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# Fantasy, Repression, and Motivation in an Ecological Model of Memory

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*Remembering is a kind of doing. – Ulric Neisser (1996)*

## Introduction

In the course of many years, I slowly came to notice a particular recurring feature: If somebody asks me to remember and report an authentic memory episode, I first notice the energetic effort to pause the behavioral flow. Each biographic episode has to be reconstructed, even if its core, consisting of two or three connected facts, emerges automatically as a short sequence. That is why I – just like anyone, I suppose – always recount almost identical stories with identical points. In sum, these few stories form my available repertoire of memory episodes.

As you can see from this loose self-observation alone, the problem of recollection combines aspects of the psychology of thought, of motivation, of affect, and of personality. Therefore, it should surely be at the center of any general theory of man because feeling, fantasy, and thought are individual experiences, which connect only by memory.

That remembering and memory are *not* at its center, and even fields akin to psychology such as artificial intelligence, linguistics, and neuroscience first treat "executive" problems, i.e., perception and its connection to action, seems to be due to the aspect of personality and the often individually vastly different motives of remembering. The latter obviously feed back on thought and even perception, and that is why, strictly speaking, a truly "general psychology" has always been utopian and will remain so. Conceptually the individual aspects of mind are hard to grasp and methodically (statistically) *not at all*. Furthermore, they are often embarrassingly personal and, of course, always subject to whitewashing in service of the self (Devereux 1967). So better leave it out. May psychology remain a "strict science," although it has never been one.

Nevertheless, remembering and memory remain the kernel of intelligence and thus of psychology. The fact that they are so much

ignored leads, I suppose, to the almost total public disinterest in academic psychology and cognitive science.

I believe that our group, which for more than 20 years has been doing introspection studies in psychology of thought with and around Oswald Wiener (Eder and Raab 2015), also often slipped away from the goal of a *comprehensive* psychology of thought because of this "embarrassing" aspect of the personal, which – alas! – makes for the embedding of all thought into one's life path and everyday life. In this respect, our group also fully belongs to mainstream psychology and cognitive science, whose theories of motivation to this day remain either too statistically oriented and / or conceptually too abstract. On that score, it seems characteristic that none of the cognitive science dictionaries I know contains an entry on "motivation."

In contrast, psychoanalysis, seen historically, has put the problem of personal recollection, of the individual, at its core. Based on its "ego psychology" and ideas of the "secondary process," it only later sketched out preliminary theories of thought in general (Rapaport 1950).

Yet, the rare attempts at connecting the psychoanalytical concepts of motivation with general psychology (in the university) by clothing therapeutically effective notions such as "repression," "defense," "condensation," or "fantasy" in terms of cognitive science (Rapaport 1971, Erdelyi 1985, 2006) seem to have failed. They failed, I believe, because neither side managed to convince the other of the sheer *existence* of their respective problems. I further believe that the reason for this is that *both* – cognitive science and psychoanalysis – misconceived the problem of remembering and memory. So here I will try to – anew and hopefully better – reconcile both by using new conceptual means, which Wiener's ideo-motor theory of thought is so far able to supply.

In the following, the italic passages attempt to describe examples of my memory episodes as authentically and soberly as possible. I tried to resist the urge to confabulate and decorate as well as I could and to write them down without poetic decorum or any added nubs. Due to the required brevity of the presentation, these examples are

few, and I must hope that they are sufficient to gain empirical support for my theoretical sketch.

## "Real-life thought" and "ideal thought"

Even when the thought process is controlled by a defined task, it is ordered only sporadically and at a perceptible affective cost. Each assembly process (intentional orientation in a problem space) requires heightened concentration, i.e., the allocation of almost all cognitive resources to the task to which one has to forcibly return again and again. Intoxication and fatigue instantly lead to lapses into fantasy and the flight of ideas. The same is true for the remembering of situational episodes. Every solution of a task, also of the task of remembering something, results in a structure, that is, a (motorically or socially) applicable regularity. The processes leading to this result may sometimes take months or even years in which the task remains incubated. Potentially, introspection only uncovers the surface of them but it is able to give at least hints towards their functional core and its incidental interaction with the environment.

As long as perception and action aren't interrupted by a task or a biogenetically older and, thus, vitally more urgent reflex, our attention remains controlled by stimuli. A loud sound, for instance, or an error signal during the execution of a sensorimotor schema ("missing an object") may disrupt the behavioral flow. Most of the time the behavioral control by perception is consistent insofar as it leads to gratification or, at least, to no conflict.

But why then do we, despite this consistency of the perceptual world, experience our thinking as being so erratic? Why does it so often consist of fantasies, which seem to have little or nothing to do with either the objective world or the currently conscious task (Varendonck 1921, Stekel 1951, Klingler 2008, among others)?

In Raab (2015), I attributed this restlessness to a heterarchy or (temporally dynamic hierarchy) of incubated complexes of sensori-

motor schemas episodically broadcasting tasks or, as their simplest instances, contradictions into consciousness. Sometimes, these are recognizably triggered by stimuli, but more often they are not. Only the habituation of tasks, which "freeze" to an at least medium-term "problem attitude," or challenges from the environment – from internal needs or from bureaucracy – counteracts the rather chaotic nature of the "stream of consciousness." Focused thinking presupposes habituation of this problem attitude. The latter you can observe from the fact that you always have to attune anew to every task once you have deviated from it.

If they are of a mundane kind, these incubated tasks become actualized by somatic changes and environmental cycles (hunger, thirst, fatigue, sexual urge) or are triggered by superficial sensory stimulus constellations (Fisher 1957). They then function as quasi-needs only ceasing when finally resolved (Lewin 1951).

As already mentioned, remembering past life-episodes can be considered tasks too. Usually, you remember only if you are asked, or if the episode, as a "story," is to serve a group as social cohesion or as entertainment (Halbwachs 1925). Special cases of remembering encompass the writing down of memories, as sometimes fostered by professional pressure, or, possibly related to this, spontaneous recollections when losses or shocks necessitate major rearrangements of orientation (Salaman 1970).

On the one hand, the psychology of thought and problem-solving usually deals with concentrated thinking on formally defined tasks with unambiguous solutions. In real life, however, these concentration phases only last for short, often merely second-long periods. In order to be able to devise controlled experiments, psychology thus idealizes the incubated task heterarchy and problem attitude to a single motive, namely solving the artificially prioritized task. In "real-life thought," on the other hand, mundane, professional and psychobiographical tasks and their contradictions intermit unpredictably, because they depend on unpredictable "coincidences" provided by the outer situation.

As an aside, I will try to specify the term contradiction in the psychological and not logical sense below.

## Memory episodes caused by unfinished tasks: the fantasies

> *The peacocks in front of the baroque palace in the west of X majestically crossed the wet (?) meadows, and immediately: my mother, who suddenly ran after one of the male peacocks quite frantically, jumped on his tail feathers and soon happily and proudly presented one tail feather in her hands, probably in order to decorate our apartment or as a gift to someone.*

This is one of the few memory episodes from my elementary school years. A memory episode must meet four criteria. First, it must interrupt the current focus of orientation, whether it is directed to the environment or inward; second, it must connect at least two aspects or, in Wiener's terms, "seeds" to a spatiotemporal sequence; third, this sequence must appear automatically and identically and *not* be generated by controlled thinking (i.e., intentionally assembled "stories" do not count, only sequences expanding automatically and, thus, authentically, however embarrassing they may be); and fourth, it must be temporally locatable in one's biography within about five years and geographically in a specific region.

Just like *all* my episodes, the one of the peacock does not carry an overall affective tone but is characterized by always the same *change* of aspect while expanding. In the above episode, the peaceful peacocks in front of the "romantic" palace contrast with the brutal and – to a child – incomprehensible attack by an adult. Generalizing from my entire catalogue of episodes in retrospect, this change of aspect always results from a contradiction, i.e., from a "frozen" everyday attempt at understanding something that remained incubated.

Here are two more examples from my youth.

> *The feeling of suddenly being responsible, as the two construction workers standing in the two-meter-deep trench dug into the ground consisting of river gravel looked up to me from their shovels, because I, barely nineteen years old, had to command them to secure the trench with wooden poles because, as I knew from only a few hours of studying geology, it was critically unstable – and immediately my (political) rage that they, although so much older than me and probably having toiled on construction sites for years, were actually dependent on a high school graduate patrolling the site early in the morning for his vacation job.*

As a newbie, I just had not expected to be forced to instruct somebody on the first workday. The following episode reveals a similar conflict in social hierarchy:

> *The boring view out at the cars and cyclists that I saw passing by as a guard soldier, here and there a single person going from left to right or vice versa, and immediately I see my cartoonish and yet not completely ironic snappishness with which I – my right hand on the automatic rifle – greeted entering officers in order to scare them, just because I felt so renitent and bored.*

The contradictions always result in the identical points when recounting the episodes. Generally, stories without contradictions do not have any points. If I (here as the author) set myself the task of putting an episode in words, I habitually imagine experiencing the episode *pictorially* like a movie clip, probably because the original situation was perceived and not described. Following Wiener (2015a), this pictorial impression is due to *emulation*, i.e., the psychologically naïve qualification of a *structural* experience as a *perceptual* one.

Oswald Wiener's ideo-motor theory of thought is based on the (idealized) distinction between two internalized motor processes not, or only rudimentarily, reaching the musculature. These processes interact, i.e., receive reciprocal impulses from each other. In introspection, this becomes especially apparent during formal tasks (Wiener 2015b). In short, sensorimotor schemas operate on other sen-

sorimotor schemas during an assembly process, which temporarily coagulates a task to allow for spontaneous short-circuits and, thus, simplifications or regularities. Schemas of type 1 provide operands, i.e., surrogate "object features", which schemas of type 2 can operate on. All these processes are, to speak with Freud, "preconscious" and must be kept available to consciousness by concentrating on the task at hand (Kris 1952). The more frequently you turn to a task, the more smoothly both kinds of processes will run. In this sense, productive thinking is a habituation process under motivational pressure yielding structural shortcuts. The mere training of schema sequences gradually coagulates these sequences to a larger structure. *Essentially,* the thought process does not differ from training sensorimotor coordination in sports or instrumental music.

How can we now interpret the history of the psychology of memory from the perspective of this hypothesis? Since the most easily controllable method to carry out memory experiments is the memorization of nonsense phonetic units like syllables or letters, Ebbinghaus (1885) pioneered a whole tradition investigating "short-term memory," as it was to be named later. "Long-term memory" was then believed to simply operate according to the association laws of "similarity," "contrast," and "proximity" of "thing-presentations" and "word-presentations." Of course, in this tradition limiting itself to the "scientific method" of counting and measuring (e.g., of reaction times), introspection is excluded by definition. After all, the syllables were chosen precisely because they carry minimal meaning and, thus, putatively allow for as few associations as possible. On this methodical basis, negative exponential "forgetting curves" could be determined, but not *what* and *how* forgetting functions. Psychologists measured only what is measurable at the behavioral surface, namely the number of memorized syllables or "items" (Bower 2000).

In contrast, introspection shows very clearly that even "meaningless" (i.e., superficially jumbled) letter sequences can only be remembered when the subject "artificially" structures them in order to embed them in meaning. Accordingly, I myself (Raab 2012) was only

able to memorize the given letter sequence *bdlhytcyqdnzblvmksqsklkr* by partly constructing the mnemonic support of "bund deutscher luxus hühner you too care-for your queen die neue zone bleibt links vor mksqs klkr" held together by the fictional attunement to a situation – here the situation of a "politician's speech." This mnemonic support by constructing a story was experimentally underpinned by Erdelyi et al. (1976) under the name of "recoding" words into "inner pictures." Yet, the last group of letters I only remembered by way of a superficial analogy, namely to the letter codes attached to UNIX files which are listed in the terminal window behind the file names. "mksqs klkr" I thus memorized "by heart," that is, (almost) purely phonetically. Interestingly, it is just this *structural*, i.e., content-related or – to speak with Erdelyi – "pictorial" support, that is, in longer terms of months and years, *forgotten sooner* than the superficially remembered parts, as Eder (cf., Eder 2023: 245) also observed. As a spontaneous solution of the remembering task, this meaning support does not seem to remain incubated, while the flat parts remain problematic and are therefore retained.

Of course, this constructive character of remembering refers to a book that perhaps has been most often named as a pioneering achievement but nonetheless left surprisingly few traces in the experiments of the following generations of researchers, namely *Remembering* by Frederic Bartlett (1932) who conceived of all remembering as (re-) construction processes. In order to do so, he adapted Kant's notion of schema into the psychology of memory, albeit without being able to define it more precisely. It is clear, however, that he did not mean sensorimotor schemas in Piaget's sense, but schematization in the sense of a "loss of detail," which he undoubtedly verified by his subjects' reproductions of stories or pictures from memory.

Against the backdrop of the association theory of memory, which still either implicitly or explicitly dominates psychology today, stating that "thing-presentations" somehow mirror the relations in the real world, Bartlett thereby basically introduced the notion of a prototype, i.e., a detail-reduced mental representation. Introspection during

formal tasks, however, shows that everything, which is imagined in more detail than a seed or a seed sequence of a memory episode must be constructively *assembled*. Hence, mental "entities" such as "thing-presentations" allegedly representing external objects simply do not exist.

In any case, from this perspective short-term memory is nothing but a word denoting the limited capacity of the temporary "scaffold" necessary to assemble several schemas. As long-term memory *(in the broad sense)* I thus postulate – against the empirical background that without assembly nothing at all, not even attunements or seeds are registered (Wiener 2015a) – the stock of all sensorimotor schemas. Long-term memory *(in the narrow sense)* then consists of the aforementioned pre-structuring of long-term memory in the broad sense by unfinished tasks, i.e., by contradictions on one ontogenetic level or two ontogenetic levels. If their processing is triggered so that they become conscious, they are experienced as "episodes" or "scenes" functionally representing an unfinished task (Zeigarnik 1927, Lagache 1953, Ietswaart 1995). Additionally, in order to do justice to results of introspection, a larger number of "facts" have to be postulated to form an intermediate layer between schemas and tasks and sharing properties of both. I will try to account for these facts in the next section.

Between 2015 and 2020, I tried to write down *all* my memory episodes satisfying the four criteria mentioned above (hitherto unpublished). This attempt forced me to conclude that all of them result from incubated tasks or contradictions in the heterarchy of schemas available. Not only the "lost" affective tone of the episodes but also said automatic change of aspect, which is common to all of them, forced me to this conclusion. Although hitherto unrecorded episodes come to mind ever more rarely, and almost exclusively when traveling to places which I have already visited in the past and which thus scaffold memory from the outside, their total number is clearly converging and will definitely remain below 1,000. Furthermore, there are indications that this number does not increase with age (Giambra 1977). That episodes are geographically locatable and are often trig-

gered while traveling to known places obviously relates them to spatial orientation, from which thought, anthropologically speaking, ultimately derives (Neisser 1988: 368ff.). To underscore this conjecture, here is a fourth example:

> *Our vacation apartment was in one of the new buildings designed for more than one family shooting out of the ground everywhere on the coast of Croatia, presumably financed by money earned abroad. Vaguely, I intuit green paint (of the facade probably), and immediately I remember how I dipped one of the landlords' cats by its rear end into a bucket of water polluted by green paint residues, whereupon my brother snitched on me to our parents, and I, although older, got too afraid to confess and so I promptly claimed my brother was the culprit.*

All biographical stories, apart from these maximally 1,000 episodes, are constructions based on my broader orientation in space and time. Therefore, they have to be classified as *abstract*, however "concrete" they appear in terms of their content. They are fiction, and the way they are constructed and narrated is subject to cultural conventions. This seems hardly surprising as their assembly fulfills a task of a different kind. While memory episodes reproduce a contradictory situation without having to impress someone, the biographical story aims at a punch line having a social effect. In contrast to the often boring authentic episode, whose punch line is but a subjective contradiction, the story must be of more *general interest*. In contrast, my memory episodes, as in the following example, are anecdotes that everyone knows in this or a similar way, because their motives are normal, that is, all too human:

> *On entering our Saab in summer it already stank of vomit due to the plastic covers of the seats. More than mine, my brother's stomach instantly reacted – and immediately I remember not only the beige color of the plastic covers shining bright in the glaring sun but also the brooding fug as we went on a trip to southern Styria, on which my brother miraculously discovered a coin while vomiting next to the parked car.*

If I intended to exert a social effect, I would of course be able to *conclude* on the basis of my knowledge that in this year in that place I probably met those people with whom I did this or that simply because I am able to *establish such connections* during an act of assembly. I am inclined to call this potential story repertoire, following Freud, the "ego" because, unlike my authentic episodes, these fictional stories *do not* generate any uneasy contradiction. They just "fit me" – at least in the particular moment. To put it into psychoanalytic terms, they are "ego-syntonic" (Laplanche and Pontalis 1973: 151f.). As such, they only slowly change in accordance with my life circumstances, with changing friends and loves – but also in the course of the psychoanalysis I have been undergoing since 2018.

Let us leave fiction and return to psychological reality. It seems clear that during early childhood all incubated tasks result from *motivational contradictions*. Biological motives contradict socially learned motives and vice versa. The "drive derivatives," which according to Freud emanate from the "primary process," replace the real drive object by "fantasies" (in the psychological, not the romantic sense). Those raw fantasies of wish fulfillment must be assimilated consistently at an epigenetically subsequent, more comprehensive and abstract, insightful level in order to be integrated into long-term memory (in the broad sense). In other words, what you "forget" *as an episode*, sediments to "semantic memory" (Linton 1982: 79), which in turn generates all more refined *fictional* fantasy episodes as the basis of the "ego" (here, "fantasy" in a romantic sense).

What does contradiction mean in the psychological context? In contrast to logic, nature knows no "contradiction" but only processes. Thus, from a psychological perspective every contradiction has to be understood as a failure of accommodation to said structures of the "ego." True memory episodes thus become "ego-syntonic" only over time, because their original experiences have always been "ego-dystonic." That is precisely why they interfere with the sensorimotor flow.

A variant of contradiction is the "negation," which in psychology also has to be understood differently than in logic. In order to negate

or deny something, you have to imagine it first, even if only sketchily as a prototype. Clinical psychoanalysis uses this fact by taking just what the patient denounces as "uninteresting" or "inexistent" as a basis for its motivational analyses (Freud 1961). Thereby, it succeeds in bringing forward "ego-dystonic" and, hence, problematic contradictions of the analysand.

In the language of psychoanalysis, contradictions and negations stem from "conflicts." Even in higher mammals, such conflicts arise already during infancy, if two "instincts", that is, two sensorimotor schemas directed at two different objects, become active at the same time. Yet, as the only more urgent one results in behavior, the conflict is resolved *in action*, albeit sometimes after a shorter "behavioral dithering" period. So I was once lucky to test a black sheepdog bred for "group cohesion," who was freewheeling across the fields together with me and his master. As our path arrived at a T-junction we, the two humans, took the opposite path, respectively. Instantly, the dog started to jerk its head alternately to the left and to the right. After a minute or two of such dithering, it finally ran after its master to whom it was more attached.

An inner conflict in the proper psychological sense results from the confrontation of "the pleasure and the reality principles" (Freud 1958). This confrontation requires some epigenetic development well beyond a dog's reach. Internalized and habituated knowledge about the negative consequences of impulsive action inhibits purely stimulus-controlled behavior, because a drive is nothing but a sensorimotor schema primed so as to be satisfied. In psychoanalytical terms, the "ego" (including its "super-ego" as its "social" part habituated in the respective milieu; Freud 1953) inhibits the "id." By this inhibition, instincts are, of course, delayed or transformed to "drive derivatives," which in the simplest case appear as said fantasized drive-objects, produced by schemas of type 1 (Hartmann 1947: 373). In other words, each drive inhibited by more culturally specific structures may also become an unfinished task. As quasi-needs, they then episodically resurface, even if clothed in different fantasies according to the current orientation.

So it is those aspects of a situation that incubate as tasks (thereby becoming pre-conscious), which the current "ego" is unable to assimilate completely. Accordingly, all my memory episodes have one thing in common. In the course of the sequence, the initial aspect of the remembered event changes, revealing that at a more abstract, i.e., a socially more acceptable level, both aspects are evaluated antithetically. In introspection these two aspects express themselves as different attunements. My repertoire of episodes suggests that by this incubation the original affect of the episode is lost. When recollecting experiences of brutality, such as in the peacock episode, I do *not* relive any possible fear but the contradiction that a person, which I firmly deemed as a guardian, suddenly reveals her violence. In the vomiting episode, I don't relive any disgust, but rather the contrast between my brother vomiting and, because of that, happily finding a coin.

In the course of epigenesis, social orientation progressively diversifies. Nevertheless, tasks and contradictions of prior developmental "structural levels" obviously remain and intrude into consciousness as "regressive" fantasies. An important evidence for incubated tasks as the core of long-term memory (in the narrow sense) is the salient but, to my knowledge, never mentioned fact, that – in contrast to external objects or productive thinking – you *never get bored* with your own fantasies. They seem to form the scaffold of your "interests," even if most of them result from passively imposed contradictions.

This topic also extends to observations during Zen meditation, which is, to put it bluntly, designed to learn *not to* expand seeds and to dishabituate the beginning of assembly processes. In short, meditation serves to unlearn the habitual attitude of solving problems by thinking. The sequences of seeds observed in meditation follow each other according to tasks and not according to similarity or temporal proximity. Meditating in the morning usually results in seed cascades beginning with concrete tasks of the coming day, but even if one again succeeds in avoiding further assembly, they easily trigger interpersonal or more professionally or psychologically specific tasks, and so on, until one manages to refocus on breathing. So

"association chains" seem rather to be "problem chains" that cascade up and down the task heterarchy.

Seen from this angle, "depth psychology" of all things deals with the *surface* of mental events, namely with the recurring motives for restoring balance with the environment. We just look at mental events with the wrong attitude because the incubated tasks and contradictions have become "ego-syntonic," and we thus perceive them as "parts of us," although they are mostly fantasies. After all, they are the only truly individual aspect of us and thus make up our "personality." It is precisely for this reason that it is only when we collide with our environment that we realize our "neuroses," the internal economy of which only "functions" as long as it does not conflict with the economy of our outer milieu.

Since "ego" development through habituation to and insight learning from experiences with "objects" in the social milieu does not start before toddler age (Piaget 1973), I believe one does not remember any authentic episodes before this time. Any episodes from an earlier age seem to have been suggested by parents, photos, etc. The "ego" just is not an entity and does not appear in introspection as a concrete thing, but only as a "feeling of authenticity," which after all warrants the coherence of all experience. The "ego" is not only transparent but also "embodied," because contradictions are concrete action tendencies opposing each other.

Let's briefly turn from structural considerations to the direct *experience* of fantasy. *What* exactly is it, that introspection allows us to register as a fantasy emanating from an incubated task? I found that it is always some seemingly quasi-pictorial aspects of the task object. They appear yet unordered, that is, in formal geometrical tasks, for instance, as undifferentiated edges or vertices, or, in everyday life, say the impression of holding the hand of the loved one who rejects us. In Wiener's terms, fantasies are "clutter" of yet to be ordered seeds, which always appear in the initial phase of assembly. So even the seemingly uncontrolled daydream is not arbitrary but the effect of an interest (McMillan et al. 2013).

In general, there is no such sharp distinction between the flight of ideas and orderly thinking as psychology suggests, perhaps because of the ideal that every modern human being should always be productive. As with dreams, psychology remains undecided about what function fantasies serve, but their existence alone must be taken as an indication that they are not "purposeless." According to the view presented here, fantasies are first steps of task solutions. Overall, there seems to be no functional difference between memories (of a task in the broad sense) and "free" fantasies. The latter just follow from contradictions between schemas close to the "instinctual object" and reality, and the former can reach up to the level of abstract contradictions of a theoretical kind.

## Schemas with residues from everyday tasks: the "facts"

> *Father's light gray socks in front of me on the floor. Immediately I know: they stink penetratingly.*

The snapshot described here pertains to a memory from my childhood, which meets only three of the four criteria I postulated above to define genuine, i.e., non-confabulated episodes. What is missing is its location in space and time, which I can only infer. Nevertheless, both its spontaneously intrusive character and the change of attunement as well as the fixed sequentiality are present. That is why the experience cannot be understood as the activity of a "pure" schema in long-term memory. In other words, because of its biographic connection it isn't a pure intuition. Yet, because its date is too imprecise – I only know that I saw these socks some time during childhood – it cannot be considered a memory episode proper, and thus it's not a part of long-term memory in the narrow, or Zeigarnik's, sense postulated above. All action readinesses necessary for handling this object (it is even unclear whether I remember one or two socks!) are con-

tained in this experience, but yet two, namely the light gray color as well as the smell, are "superfluous." And yet they are not integrated into a truly biographic episode.

To speak with Wiener, facts cannot be assembled into the biographical chronology. In contrast to episodes, they lack the minimal attached context that ultimately makes episodes seem authentic (Wiener and Schwarz, in this volume). This is particularly evident when the context receives support from the *external* situation serving as a stimulus scaffold. Just lately, for instance, I immediately recognized a knitted toy parrot from my childhood when I saw it again in my parents' house. Yet, I would certainly never have *actively* remembered it again, since I am unable to associate any concrete situation with it. To me, the knitted toy parrot is merely an isolated fact.

Further examples of such facts would be city streets, the quasi-image of which I recognize as being from a specific perspective specified by only one additional feature. This feature could be that I know which direction the one-way traffic moves (towards or away from my vantage point) or in which sequence the traffic lights along my sight axis turn red. Also, well-known everyday objects, of which I can give one or two properties like their color or their approximate geometry, fall into this category, which I, following Neisser (1988), prefer to call *facts* instead of "mnemes" as in most literature. The observation that even streetscapes may look completely different depending on the direction in which one walks would suggest the term "sight," but this, again, seems too narrow because of its visual connotation, since many facts are obviously given phonetically or olfactorily.

Most of the pragmatic stories we essentially need to communicate consist of the assembly and, thereby, bundling of such facts. My inner layout of the habitual supermarket near my apartment, for instance, consists of such facts except for only two quite recent authentic episodes representing two social situations I did not fully grasp in terms of my motives. Chiefly, these facts imply the locations of products within the vast supermarket but there are also two slants in the gray tile floor, on which my shopping cart regularly rolls away.

All of this suggests that facts, as stemming from everyday tasks, are of a pragmatic origin and function.

As indicated, introspection shows that these facts contain at least one to a few individualizing features, which are "superfluous" in the sense that they are not necessary for the mere handling of the object remembered and thus add to mere schemas. As such, additional qualities cannot by analyzed further, they amount to "qualia," which make them more apt as nuclei of assemblies as unparameterized schemas, as can be seen in the supermarket example. Hence the term "fact" onto which "clings" a part of its running environment but which is, in contrast to a genuine episode, less specific and, thus, less meaningful. It seems clear that the number of such facts greatly exceeds that maximum of 1,000 memory episodes. Furthermore, I reckon that such a trade-off fits better to the necessary plasticity of memory than an orientation operating on incubated tasks and schemas alone, because ultimately memory too must serve behavior control. So the "layer" of facts would be situated "between" long-term memory in the broader sense and long-term memory in the narrow sense for functional-economic reasons.

From a theoretical perspective, facts could be conceived of as "parameterized schemas." I believe that the supermarket example quite clearly shows that here, too, it is tasks which originally led to the parameterization, because I only remember objects I was intentionally looking for. But to call facts incubated tasks would go too far, even if, just like those, they also seem to be remnants of assembly processes and thus cannot be retained without attention. One might speculate whether the transition from episode to fact is gradual, that is, whether the fact too presupposes a minimal or inchoate assembly. I suspect that only the pragmatic and "meaningless" character of facts and the generality of everyday tasks, which they stem from, prevent a more specific embedding into the web of incubated and, above all, biographically interrelated tasks. Shopping in the supermarket, for example, is normally too ordinary or, psychoanalytically speaking, not "deep" enough to leave any traces. Nonetheless, the supermarket

is quite often part of a task environment. Therefore, Neisser (1978: 98) compared schemas to genotypes, which grow into phenotypes depending on the current requirements, which are precisely determined by the actual running environment and external situation. Accordingly, facts seem like fixed phenotypes of genotypic schemas.

## Remembering as a task with internal and external scaffolding: repression

After more than three years of psychoanalytic sessions up to several times per week, I must ascertain that to this day that none of the surfacing episodes were new to me, even though some of them I had not remembered for many years. So I am, at least so far, unable to corroborate the psychoanalytic concepts of "screen memory" or the "repression" of "traumas."

In the course of the three marked breaks in my biography, of which the last one forced me to reluctantly seek therapy, I noticed, apart from psychological symptoms, also a sociological one. In the months and years after those breaks, the boldly forced loss of orientation seemed to be connected with an affect storm and the problematization of hitherto unproblematic structures causing the obsessive remembering of tasks having again become unfinished because the newly changing "ego" cannot assimilate them. But additionally, the main general observation was that my respective circle of friends got spontaneously rearranged. Some of them turned away, and I was very prone to find new ones, some of whom even had a socio-structurally similar position or fulfilled a psychological similarly function as their former equivalent (such as protection, inspiration, or identification). Apart from this social reorientation, one has the urge to change flats, buy new clothes, get a new haircut, etc. So obviously a drift into a new, and sociologically measurable, "attitude milieu" takes its course.

This also yields a drift of said "ego" into a new habitual memory "affordance regime," because some episodes tend to be nudged less

or more often than before. Sexuality, which also manifests itself by the urge to form new bonds including the respective fantasies, may be the trigger and the catalyst of such phases, but certainly not their cause. The latter rather seems to be the fact that one is forced to re-orient oneself in terms of higher-level goals, which shows at first merely as an uneasy feeling in the present situation. Alfred Adler (1931) subsumed these goals under the heading of "meaning of life."

But *how* are milieu and remembering related? It remains largely unclear how and which stimuli nudge incubated tasks so that we register them as quasi-images. Unfortunately, we seldom manage to identify how a certain thought has been triggered by a specific outer event, although we often know *that* the trigger came from outside (cf. Fisher 1957). If we include somatosensory signals as belonging to the external world, which has been sensibly argued, we could even postulate that no memory, indeed *no thought at all* is ever triggered "from within," i.e. from a "mental need."

What has experimental cognitive science contributed to the issue of the interaction between environment and memory? Since the 1970s, the possibility of measuring eye muscle responses in experiments on perception to control stimulus constellations on computer screens by feedback has not only brought insights into so-called "saccadic suppression" (Bridgeman et al. 1975), i.e., the non-uptake of visual stimuli during saccades, or the "change blindness" to objective stimuli (Simons and Levin 1997). Based on these and other experiments, O'Regan (1992) managed to argue convincingly that – for reasons of parsimony – objects of the external world do not need to be "stored" in memory because they can mostly be "called" by attending toward them any time when needed. So the environment largely serves the sensorimotor system as an "external memory." Perception does not take in information, but rather probes the external world on the basis of the current schema heterarchy, which is in turn recalibrated in order to warrant the flow of action.

The recognition of an object is thus supported by the constellation of the external world, which by its *objective structure* helps to

create attunements, which can also be confirmed by introspection. The persuasiveness of these attunements can even lead to so-called *déjà vu* experiences.

This exterior *scaffolding* of perception and memory, however, does not only consist of inanimate things. "Reality" does not only pertain to the environment in the bio-ecological sense, but importantly also to the *proximal milieu* of people with similar interests, whose behavior I must tune my orientation to.

Introspection markedly shows that our friends scaffold our thoughts and our remembering, if only because of similarities in our and their interests. Especially for institutionally independent and, therefore, economically always alert people, repression clearly does not appear as the result of an "inner censor" operating in a "dynamic unconscious" in a Freudian sense but rather positively as adaptation to the current *proximal milieu*.

So crucial parts of the environment comprise – ever since humans exist, but clearly increasingly so in technological societies marked by a growing division of labor – of conspecifics with similar interests. In anthropology, their number has not coincidentally been estimated at a maximum of 150 for each person. This constraint seems to have co-evolved with the capacity of the brain to distinguish individuals as it roughly corresponds to the size of a Stone Age kin (Dunbar 1993, cf. Lindenfors et al. 2021). Moreover, the fragmentation of the population into milieus defined by the division of labor, by attitudes, and, thus, by habits and "tastes" not only supports what I remember, but even more what I do *not* remember. Drift into new circles of friends and acquaintances, but also travel, most of all make me "forget" tasks. So forgetting is not merely a function of the brain, but also a function of the parsimony of behavioral embedding. Strictly speaking, except when physiological reasons pertain, there is no forgetting, but merely non-remembering. In this regard, Ramstead et al. (2016) spoke of "regimes of attention" that may have escaped Freud because in his lifetime social structure was less sharply contoured than it is today.

According to my observations, adaptation to the proximal milieu elegantly explains what is called "repression" in psychoanalysis, where it is conceived of as a defense mechanism of the "dynamic unconscious." Despite repeated attempts of mediation (for instance, by the aforementioned Rapaport and Erdelyi, but also by Jahoda 1977) this term has never been accepted in cognitive psychology, although it has proved useful and effective in therapeutic practice for decades. Yet, a "dynamic unconscious" that actively shields consciousness from unpleasant "thing-presentations" by acting as an internal censor is both physiologically and psychologically implausible (O'Brien and Jureidini 2002, Hutto and Peters 2018). So it has been precisely this putatively active role of the unconscious in remembering and repressing that has received a particularly hostile reception from the cognitive sciences, as one can gather from the numerous commentaries on Erdelyi (2006). The main reason for this is, or so I believe, that it inevitably leads to the infinite regress of a homunculus in the brain controlling the mind.

It can hardly be denied that systematic dishabituation of specific external triggers for orientation serves the economy of cognitive resources. The "internal" economy of mind arguably calibrates itself according to the co-evolved capacity of the brain, which cannot be increased without risk as it is done in the computer industry. However, *what* is "repressed," that is, which incubated tasks and facts are tendentially "forgotten" in the aforementioned sense primarily depends on the *external* economy of prestige in the proximal milieu. Bourdieu (1984), for example, has conceived of this economy as being divided into accounts for cultural, financial, and social capital, which can roughly be estimated in payment equivalents and partly reciprocally exchanged.

To give an example, here is an anecdote illustrating the interaction between internal and external economy. At a work meeting a few years ago, I, as a freelance author, had to ask for the signature of a university dignitary of roughly the same age for a project proposal. During the conversation, the details and background of which are irrelevant here, I noticed again and again the facially expressed astonishment by which he reacted to my half-willful provocations as far as

allusions to institution, taste, and sexuality are concerned (the causes of which I will not pursue here). Now the psychoanalyst could justifiably interpret that the dignitary actively "repressed" aspects of his life as regards institution, taste, and sexuality. On the other hand, it occurred to me later, the dignitary too would have to be able to judge from *his* position and *his* proximal milieu that *I am repressing* certain disadvantages of *my* profession largely apart from institutions, such as losses in terms of income, prestige, and authority. So while he behaves more rigidly, i.e., in a more "compulsive manner" within the framework of my milieu, I do the same from his point of view within the framework of his milieu. We simply live in two different proximal milieus, each of which tends to mirror "our" values and egos (Freyd 2006), although our distal milieu, the "educated class," remains the same and although there is even some overlap of friends. Habituation to the milieu, and the "repression" it enacts, seems to be simply necessary for psycho-economic reasons (Horney 1945).

To sum up, passive and ecological repression in the sense described serves to dishabituate those incubated tasks that are useless to the current heterarchy of motives. Of course, these tasks are not completely "forgotten," since they can be triggered again by more unlikely external situations. But certainly the probability for them being triggered decreases. In turn, the proximal milieu makes other situations and episode retrievals more likely. Quite consistent with psychoanalysis, which focuses on contradictions between drive derivatives and social world, repression results from drifting, often for years, into a milieu that no longer supports the unpleasant contradictions from the past. In this milieu, potential "neurosis," which is diagnostically best identifiable by an impoverishment of the behavioral repertoire, can be expressed and acted out unnoticed, i.e., "ego-syntonically." By the definition postulated here, however, it would then no longer count as neurotic because it serves an economic function.

I believe it is likely that this concept of passive repression will not be readily acceptable to traditional psychoanalysts. As a consequence, "neuroses" would not necessarily have to be caused by trauma, but

may also result from becoming progressively unable to match needs and quasi-needs within one's proximal milieu. So therapy may, but does not have to "dig up" repressed motives. As a consequence, psychoanalysis would be no depth psychology but rather a kind of microsociology because every "neurosis" would, as soon as it becomes noticeable, always be an "adjustment disorder" (Fonagy 1999).

To me, the following seems indisputable: On the basis of the law of parsimony, it is simply more economical to change or distort reality than to repress it internally (Rofé 2008). Accordingly, obsessive fantasies also occur only during those crises in which the proximal milieu becomes "outdated" for somatic or psycho-economic reasons or is suddenly partly eliminated by illness, death, or separation. In mourning, for example, the object that is now missing or cannot be accommodated quickly enough as missing gets "fantasized." Then even perception often becomes temporarily "delusional" (Freud 1957).

## The energetic perspective: affect and motivation

Whenever purposeful action is inhibited from within or without, the congestion of the energy already allocated to the action must find a somatic outlet. The nervous system has the property of hysteresis and thus cannot abruptly stop processes already operating.

It is a truism that emotions are registered only when there is an urge to act, but the goal of action is uncertain. Early in childhood, emotions result from the inhibition of instinctive, and later of actions directed at intuited goals. Since those aspects of thinking that we are able to register in introspection also originate from inhibited actions, we probably have to understand the series beginning with purely somatically dominated feelings ("basic emotions") up to the somatically miniscule seeds registered during assembly as a kind of affect continuum.

Contrariwise, the dichotomy of positive and negative emotions commonly postulated in psychology seems arbitrary and too closely

related either to the behavioral concept of "flight-or-fight" or to value-guided criteria. In Buddhist psychology, on the contrary, *each and every* affect is neutrally considered a disturbance of equilibrium or equanimity apart from its consensual valence (Jullien 2004). According to this notion, one should thus neither wallow in emotions "for their own sake," nor should one repress them, but rather just let them pass. Frantic thought is thus conceived of as "suffering" just like frantic acting (Kalupahana 1987). Interestingly, Freud (1955) seems to have been guided by a similar idea of homeostasis.

Within the framework of the ecological model sketched above, this definition of affect as focused energy allocation would imply the following: Since all motor impulses becoming conscious originate in a task, and conflicts between instinctual object and reality are also incubated as tasks, all affects could be understood as yes/no control predicates for balancing the trade-off between the inner and outer milieus. In this sense, they are "generic notions" (Raab 2015, Wiener and Schwarz 2023).

The teleological orientation of "motivation theories" such as this has often been criticized as unscientific. To me, too, teleology seems to be rather a necessary premise in which the model has to be embedded in order to contradict neither biological nor psychological theories. On closer examination, Freud's (1955) derivation of motivation from a basic conflict between the "life instinct" and the "death instinct," the interplay of which enables the brain to adapt to reality, seems indeed highly questionable. To me, the most parsimonious and thermodynamically coherent pre-sociological "goal" seems to require the postulate of a "structural drive" enabling the individual to orient in an increasingly differentiated way – either by reducing complexity externally (by action and object manipulation) or by longer-term internal adaptation (structural development by habituation and thought). I speculate that this structural drive is caused by or is a corollary of the production of negentropy in the biosphere (Raab 2006). This view attributes bio-psychological teleology to thermodynamics.

Sticking to this energetic view, "seeds" in the sense of Wiener would psychoanalytically amount to micro-affects (Rapaport 1950). Schemas get energetically "cathexed" and, therefore, consciously registered. Assembly reduces the affective energies ruling the "primary process," by which they produce phantasies, to "small cathexes," which can then be "shifted," i.e., offered as input to a running environment. The necessary "counter-cathexis" breaking sensorimotor flow emanates precisely from the incubated tasks leading to assembly. Moreover, by controlling schemas it is also the assembly process that generates the fiction of free will, which in fact results from the energetically focused coordination of schemas screening off most stimuli.

From this perspective, i.e., of assembly focusing energy, the terms of psychoanalysis would have to be, as it were, reversed. It would be precisely *not* the energies on the instinctual level (of the "primary process") that are "free." In the primary process, several schemas simultaneously strive for their "instinctual objects" uninhibited by cultural influences. I think that the primary process, expressing itself most freely in dreams, would have to be called unfree, so that the question arises as to whether or not one should file instinct-derived fantasies under thought at all, as Suler (1980) did. During thinking proper, which Freud called "secondary process," affects seem to flow more "freely," since attention is, after all, less obsessively bound to an object or one of its features. It's only the task heterarchy that makes our orientation as flexible as it is.

In line with Piaget (1950), who also championed a similar structural view, Freud postulated the function of "fantasies" in the infant as substitutes for the real object to be acted upon. Fantasy replaces the instinctual object with a proxy object, a "mental image," thereby partially satisfying the instinct. Wiener conceived of this process more elegantly. For him, the mental image is the quasi-motor branch of a schema, whose actualization as a procedure of type 1 puts us in a sufficiently similar attunement as if the object were present as the target of action. Affectively, this process consumes part of the energy, which

would otherwise be afforded by the action, and is experienced figuratively as a "instinctual derivative" (A. Freud 1993).

In art, these primary fantasies can be utilized. Reinforced by his or her proximal milieu of the "art scene," the artist gradually gets used to playfully allowing even unpleasant, embarrassing, or brutal fantasies. In this milieu, libidinal ideas are allowed as "ego-syntonic," often being expressed "in play." It is the secondary process, however, including artistically formal and milieu-strategic considerations, which further shapes these ideas into a work of art (Hartmann 1951). Accordingly, taboos of others are the artists' quarry, the others' demons their material.

So the interplay between "regressive" individual fantasies and intellectual control, embedding them into an historically informed framework comprehensible at least within the proximal milieu, forms the core of both artistic and scientific creativity (Suler 1980). Yet, while sensorimotor intuitions in art get "trimmed and socially tamed" by being subjugated to historical convention in subsequent processing and educated secondary processes, in science they prove to be either productive or unproductive in the sense of an objectively solvable task.

## Summary

By idealizing long-term memory as sensorimotor heterarchy, memory episodes can be conceived of as the outcome of unfinished tasks and contradictions between different onto- and epigenetic structural levels within this heterarchy as well as with reference to the environment. These task situations are "frozen," i.e., incubated, because of the feature of hysteresis of the nervous system, which is not able to spontaneously adapt but must habituate by cascading accommodation episodes. Short-term memory is a name for these episodic attempts, triggered by the interplay of incubated tasks and stimuli, to accommodate schemas, which may be "pure" or specified to represent "facts" bun-

dling two or three seeds, into more comprehensive structures (internal models). Fantasies are "broadcasts" intermittently issued by these tasks, with the help of which the latter can be solved not by action, but by such structural adaptation.

For reasons of parsimony, however, in dynamic environments still a good part of this adaptation takes place *in action* through social drift, whereby repression in the sense of Freud can be seen as adaptation to a specific and specifiable proximal milieu. The motive underlying this entire orienting behavior does not originate from sexual or death instincts, but ultimately follows a structural trend controlled by thermodynamics (towards "negentropy"). Depending on genetic predisposition as well as reinforcement within the milieu, this trend expresses itself, according to temporary circumstances and individual, as either a tendency towards manipulation of the environment or towards internal structural adaptation. Individual orientation and, thus, homeostasis develop either through complexity reduction of the outer world by action or complexity increase of the inner world of orientation by thought.

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