, I guess. No, the key is not there!Indeed, only yesterday I had it in my hands, indeed, when I went to the cellar for a bottle of wine. I remember that I locked the cellar after me. Probably I have habitually put the key into my pocket, so it should still be there. But it is not! Well, there are all sorts of places where I could conceivably have left the key.*

Here the phrase "where I could leave" may hint at a range of places, for instance "where it is usual to keep keys in our home", or "where I usually put things from my pockets", or "where I was physically present after having locked the cellar."

> *Presently I am attentively walking around through all of such places. No success! I walk around once again. And again. Now, I am stopping the fruitless rummaging*

around and, in the hope of discovering some clue, I am pondering about what was actually happening to me during the whole period between locking the cellar and noticing that the key is missing. It is rather disappointing how many gaps exist in my recollections about the period in question! Maybe some logical inferences will help.

In this narrative we can easily distinguish two different episodes from my personal life. One is the present search for the lost key (let us call it shortly the "search" episode). The other is the episode of my life in the period between (yesterday's) locking the cellar and (today's) noticing that the key is missing (shortly the "loss" episode). In the textual presentation above, events of the former episode are narrated mostly in the present tense, events of the latter episode in the past tense. It is worth noticing the nested structure of the higher-order "search" episode that embraces the lower-order "loss" episode as its proper part (not just a segment). To be precise, the *act* of recalling per se should be counted as a higher-order event, while the *content* of the recollection (the "loss" episode itself) is composed of lower-order events.

There are several pertinent observations that can be stated as general properties of any act of recollection of episodic memories (to simplify the wording I use the first person singular when refering to the remembering subject):

- My past (remembered) Self is identical (genidentical[18]) with my present (remembering) Self.
- My present experience of the past episode is imaginative.
- The orientation (but not the duration) of the experienced time of the past episode is preserved (we may perhaps recall it in reverse order, but we are aware of the reversal);
- What is real (not imaginative) is not the content, but the mere act of recollection. It is a part of the present higher-order episode.
- The past episode may have a name and/or temporal tag (date). Sometimes it can be retrieved using such a name or tag.
- While recollecting, I am aware that the recollected episode was real in the past; now I may even know the then-future (or at least I know that I cannot affect it now). Hence my present empathy with my past Self may only be partial.

The above example of the "search" episode reveals a certain temporal structure on a rather coarse level. It has two phases: the first phase is my "rummaging around" through the promising places, the second phase consists mainly of my recollection and pondering over the "loss" episode. What is conspicuous in the example are the unpleasant gaps in memory even of relatively recent events. The gaps may have various causes like inattentional blindness to things and events outside the scope of attention already during the original experience,[19] or subsequent forgetfulness of recent events in episodic memory.

Thus we should make a conceptual distinction between the intended past episode as such and the same episode as it is later recalled, the latter being a fragment, or even a distortion of the former. To make this distinction clearer, consider the "loss" episode in the above example. Even if it has a relatively well specified beginning (the act of locking the cellar) and end (my noticing the loss), we may think of it in two different ways. First, we may conceive of it as a collection of *all* events related to the key and myself during the specified period, whether I remember them or not. Second, we can identify the "loss" episode with its

[18] Crudely put, genidentity is identity over temporal gaps; cf. K. Lewin, *Der Begriff der Genese in Physik, Biologie und Entwicklungsgeschichte* (Habilitationsschrift, 1922).

[19] Cf. A. Mack and I. Rock, *Inattentional Blindness* (Cambridge, MA: The MIT Press, 1998).

"gappy" mental model restricted only to those events that I am currently recalling. In the second case, the "loss" episode is dynamic and can evolve (improve) within the course of the "search" episode. In the example, the second phase of the "search" episode is actually an effort to fill the gaps in the "gappy" model of the "loss" episode in order to discover the unknown crucial event (that of putting the key somewhere).

There are two different strategies applicable—an associative thought and inference. Associative thought is basically an attempt to randomly dig out memories that are preserved, but not currently accessible. Playing with arbitrary, but related ideas may have a triggering effect for the emergence of apparently lost memories.[20] Inference is perhaps the last resort in cases similar to our example. There are some not very useful trivial inferences like this: "I had the key yesterday, I do not have the key now. Thus there exists an event when I put the key away." The everyday fuzzy logic may also yield some more interesting deductions. In fact, my own "search" episode continued as follows:

> *I try some inferences. I indulge in this line of thinking:"Perhaps, when I returned from the cellar with the key still in my hand, I wanted to do some manual work. So I might have put the key away to avoid being hampered by it. Well, was I doing some manual work? Oh yes, I was opening the bottle of wine in the kitchen! Hence there is a certain chance that I left the key somewhere near that place." I rush to check the kitchen, but there is no key there. I am giving up the search—better to call a locksmith.*[21]

And so the "search" episode is over and only some new facts may fill the gaps in the "loss" episode. Incidentally, the nested structure of episodes may have several levels. For instance the entire story of the search for a lost key, presented in this essay, is in fact an episode retrieved, when I am writing it, from my own episodic memory.

Any recollection of an episode somewhat affects the recalled episode. Here, by the term "affects" I do not mean that it modifies or distorts the actual course of its events or the entities involved. What is affected is something more crucial, namely the *significance* of the episode. In everyday life, we normally recall past situations or episodes for some reason. In the case of the lost key the reason for recalling the "loss" episode was precisely to help me find the key. Some other time I may recall the same episode for other reasons, say, to please myself with a reminiscence of a good wine, or to entertain an audience, thirsty for a catchy story from my life. In each case the story obtains a different flavor of significance.

Thus the significance of a recalled episode is not just a property of its narrative content. It depends also on the intentions and moods of the person who is recalling it, and on the situation in which it is recalled. But even when it is not recalled, its meaning may change with time. If nothing else it is growing older. Of course, the significance of an episode is not something observable, specifiable or even measurable. It is rather a matter of appreciation, understanding, and meaning.

5. Hybrid Memory

The distinction between semantic and episodic memory can hardly be understood as something exact. In fact, there are phenomenally-based intuitions according to which there are obvious intermediate cases and various kinds of mutual interaction between both memory

[20] The more general type of associative thought is not guided by a purpose or a goal. Impressive examples can be found in Proust's famous *In Search for a Lost Time.*

[21] In reality the key was found later.

systems that cannot by attributed just to a short-term working memory. For theoretical purposes (at least) we can tentatively presume the existence of a third type of memory that comprises all intermediate cases and underlies the mutual interaction of the semantic and episodic memory systems. I propose the term *hybrid memory* for this third type of memory. As long as there is no concrete neuroscientific evidence for its existence as a brain structure or neural process, hybrid memory should be understood as a primarily theoretical and/or phenomenal concept.

Theoretically, we can imagine two functionally different directions of interaction between semantic and episodic memory systems. On the one hand, in the time of acquisition of a certain piece of general knowledge, i.e., in the process of learning, a person has to live through several episodes of similar content (or a single episode in case of "one-shot" learning), that at least temporarily survive in episodic memory. From there they are taken over by hybrid memory that gradually frees them of their concrete situational peculiarities and extracts from them anything that is appropriate to be saved in semantic memory (the "digestion metaphor" of learning).

In this way we could acquire part of general knowledge stored in semantic memory, for instance (refering to our previous example): what is the function of keys, why it is better to keep wine-cellars locked, that bottles of wine should be stored in horizontal position, how to recognize a good wine, etc. Such pieces of knowledge can be obtained by personal or reported episodic experiences, that as such may be happily forgotten. Even if we have learnt such knowledge from encyclopedias, once there existed episodes of reading, also mostly forgotten.

On the other hand, in order that a particular experienced episode is kept in a retrievable form in episodic memory, it should obtain a coherent narrative content. This is hardly imaginable without semantic memory supplying an appropriate knowledge of the generic structure of the episode, of properties of its components, types of efficacy and other relations between them. Thus, for instance, I would not be able to remember and narrate the episode of my search of the lost key without being familiar with many of the just mentioned pieces of generic knowledge (about keys, cellars, wines, etc.) and, last but not least, without knowledge of words of language and their meanings.

There is also another possibility of introducing hybrid memory, namely to grant it a status of a third type of full-fledged memory, albeit with a hybrid content. It would represent a kind of generic but situated knowledge that might combine properties of both semantic and episodic memory. We may think, for instance, of the accumulated and average personal experiences of the following kinds: (1) something learned mostly from one's own past experience, but without any link to time and place (e.g., an encounter with a ticket inspector in a train); (2) a specific aspect of a common object (the river Moldau as it is regularly viewed from one's own concrete window); (3) one's own long-term priorities, desires, fears, and other kinds of self-knowledge. To sum up, hybrid memory in this sense may be conceived of as preserving all that would either be stored in semantic memory if it were freed of the traces of individual experience, or that would be stored in episodic memory if it had no generally instructive content.

Ontologically, the conception of hybrid memory may be understood in three different ways. First, one may think of certain presupposed brain structures underlying it that should be anatomically or dynamically distinguishable from (but linked to) the brain structures associated with semantic or episodic memory. To corroborate such a view we would probably have to look for appropriate neurobiological data.

Second, the term "hybrid memory" may appear to be just a name for short transient processes activated only when an interaction betweeen semantic and episodic memory is on the way, in particular, when such a process is at least partly associated with a conscious feel.

Then we may think of it as subsumed under the more general concept of working memory (especially if it turns out to be supported by neuroscientific data).

Third, we may take the concept of hybrid memory solely as a helpful theoretical concept, based on our intuitive phenomenal reflection. This, incidentally, is compatible with both previously mentioned options.

6. The panorama of life

Up to now we were concerned with individual episodic situations and their (episodic) memories. In this last section I address, somewhat tentatively, the issue of the aggregate of all episodic memories that are conceivably embraced by episodic memory.

Ordinarily the terms biography or autobiography are used to mean an account of the whole life of a person, implicitly conceived as a single continuous story (albeit typically available in an incomplete or fragmentary form). In our setting, however, we need a somewhat different concept, much more restrictive and without the implicit notion of continuity. For the latter concept I propose the term "panorama of life" (to be specified below) in order to keep the distinction in mind. The preliminary intuition behind this conception is the following: imagine that you remember your past life in terms of a collection of rather limited anectodal episodes, typically not connected to one another and not always open to an explicit chronological ordering.

Let us first mention three types of episode that differ in the "mode of existence" in the eyes of the subject (hence I prefer to describe them again in the first person singular):

(1) My presently lived real episode (my "here and now" experience);

(2) My presently recalled past episode;

(3) A past episode that I could possibly recall from my episodic memory;

(4) Any episode that I presumably lived through in the past and so it could have possibly become the contents of my episodic memory (but perhaps never became or I am just unable to recall it now).

Note that episodes of type (2) and (3) are a special case of type (4) and that the latter may include all sorts of episodes ranging from those of type (3), through various partly forgotten or gappy episodes, up to somewhat elusive episodes without any concrete content. The first-person nature of the distinction is essential and we can hardly rely on any objective, third-person approach, especially when the type (4) episodes are discussed (let us neglect the God's Eye perspective).

To make our next discussion more transparent, I make three restrictive—admittedly counter-intuitive—formal assumptions. First, let us fixate what we consider to be the *present* episode (so that the notion of personal "past" does not evolve over time). Second, let us disregard possible inclusion of episodes. And third, we are not concerned with the possible presence of (internal) gaps in episodes (to a reasonable extent). In addition, we presuppose that the duration of individual episodes does not exceed a reasonable limit dependent on our cognitive capacities and on our abilities to consciously handle large amounts of data.

Under these assumptions we can define the *subjective panorama of individual life* (shortly *panorama of life*)[22] simply as the collection of all episodes presently available in episodic memory (i.e., those of type (3) mentioned above). The notion that the panorama is at least partly ordered with respect to time, and that there exist smaller and larger hiatuses (gaps) between particular episodes, helps with the intuition, but is not *a priori* presumed in the definition (see later). Incidentally, let us not complicate the matter with thoughts about a variety of possible re-definitions of individual episodes—in fact, any re-definition, extension, or merging of particular episodes can be formally viewed as a generation of a *new* panorama.

Our natural attitude to the panorama of life, as something always incomplete, can be circumscribed by the hypothetical idea of an existence of the *ideal panorama of life*, comprising *all conceivable* past episodes of one's life (i.e., all episodes of type (4)). Obviously, the concept of an ideal panorama is even more elusive than that of the partaking episodes. The ideal panorama per se is not concretely accessible under the first-person perspective or under the third-person perspective. In a sense it plays the role of an ultimate "horizon" of all conceivable panoramas of various degrees of (un)completeness.

Typically, episodes worth and easy to be recalled and possibly narrated are rather salient and distinguishable from the undifferentiated background. They are relatively small, short, and not too complicated. I admit that we sometimes count as "memories" also impressions, feelings and long-term experiences related to large periods of life (e.g., "the childhood spent in Combray"). However, these memories, might be better associated with hybrid memory than with episodic memory.

Let us now examine certain structural properties of the panorama of individual life as it appears to the subject. Taking a certain detached theoretical stance we can make two preliminary observations. First, some of the past episodes may reappear in later episodes as recollections either by intention or spontaneously (cf. type (4) above and Chapter 4). The anticipated, imagined (or even dreamed) episodes are not counted here as parts of the panorama of individual life in the narrow sense; however, it is worth noting that only the subject himself can draw a dividing line between (possibly) distorted memories of real, once lived episodes and episodes that are only imagined or dreamed.

The second observation concerns a possible temporal ordering of experienced episodes. We can recall the memories of past episodes in an arbitrary order, and, more importantly, we cannot always decide about the concrete order of their occurrences in the past. Since a part of our cultural background is the belief in linearity and connectedness of our autobiography as if all experienced episodes orderly followed one after another, we automatically ascribe the disorder and existence of panoramatic hiatuses solely to our forgetfulness and unavailability of sufficient chronological records. However, for the sake of discussion, let us follow the strategy of separating our phenomenal first-person experience from the background intuition of linearity (and continuity) of time.

Most of the theories of personal time take for granted the metaphysical assumption that both inner episodic time and extra-episodic (autobiographic) time are just segments of the absolute objective (physical) time and hence that it is nothing but the weakness of our memory and narrowness of consciousness that prevent us from projecting all the episodes of our life densely onto one common measurable time-line. Analogously, most natural sciences entertain the notion of objective physical time endowed with the structure of the ideal mathematical continuum, formally identifiable with the continuum of real numbers. The same notion of time is tacitly used in research on consciousness in spite of the fact that human time

[22] I am borrowing the word "panorama" from the title of H. G. Adler's novel *Panorama* (Piper, München 1968/1988).

consciousness is organized differently and does not reach the scales below tens or hundreds of milliseconds.

What is the origin of our certainty about such linearity and continuity of objective time? Does it come from experience of the lived present or from our inherent feel that our past life consists of episodic memories glued together into a single amorphous whole? Marcel Proust in his famous search for "lost time" writes:[23]

> All these memories, following one after another, were condensed into a single substance, but had not so far coalesced that I could not discern between my oldest, my instinctive memories, those others, inspired more recently by the taste or "perfume," and those which were actually memories of another, from whom I had acquired them at second hand; no fissures, indeed, no geological faults, but at least those veins, those streaks of color which in certain rocks, in certain marbles, point to differences of origin, age, and formation.

Let us try to suppress the feel of our past "condensed into a single substance" and let us take notice that, after all, our memory only offers discrete, episodic clips that are divided by "fissures" and "faults". The experienced episodes have their own inner episodic time and most of them are separated by inter-episodic hiatuses of unrecoverable memory. The "fissures" and "faults" (perhaps even "veins" and "streaks") in Proust's reflection may only be products of our effort to secure temporal continuity of our Selves and of the surrounding world.

Autobiographical reasoning according to Habermas and Bluck (as summarized by Rubin)[24] is the

> process by which autobiographical memories are combined into a coherent life story and related to the current Self. They identify four components of autobiographical reasoning: temporal coherence, which involves the sequencing of events in time; causal coherence, which serves to explain both life events and changes in the narrator's personality; thematic coherence, which involves an analysis of common themes among many different memories; and the cultural concept of biography, the cultural mores that dictate the events that are incorporated into a life story.

Reflecting on the structure of (perhaps ideal) panorama of life we may formally indicate some general relationships among mutually distinguishable episodes. Examples of such relationships may be: disjunction (unrelated episodes are separable), overlap (two episodes share certain segments), or inclusion (one episode being a segment of a larger episode). This is, indeed, a somewhat static view. As some episodes are being refreshed in subsequent recollections, others getting lost from memory entirely, still others appearing to be overlapped, the structure of the panorama is dynamic—it perpetually evolves.

In spite of that, the idea that all episodes of the panorama may, in principle, coalesce into a single linear chain of connected or overlapping episodes seems to me somewhat counterintuitive: there are, in fact, only rare cases when two non-overlapping events are in one or another way linked together (whether due to a causal link, evolution of involved entities, or something else).

Now, if there are hiatuses between episodes in the panorama, we may naturally ask: what is between episodes? But do we really expect something to fill the hiatuses? Indeed, we are accustomed to say "some time elapsed between them". By saying this we mean, however,

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[23] Marcel Proust, *Swan's Way* (Mineola , NY: Dover Publications, 1913/2002), 164, (transl. by C. K. Scott Moncrieff).

[24] David C. Rubin, "The Basic-Systems Model of Episodic Memory," *Perspectives on Psychological Science* 1 (2006): 277–311; with reference to T. Habermas, S. Bluck, „Getting a life: The emergence of life story in Adolescence," *Psychological Bulletin*, 126 (2000): 748-769.

another time, not the authentic time of narratives and episodes, but the pervasive background time of inner intuition.

Let me quote a somewhat metaphorical, but for the temporal organization of memory, relevant statement of Shaun Gallagher[25]:

> Instead of experience organized in a temporal stream, experience may be more like a rain against a finite surface, droplets of experience splashing together forming puddles of meaning which only sometimes flow together to create a short-lived stream.

Elsewhere I proposed an understanding of time having a "granular" structure and evolving at several levels.[26] On the intra-episodic level "droplets of experience" may flow together to create a short-lived streams, while on the top most level, they merge into the panorama of life. It owes its coherence to our ability to preserve episodic memories. As Antonio Damasio observes,[27]

> The ability to form memories is an indispensable part of the construction of a sense of our own chronology. We build our time line event by event, and we connect personal happenings to those that occur around us.

Or as Stern puts it,[28]

> […] archipelago of islands of consciousness, the present moments, that make up our subjective experience, rather than the unconscious underwater mountain range (be it psychodynamic or neural circuitry) that occasionally pierces the surface to make the islands. These islands are the psychological foreground, the primary reality of experience.

A view from distance leads to the issue of correctness of episodic memory that I willingly put aside in this study. Let me just mention that there is a continuous range between confabulation proper (because incoherence, falsehood, etc.) and natural distortion of memory under the dictatorship of the subjective feel of the meaning of life.

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[25] Shaun Gallagher, *The Inordinance of Time* (Evanston, Ill.: Northwestern University Press, 1998), 201.

[26] I. M. Havel, "The structure of experienced time," in: *Endophysics, Time, Quantum and the Subjective* ed. R. Buccheri et al.; (Singapore: World Scientific, 2005), 379–404.

[27] A. R. Damasio, "Remembering when", op. cit., 50.

[28] D. N. Stern, *The Present Moment in Psychotherapy and Everyday Life*, (New York: Norton, 2004), 21.