

# The Temporal Structure of Intentionality and Its Disturbance in Schizophrenia

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## Key Words

Intentionality · Schizophrenia · Temporality ·  
Consciousness · Phenomenology · Neuropsychology

## Abstract

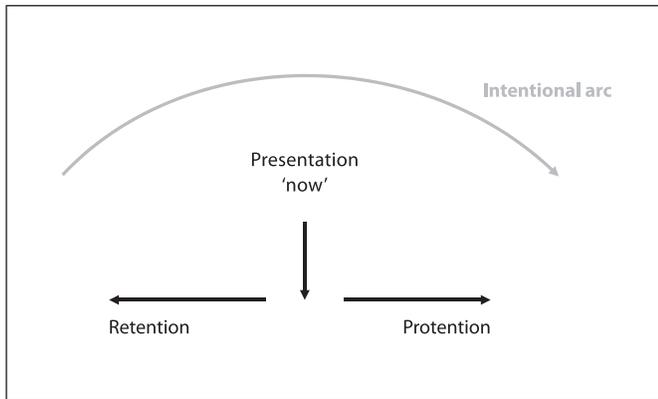
Working memory, attention and executive control functions are central areas of neuropsychological research in schizophrenia. These concepts implicitly refer to the basic temporal structure of mental life as an integration of past, present and future. From a phenomenological point of view, they may be paralleled to the structure of internal time consciousness as analyzed by Husserl, consisting of a retentive, presentational and protentive function. These synthetic functions, operating at the most basic layer of consciousness, are capable of integrating the sequence of single moments into an 'intentional arc', enabling us to direct ourselves towards objects and goals in a meaningful way. On this background, basic symptoms of schizophrenia such as formal thought disorder, loss of automatic performances and disturbances of self-awareness may be conceived as caused by a weakening and dissolution of the intentional arc. A failure of the continuous intertwining of succeeding moments, and especially of the protentive function, leads to a loss of the tacit or operative intentionality that carries the acts of perceiving, thinking and acting. The loss of tacit, implicit functions undermines the common-sensical understanding of reality

and has to be compensated by the deliberate, hyperreflexive reconstruction of everyday performances. Phenomenological analyses may thus establish a link between experimental research on single mental dysfunctions on the one hand and the higher level of the patient's subjective experience on the other.

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## Introduction

Working memory, selective attention, executive control functions and action preparation are central areas of neuropsychological research in schizophrenia. These concepts are in striking analogy to the basic temporal structure of mental life, which may be regarded as an integration of past, present and future. From a phenomenological point of view, they may be paralleled to the tripartite structure of 'internal time consciousness' as analyzed by Husserl [1], consisting of a 'retentive', 'presentational' and 'protentive' function. These synthetic functions, operating at the most basic layer of consciousness in an implicit, tacit or automatic way, are capable of integrating the sequence of single moments into an 'intentional arc'. This temporal synthesis enables us to direct ourselves, by perceiving and acting, towards objects and goals in a meaningful way.



**Fig. 1.** Structure of internal time consciousness, adapted from Husserl [1].

The thesis put forward in this paper is the following: in schizophrenia the implicit or automatic temporal synthesis necessary for the constitution of reality is disturbed. This leads to a fragmentation of the intentional arc, leaving single elements of perception, action and thought processes unconnected. Instead of carrying the intentional arc, they come to explicit awareness as alienated or opaque phenomena. As a consequence the automatic constitution of reality is dismantled and has to be replaced by active or rational reconstruction. This task, however, overburdens the patient's adaptive intentional capacity.

### The Temporal Structure of the Intentional Arc

In order to explain the disturbance of the temporal micro-structure of consciousness in schizophrenia, I will first give a short description of the intentional arc and its temporal structure as explored by Husserl [1] in his *Phenomenology of the Consciousness of Internal Time*.

According to Husserl [2], beneath the conscious and active intentionality by which we are directed towards things, there is a stratum of what he calls 'passive syntheses': when we are looking at a table, a multiplicity of single aspects has to be synthesized in order to constitute a coherent and enduring image, the spatial unity of the table. There are different types of syntheses, e.g. a synthesis of spatial perspectives, a synthesis of *gestalt* formation in perception and action, a synthesis of identification, a synthesis of causal connection and one of temporality. These syntheses occur automatically or passively,

behind the subject's back, as it were, thus becoming a medium for intentional perception: they enable the subject to intend the objects, to focus or act on them. Merleau-Ponty [3] coined the term 'intentional arc' to denote the tight connection between the agent and the world brought about by means of perceptive and motor schemas or *gestalten*. These are stored as dispositions to automatically perceive and respond to situational cues in meaningful ways, thus allowing for a basic or 'operative intentionality' [3].

This basic structure of intentionality may be illustrated by what is going on right now: you are reading a series of letters which you immediately perceive and understand as a meaningful sequence of words. The multiple syntheses of *gestalt* formation and temporality going on automatically in your perception make you read the letters as sentences. Thus the single letters of a page or the sounds of a speech are only *implicitly* present in our perception, while we are directed towards their meaning. Polanyi [4, 5] analyzed this structure of perception as an interplay between the 'distal' pole, i.e. the explicit or focal object of awareness, and the 'proximal' pole, which recedes from awareness and is only known in a tacit, implicit and pre-reflective manner [6]. In other words we are directed from the proximal to the distal pole of what we perceive. Using one of Plessner's [7] terms, intentional consciousness may thus be characterized as 'mediated immediacy'. Passive or implicit syntheses are the medium through which we immediately perceive the world and interact with it.

The intentional arc obviously has a temporal dimension: in order to form meaningful units, succeeding moments have to be integrated into a coherent sequence. At the lowest layer of mental life we thus find what Husserl [1] called the synthesis of 'internal time consciousness'. I will summarize his essential results (fig. 1). The stream of consciousness is not a mere succession of 'nows'. My conscious experience implies being aware of what I have just seen, heard or thought – i.e. retentions – as well as roughly anticipating a continuation of what I am now seeing, hearing or thinking – i.e. protentions. Husserl's favourite example refers to music: while listening to a melody, we are constantly aware of the notes just being played, and they also create a certain expectation of how the melody could be continued. Thus our perception of a melody is not a succession of single nows but a dynamic self-organizing process going on as the melody unfolds.

The same e.g. applies to a sequence of speech acts. When you hear me saying: 'Yesterday I walked across the ...', you both retain these words and expect others to

follow, which would not be e.g. ‘... the butter’ but rather ‘... the bridge’ or something similar. Retention and protention are thus necessary to understand the sentence, i.e. to connect its succession to a meaningful unity. However, of course they are necessary for me, the speaker, as well, in order to lead my sentence to its end. If my retentions suddenly vanished, I would be lost within the sentence, and if my protention failed, I would not know how to go on.

In this way each mental event retains its predecessors and anticipates future events. Succeeding events refer to one another. Thus consciousness is not momentary but spreads out by its double-faced attention of retention and protention. It spans an intentional arc connecting the beginning and the end of the sentence. This arc also implies what could be called an ‘implicit self-awareness’. I am not only aware of the sentence but also of myself speaking and intending it. In this way consciousness becomes a self-referential process: built into its retentional-protentional structure, there is a sense of agency, of myself being the originator of my speech or thought. The mental events in my consciousness are not mine only because they succeed each other in the same mental life, but rather because they are inherently intertwined like the links of a chain. Husserl writes:

‘The flow of the immanent time-constituting consciousness ... exists in such a peculiar way that there must necessarily be a self-appearance of the flow in itself, and therefore the flow itself must necessarily be graspable in flowing. The self-appearance of the flow does not require a second flow, but it constitutes itself as a phenomenon in itself.’ [1, p. 83]

By its retentional-protentional structure, every conscious process implies an awareness of itself: this is what constitutes the unity of consciousness over time. Husserl was more interested in exploring the retentional function; he did not say much about protention. However, protention is essential for spanning the intentional arc and leading it towards its goal, and it could well be the function responsible for the disturbance of mental agency in schizophrenia. Let us have a closer look at it.

### The Protentional Function

Protention is an indefinite anticipation concerning external or internal events (objects moving, music playing, thoughts emerging, etc.). In its most general sense it means the expectation of things going on. They may turn out quite differently, and a surprise results. However, even then what happened was not totally unexpected but

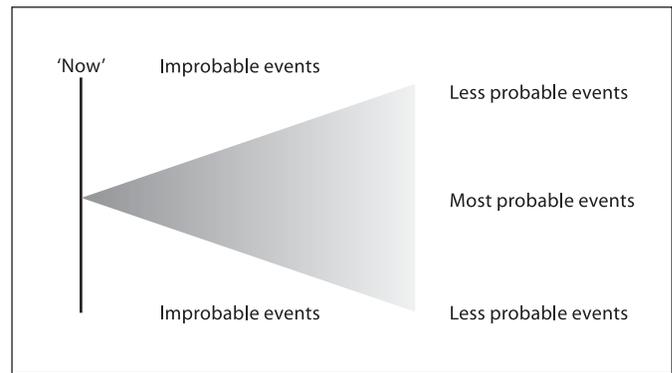


Fig. 2. Protentional function.

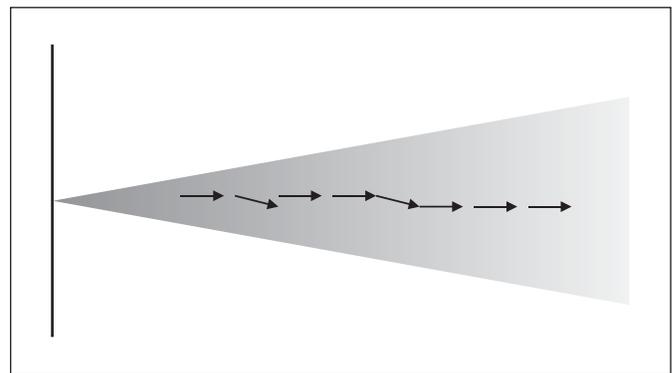
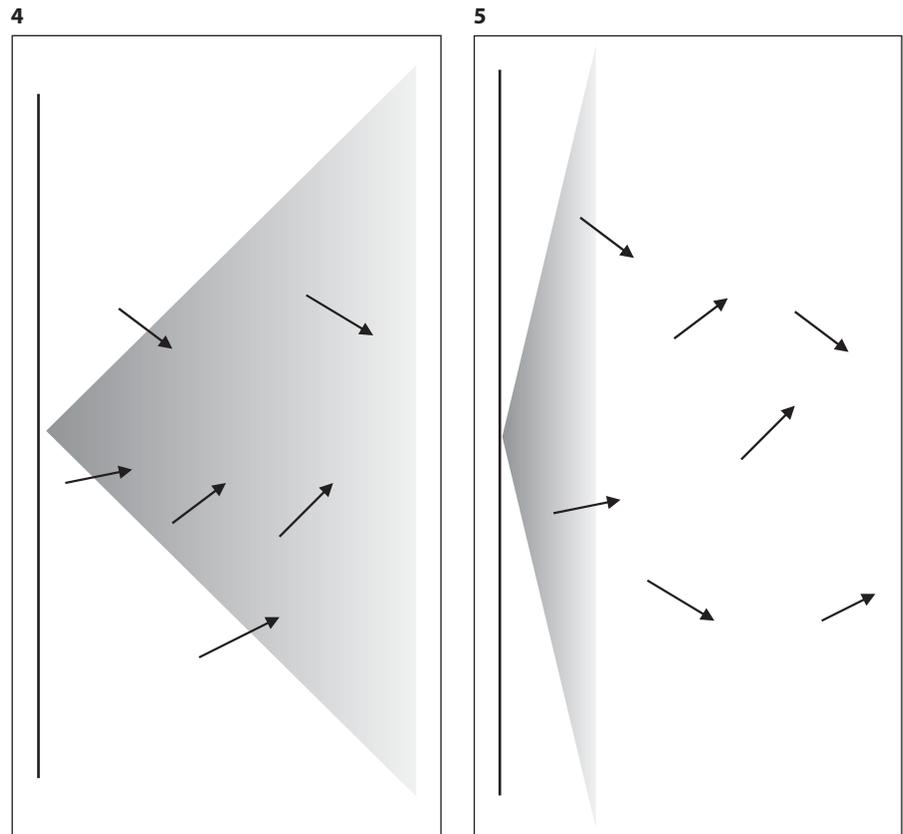


Fig. 3. Focussed protention (e.g. in concentrated thinking or speaking).

only highly improbable. Thus we may say that protention opens something like a cone of probability (fig. 2).

The cone originates in the present and continuously moves forward. Inside the cone lies the more or less probable; towards its margins external events or inner associations are increasingly improbable. What is probable for me is determined by my retentions, my present impressions and my intentions at every moment – e.g. when speaking, I am aware of the beginning of my sentence, of what I am saying right now, and of what I am aiming at with my sentence. Accordingly certain associations and continuations will be preferred, others excluded. In order to keep my speech on track, unfitting ideas have to be prevented from intruding. Thinking or speaking are highly selective processes that constantly inhibit inadequate thoughts and associations – a faculty which Janzarik [8] called ‘disactualization’. The margins of the protentional cone are thus determined both by my given intentional orientation and by the inhibition of distracting



**Fig. 4.** Dilated protention (e.g. in daydreaming, free association and creativity).

**Fig. 5.** Retracted protention (e.g. in dreaming and drugged states).

associations. This selective function of protention largely corresponds to the action planning system ('preparatory set', [9]) located in the prefrontal cortex.

From this follows that the protentional function is not a fixed setting but depends on my present state of attentiveness. The protentional cone may be highly focussed as in states of concentrated reasoning (fig. 3). Then the thoughts stick to the intentional track like iron filings in a magnetic field. On the other hand there are states of daydreaming or drowsiness, free association or creativity, which imply a wide opening or dilation of the protentional cone (fig. 4). Under those circumstances there is space for ideas or associations occurring spontaneously and following each other without overarching purpose.

If we now imagine a maximal dilation of the cone, the protentional function is retracted, and there is nearly no protention any longer (fig. 5). This is often the case in dreaming, where experiences follow one another in an irregular way, and one often has no anticipation of what is going to happen next. Strange images may appear, one person may be replaced by another, the scene may suddenly change, and yet all this does not irritate the dreamer. Since his protention is retracted, he is not anticipating

coming events anyway. Thus the unifying temporal structure of consciousness is weakened. A similar lack of protensivity is experienced in drugged states, e.g. in *mescaline intoxication*, where subjects experience a more or less marked thought disorder and feelings of passivity:

'It seems as if a second subject is thinking and speaking, *while the actual ego is no more capable to draw up a complete thought*: At the end of the sentence I do not know any more how it began ...' [10]

As we can see, the intentional arc is disrupted and the subject's sense of agency disturbed. At the same time a temporal disintegration and a splintering of experienced continuity occur. A test subject saw himself mounting a staircase in a series of single snapshots:

'... there seemed to be no continuity of time, the whole procedure dissolved into unconnected single situations that could afterwards be actively connected like the pictures of a movie ... they don't have a place in time, time has no sense here.' [11, p. 148]

Similarly, musicians in mescaline intoxication missed the sense of unity when playing a tune: music was no longer perceived as an integral temporal process but as a static succession of single tones; the melodic arc seemed to

have dissolved [12]. Thus with the protentional function retracted, experiences may lose their temporal coherence. The tones of a tune, the words of a speech or the sequence of movements lose their unity or coherence, and a feeling of passivity similar to the dream state results.

### **The Fragmentation of the Intentional Arc in Schizophrenia**

If we now turn to schizophrenia, we find similar experiences especially in the early stages of psychosis. They include loss of one's train of thought, inability to remember what has just been said and blocking of intended speech. Let us look at some examples:

'I can concentrate quite well on what people are saying if they talk simply. It's when they go into long sentences that I lose the meanings. It just becomes a lot of words that I would need to string together to make sense.' [13]

'I have to pick out thoughts and put them together. I can't control the actual thoughts I want ... I think something but I say it differently. ... Last time I could not get the words that were correct to make up a sentence ...' [14]

Normally words are perceived or spoken not as such, but as parts of a meaningful unit; this implicit coupling is brought about by the retentional and protentional functions. The patients, however, lose this temporal synthesis and are unable to draw up the intentional arc of listening or speaking. Instead they have to explicitly build up the sentences from the single words. Thus we may assume that in schizophrenia the protentional function is disturbed, and the chain of passive or implicit syntheses disrupted. The continuity of the intentional arc dissolves, and temporal gaps arise, resulting in a loss of meaning or even in the experience of thought withdrawal. These gaps leave the patients with the task of 'rational reconstruction' of meaningful thinking or speaking. Another example concerns meaningful processes observed visually by the patient:

'While watching TV it becomes even stranger. Though I can see every scene, I don't understand the plot. Every scene jumps to the next, there is no connection. The course of time is strange, too. Time splits up and doesn't run forward anymore. There arise uncountable disparate now, now, now, all crazy and without rule or order.' [15]

A similar fragmentation may apply to everyday motor performances:

'I found recently that I was thinking of myself doing things before I would do them. If I am going to sit down, for example, I have got to think of myself and almost see myself sitting down before I do it. It's the same with other things like washing, eating,

and even dressing – things that I have done at one time without even bothering ...' [13]

'I have to think of what I am going to do all the time and that takes up a lot of energy and when I am doing something I am aware of my every movement.' [13]

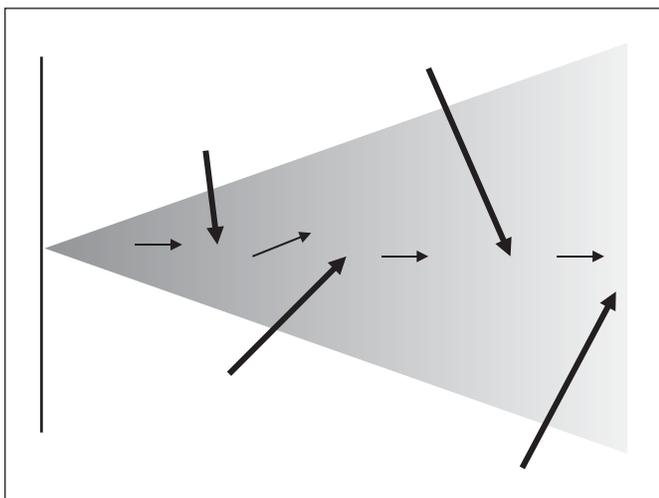
'When I move quickly it's a strain on me. Things go too quickly for my mind. They get blurred and it's like being blind. It's as if you were seeing a picture one moment and another picture the next.' [13]

As we can see, the temporal disintegration of action units results in a loss of everyday habits or a 'disautomation'. Patients have to compensate for this by an awareness of each single movement which they have to release deliberately. This results in a loss of spontaneity and a hyper-reflexivity: each action needs a great deal of conscious reflection and volition in a way that one could call a 'cartesian' action of the soul on the body. Patients often speak of a split between their mind and their body, of feeling hollowed out or robot-like. With the breaking-up of passive syntheses, they lost the implicit know-how of the body on which our everyday performance is based [6, 16].

However, disautomation is not the only result of the disintegration of the intentional arc. With the weakening of the retentional-protentional structure, the inhibition or disactualization of unfitting associations necessary for intentional thinking fails as well. This comes to be experienced as intruding or inserted thoughts:

'I could no more think what I wanted; constantly alien thoughts were pushing in between ... as if someone would not think by himself and would be prevented from his own thinking, and his thoughts were controlled ... I began to wonder whether this was still me or an exchanged person.' [17, p. 111]

As we can see, the schizophrenic patient still tries to think actively. Unlike the dreamer, he is not just the passive spectator of his mental experiences. His intentional activity starts, but then it is suddenly thwarted by intruding splinters of thoughts that appear 'out of the blue'. Thus we may say that his protentionality is not only weakened and retracted, but *fragmented* (fig. 6). What happens comes as an absolute surprise. Thus he perceives his own thoughts as from outside. Instead of carrying the intentional arc forward, they come to awareness as 'stumbling blocks', and turn into quasi-perceptions. As we can see, there is an important difference between the dreamer with his protention retracted and the schizophrenic patient with his protention interrupted. Only because unbidden thoughts intrude right into his mental activity does the patient experience them as alien and inserted, or even as 'voices'. If he were in a state of dreaming or trance, the appearance of such thoughts would not cause irritation.



**Fig. 6.** Fragmented protention in schizophrenia.

This externalization is a necessary consequence: a thought breaking into the fragmented intentional arc lacks the sense of agency; it is no longer mine. It appears against my intention and 'speaks' to me like being intended by an alien force; so it must somehow have been put into my head. With the paralysis of the patient's own intentional activity, the direction of his mental acts is reversed and turned against him, as if coming from the outside. The same may apply to motor impulses: a movement of my body that I did not anticipate must be caused by someone else. This is not an inference but an immediate experience. Schizophrenic experiences of reference, persecution and control may thus be explained by an 'inversion of intentionality' [18]: with the paralysis of the patient's own intentional activity, the direction of his mental acts is reversed and turned against him, as if coming from the outside. Instead of actively perceiving, thinking and acting, he is being perceived, related to, thought of and acted upon by others.

This theoretical concept of a temporal disintegration in schizophrenia may well be related to recent neuropsychological research, as outlined by Kaiser and Weisbrod [19] in an associate paper. A number of research results are in accordance with the concept of a fragmentation of the intentional arc. Thus Spitzer et al. [20], working with the semantic priming paradigm in schizophrenic patients with formal thought disorder, found a dopaminergic disinhibition of semantic networks with an extended scope of associations. The patients' attention was not focussed on a normal range of obvious associations, but highly distractable. This corresponds to a weakening of the inten-

tional arc which lets unfitting ideas intrude in the line of thoughts. Moreover disturbances of the temporal sequencing and synchronization of cognitive, perceptive and motor functions have been described in schizophrenia [21], leading to the concept of 'cognitive dysmetria' as a basic disturbance [22]. Schizophrenic patients e.g. show a retardation and disturbance of sequential finger movements [23] and a reduced ability to discriminate stimuli in close temporal vicinity [24]. The well-known impairment of the attentional span, and disturbances of working memory [25] and of executive control functions mainly located in the prefrontal cortex may also be interpreted as neuropsychological equivalents to a disintegration of the temporal unity of consciousness in schizophrenia [9, 26].

### Conclusion

I have tried to relate schizophrenic disorders of intentionality to the basic temporal structure of consciousness as analyzed by Husserl. The disturbance may be described as a fragmentation of the intentional arc, which is normally based on passive syntheses or implicit couplings. These syntheses are essential for our everyday life, since they relieve us of the task of actively connecting and building up the perceived objects, situations and habitual patterns of our life. In schizophrenia the protentional function may be weakened in such a way that the constant intertwining of succeeding conscious moments fails. However, with the fragmentation of this implicit structure the normal transparency of consciousness turns into opacity. The inhibition of unintended thoughts or actions fails. Associations or even bodily movements appear 'out of the blue' and interrupt the intentional arc. Instead of serving as a medium for the patient's intentional relation to the world, his thoughts, perceptions or movements may occur as single erratic blocks that stand in the way of his intentional effort. As a consequence the automatic constitution of reality is dismantled and has to be replaced by active or rational reconstruction. However, this task overburdens the patient's adaptive intentional capacity.

One means to evade the splintering of temporal unity is the minimization of change. When the flow of time consciousness is fragmented, the outward similarity of succeeding moments creates something like a substitute of inner continuity, an artificial steadiness of one's experience. Therefore schizophrenic patients try to avoid sudden changes as far as possible. This 'neophobia' becomes manifest in social withdrawal, avoidance of overstimulation or literal immobilization:

‘Everything is all right when I stop. If I move, everything I see keeps changing, everything I’m looking at gets broken up and I stop to put it together again.’ – ‘You only see a still picture if you don’t move your head and eyes.’ – ‘When I start walking I get a fast series of pictures in front of me. ... Something goes wrong with my eyes and I’ve got to stop and stand still.’ [14]

By minimizing their movements and perceptions, patients are able to live from one moment to the next without experiencing a disruption of time. Many autistic

symptoms may thus be regarded as a compensatory attempt to avoid changes in the environment as far as possible. However, in its extreme the immobilization or ‘freezing of time’ may lead to catatonic stupor, where the patient uses all his power to stay completely motionless and stiff, thus desperately trying to prevent the world from breaking into pieces with the slightest change of posture: the continuation or the end of the world literally seem to rest on his shoulders.

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