The cognitive import of the narrative schema

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Abstract

This paper aims to establish the origin of the narrative schema in the perception of intentional movements. The distinction between mechanical and intentional movements is vital for human beings, and the narrative schema, which is underpinned by this distinction, is therefore a basic cognitive principle of intelligibility. This is the reason why the narrative schema is by no means confined to the domain of the literary work of art. It is rather a major principle for the combination of partial significations in many other domains. The paper explores the role traditionally assigned to the narrative schema within continental semiotics and, through an interpretation of Heider and Simmel's study on apparent behavior, it establishes the cognitive import of the narrative schema and its origin in visual perception; finally, it gives examples of the meaning organizing import of the narrative schema.

1. Introduction

'Narrativity' is generally construed as the principle governing the organization of narrative discourse. When Vladimir Propp recycled Goethe's concept of 'morphology' in his *Morphology of the Folktale* (Propp 1975 [1928]), he indeed claimed the existence of an immanent *Bauplan* for all tales, and more precisely thirty-one sequentialized *functions* of which all tales necessarily consist. Propp's theory has, for good reasons, been radically revised and substantially amended by subsequent scholarship (most remarkably by A. J. Greimas's work in the field; Greimas 1966, 1970, 1976, 1983; Greimas and Courtés 1979), but nevertheless the main claim remains intact: narratives possess an internal structure which assigns a general form to the action and which distributes a limited number of general *roles* to be played by the protagonists (Propp's functions or

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Greimas's *actants*). Even though the emergence of narratology, either in the Greimasian version mentioned or in that of Gérard Genette, has had immediate and substantial consequences for literary semiotics — providing scholars in the domain with a battery of subtle distinctions and fundamental concepts — I shall rather focus on another, slightly neglected aspect of narrativity: the narrative schema is a principle for meaning construction that applies well beyond the literary-aesthetic domain proper, which is certainly its domain *par excellence*, but not, for that matter, its original habitus.

In what follows I will expose and examine the non-aesthetic aspects of narrative structure with the aim of justifying my main claim: the narrative schema is a major cognitive schema — i.e., an internally organized semantic gestalt in terms of which partial significations can be combined into a coherent whole — which is deeply embodied and rooted in perceptual experience. In the first section, I will briefly describe the cognitive role that structural anthropology (Lévi-Strauss) has attributed to the narrative schema. In the second section, I will defend my hypothesis according to which the narrative schema is not only a higher-order syntax that combines major chunks of meaning (and does so independently of the actual signification of the latter), it is also a principle for semantic organization whose inherent signification is rooted in perception. This part of the present investigation will draw on Fritz Heider and Marianne Simmel's (1944) pioneering work on the perception of apparent behavior and thereby show the perceptual roots of narrative structure. Finally, I will give a couple of examples that show how the narrative schema is active in semantic domains radically different from literary narratives.

2. Narrative structure: A syntactic device for overcoming experienced contradictions

In a semiotic context, narratology has mainly developed out of Claude Lévi-Strauss's analyses of the myth (e.g., Lévi-Strauss 1958). According to him, myths are syntagmatic articulations (linear distributions) of existentially essential contents (anthropological universals), such as life/death, culture/nature, human/divine, masculine/feminine, and so forth. These semantic values play such a decisive role in the mythological conception of the world that they are not explicitly determinable. They are, as Jean Petitot (2004: 253) has recently put it, 'maximally determining at the existential level, and minimally representable at the cognitive level,' and can for that reason only be exposed and represented in narrative disguise (in myths, legends, tales or enacted in rites), where the protagonists

assume specific actantial roles, thereby incarnating certain general values (in the above sense). In other words, the opposition between contradictory deep semantic contents and their articulation is figurativized through the conflicts between protagonists incarnating antagonist values (subject versus anti-subject; destinator versus anti-destinator; adjuvant versus opponent). The mythical discourse thus contains both a fundamental syntax and a fundamental semantics. The syntax is the structure that combines the actantial actions in a canonical way, enabling the linear representation of the fundamental anthropological values, but also and most crucially the resolution of their conflict.

If by 'narrative schema' we mean the canonical process structure of any given tale, it is indeed one of its major properties that it operates in much the same way as syntax in the standard grammatical sense does — i.e., it combines entities by virtue of their formal nature, independently of their actual meaning. Thus, the same basic narrative configuration (say, 'subject incarnating positive values' is sent out to fight 'anti-subject incarnating negative values') can be instantiated in an indeterminate number of ways, articulating different sorts of opposing values. Now, the crucial import of this narrative device is, as just suggested, not only that it makes it possible for man to get an indirect cognitive hold on existentially essential, yet inaccessible contents, but also that it is capable of resolving the conflict between mutually exclusive, but nevertheless necessarily correlated contents.

A case in point is the following. Often the intelligibility of the mythological world is warranted by a pervasive *principium divisionis*, which, through a long series of homologies between pairs of contrasting terms, encompasses everything from the most abstract and mighty domains (the structure of the cosmos) to the most concrete and intimate domains (the division of the house). Thus, we can have indefinitely long series of relations between terms with contrary values that are all derived from one and the same overarching difference. As Pierre Bourdieu has shown in his early, and still quite Lévi-Straussian anthropological analyses of the Kabylian society (Bourdieu 1977, 1980), a string of homologies as the following are far from exceptional:

good : bad :: culture : nature :: life : death :: light : dark :: east : west :: dry : wet :: masculine : feminine :: air : soil :: right : left :: right : bent :: etc.

However, even if such an all-embracing principle of division provides the mythological *Umwelt* with a fundamental orientation, thus warranting its intelligibility and efficient simplicity, it is also the source of inextricable contradictions: whereas it is generally essential to keep apart elements belonging to opposite realms (the union of contradictory elements

is considered as particularly dangerous), it is just as evident that the foundation of life resides on this very union of contradictory terms (be it only in its masculine versus feminine version). So what, according to the symbolic form of the mythological universe, is banished (the union of contradictory elements) is existentially necessary. No wonder, then, that those crucial moments in everyday life (ploughing, harvesting, marriage, etc.) where the unification of contrary forces is fulfilled are all characterized by a very intense narrative and ritual activity. In these cases, the resolution of the conflict, the articulation of fatally contrary sets of meanings and values, is realized symbolically through storytelling (legends, myths, folktales) or enacted ritually (in rites that inevitably activate elements with contrasting axiological value). In short: if the pervasive, homogeneous principle of division is the mythological symbolic form par excellence — to the extent it can be applied in all domains and provide intelligibility as well as guide action — then the narrative schema is its natural counterpart, insofar as it resolves the contradictions that necessarily follow from the strict application of this principle.

It seems beyond all doubt that the narrative schema — narrativity as such — can be assessed with respect to its anthropological relevance and import. Therefore it also seems reasonable to conceive of it in syntactical terms — as a general meaning-articulating device that combines formal contents — which, by the way, also explains why it has been so easily transposed from the mythological domain proper to the secularized domain of plain storytelling. Yet, the cognitive import of the narrative schema is not, for that matter, exhausted. Neither need its genesis be explained solely in mythological terms — i.e., as a symbolic form whose raison d'être is that it provides symbolic mastery over existential contradictions, thus enhancing the intelligibility and accessibility of the *Umwelt*. The origin of the narrative may very well be traced even further back, into structures that are not yet conceptual, but already highly significant: the perceived structures of intentional action. This is what we will come to grips with now.

3. The perception of intentional action

Semioticians have regularly inquired into the origins of narrativity. Yet, since the narrative schema has as a rule been construed in syntactical terms, the interrogation has mainly concerned the number and the nature of the 'anthropological universals' articulated by narrativity. Consequently, there have hardly been any hypotheses as to the origin of the narrative schema itself. The following considerations intend to amend

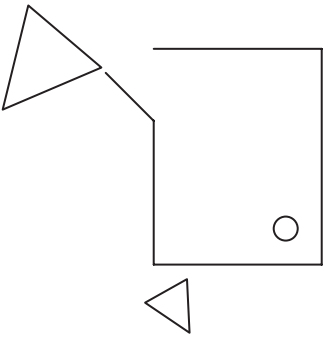

Figure 1. *The elements in Heider and Simmel's movie*

this state of affairs. The claim is roughly that humans attribute intentionality to movements in their surroundings only under specific morphological conditions. To attribute intentionality to a being is to consider that it moves according to a micro-narrative program; its acts are purpose-oriented.[1] If there are constraints on the attribution of intentionality, then there is an objective, morphological correlate to the narrative schema in this narrow and fundamental sense, and it can therefore be claimed to be rooted in perception. Heider and Simmel's investigation from 1944, 'An experimental study of apparent behavior,' can be invoked as evidence for this claim. The experiments reported on in their article demonstrate humans' tendency to interpret relative movements even between abstract figures in terms of intentionality and purpose-oriented action. Heider and Simmel showed a film with the following elements (cf. figure 1).

– A large triangle
– A small triangle
– A disc
– And a rectangle with a section that can be opened and closed like a door.

The film showed to the subjects had the following 'storyboard' (the subjects were not presented with this script, and therefore not cued by the anthropomorphic expressions):

1. *T* moves toward the house [i.e., the rectangle with the opening], opens the door, moves into the house and closes door
2. *t* and *c* appear and move around near the door
3. *T* moves out of the house toward *t*
4. *T* and *t* fight, *T* wins: during the fight, *c* moves into the house

5. *T* moves into the house and shuts door
6. *T* chases *c* within the house: *t* moves along the outside of the house toward the door
7. [etc.]

(Heider and Simmel 1944: 245)

Thirty-four subjects were asked to 'write down what happened in the picture'; only one answered in geometrical terms, while all the others spontaneously interpreted the figures as animate beings and their movements as intentional actions. One of the reports goes like this:

> 'A man has planned to meet a girl and the girl comes along with another man. The first man tells the second to go; the second tells the first, and he shakes his head. Then the two men have a fight, and the girl starts to move into the room to get out of the way and hesitates and finally goes in. She apparently does not want to be with the first man. The first man follows her into the room after having left the second in a rather weakened condition leaning on the wall outside the room . . .' (Heider and Simmel 1944: 247).

What is essential to highlight here is not only our truly astonishing and forceful capacity to create full-fledged scenarios (and, what is more, akin scenarios, telling more or less the same story) out of quite poor prompts, but also the fact, established by Bassili (1976), that our narrative animation of the geometrical figures and their movements is not arbitrary; not just any pattern of movements triggers this kind of interpretation, rather must they be *temporally correlated* in a specific way. In other words, our way of conceptualizing the movements of geometric figures in terms of intentional conflicts, reactions, and so on (fights, fear, love, anger, and so forth) is contingent upon the morphological information which is contained in the scene and extracted perceptually. If the right temporal correlations are obtained, the scene is likely to be construed as a scene proper, a minor drama with animate beings fulfilling goal-oriented actions. This implies, in turn, that intentional actions seem to have a specific mode of givenness, a characteristic style of presentation which is immediately recognizable, and thus that there exists something like *direct perception of intentionality*.[2]

In its most primitive and molecular version, the narrative schema may simply originate from this fact: the development of a perceptual schema in terms of which intentional action is identified is indeed a *sine qua non* condition for adequate human life on earth. Otherwise an animal like us would be incapable of distinguishing mechanical or gravitational movement from intentional or self-propelled action, and thus either constantly take, say, his predator for a falling stick, or inversely, but equally as fa-

tally, perceive any insignificant movement in his surroundings as an index for goal-oriented behavior, thus existing in a constant state of red alert. What happens at a cognitive level is that the manifestation of a specific type of movement identified as self-propelled actions triggers not only a representation of the kind of entity that is moving that way (e.g., a predator or a harmless fellow being), but also a counterfactual schematic representation of the kind of action patterns connected to the moving entity: that is to say, in the case of the predator, a schema representing a general, counterfactual event (capture), which regulates behavior and physical reaction to the extent it represents what will happen if things continue as the predator intends them to and therefore guides the subject's sensory-motor response. Intentional movements are thus instantiating indexes of schematic action predicates (to put it in Peircean terms).[3]

Now, if we return to our question concerning the origin and cognitive import of the narrative schema, we may justify our claim that the narrative structure in its primitive form is a deeply entrenched cognitive schema, since *recognizing movements as intentional is tantamount to recognizing basic narrative programs*, that is to say, such programs that plain narratives are made of. In shorthand this yields fundamental programs such as

- S1 can be recognized as wanting S2 [S1 → S2], prompting an 'escape' or 'hide' schema, which guides S2's action [S1 → S2 ⇒]
- S1 can be recognized as desiring X [S1 → X]
- S1 can be recognized by S2 as desiring the same thing as S1 [S1 → X ← S2], prompting a 'conflict' schema for action
- S1 can be recognized as desiring the thing X that S2 possesses [S2(X)/S1 → S1(X)/S2], prompting a 'conflict' schema or an escape schema for action, etc.

In short, what is essential in narratives *stricto sensu* — the deployment of conflicting narrative programs in counterfactual scenarios — is already a basic feature of everyday cognition.[4] Narrative structure is not something we encounter only in the arts; it is a recurrent feature of our everyday experiences. Hence we can consider the narrative schema not only as a higher-order syntax in charge of combining 'existential universals' — which it *is* according to one of its dimensions — but also as an in itself highly significant *meaning gestalt*: an intentional and in this extended sense therefore narrative movement is in itself meaningful, and is so by virtue of the counterfactual representation it triggers (*S* is moving with the purpose of obtaining *X*). Since an adequate experience of intentionality in our natural surroundings is a prerequisite for adapting well to our *Umwelt*, narrativity (and the intentional/non-intentional distinction it

rides on) could in fact be considered itself an anthropological 'deep content' in the Lévi-Strauss/Greimasian sense.

If the narrative schema is an essential cognitive meaning gestalt, we must expect it to organize meaning in domains other than the literary. Examples of this will be given in the final section of this text; at present a small digression seems nevertheless unavoidable: it may indeed seem surprising that one of the decisive properties of the literary work of art, its narrative scaffolding, may originate from everyday cognition, and thus that tight connections can be established between what is inherently significant in non-aesthetic experience and meaning construction, on the one hand, and what is a major tool to articulate meaning in an aesthetic object such as a short story or a novel, on the other. However, as will be briefly shown in the following subsection, this is far from unusual.

4. Signification in everyday and in aesthetic experience

Thanks to work in the psychology and the neurophysiology of art (e.g., Arnheim 1974; Leyton 1992, and to some extent Ramachandran and Hirstein 1999), it has become standard knowledge in theory of the visual arts, that artists consciously or unconsciously exploit intrinsically significant structures from everyday perception as a means to inscribe meaning in their aesthetic objects. 'Intrinsically significant structures' refer to morphological features to which our visual system is predisposed to pay particular attention. It is important to stress that this signification is by no means *conceptual*, but purely morphological; it concerns the distribution of and relation between volumes in space, *independently of what they represent*. Parade examples of such intrinsically significant structures are symmetry-asymmetry relations, as Michael Leyton has demonstrated, and perhaps most clearly the inscription of so-called *non-generic point of views* in paintings. A configuration of figures seen from a non-generic point of view display an internal order which is statistically highly unlikely to occur.

In figure 2, a Necker cube is seen from a generic point of view, in figure 3 from a non-generic point of view (it therefor rather looks like a hexagon). The configuration represented in figure 3 only obtains from one in an infinite set of points of view, whereas the configuration in figure 2 is resistant to change (this means that even though we vary the point of view, we still get a sketch that presents a Necker cube). In the visual arts, a typical way of obtaining non-generic configuration is by representing a body in a posture in which parts of the body are perfectly aligned with elements in the background. Vermeer's painting 'A young woman weigh-

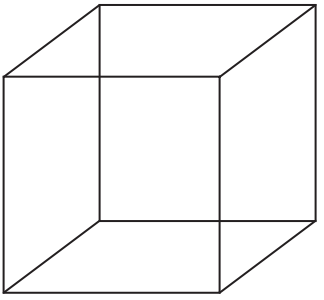

Figure 2. *Necker cube from a generic point of view (displays 3D)*

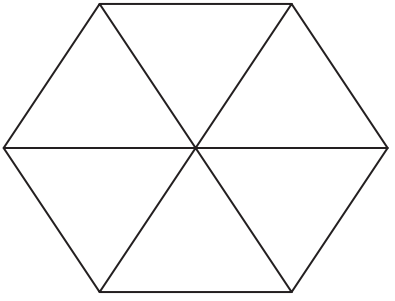

Figure 3. *Necker cube from a non-generic point of view (appears as a hexagon)*

ing pearls' is a seizing example of this (figure 4): remark the way the handle of the balance (in the foreground of the painting) is aligned with the ledge of the frame (in the background), thus creating a morphological point of articulation between the realm of the earthly values (the weighing of pearls in the foreground) and the realm of spiritual values (the painting in the background represents Jesus weighing souls on Judgment Day). This non-generic alignment serves a double purpose: it is morphologically, pre-conceptually highly significant and therefore attracts perceptual attention; it establishes visually and compositionally — not only intellectually or allegorically, as Arnheim (1969) acutely remarks — the articulation point between material foreground and spiritual background.

The point is that the more unlikely a situation is the more intrinsically significant will it be for the visual system (the more will it attract the attention of the visual system), or as Jean-Michel Morel puts it: 'The main idea is that a meaningful event is an event that, according to probabilistic estimates, should not happen in the image and therefore is significant' (quoted by Petitot 2004: 83). For this reason, artists have a tendency to

Figure 4. *Vermeer, 'A young woman weighing pearls' (c. 1662–1664)*

privilege such improbable configurations since they convey maximal saliency to the painting and thus make it possible either to realize purely perceptual articulations of represented domains/elements or to perceptually enhance the conceptual signification of a motif (for much more detailed analyses of El Greco and Vermeer in these terms, see also Bundgaard 2002, forthcoming).[5]

As this example shows, fundamental features of everyday (visual) cognition can be abstracted from their basic domain and invested in aesthetic semiosis as genuine and highly efficient meaning-articulating tools (or 'symbolic forms,' to use Ernst Cassirer's term). The fact that the narrative

schema plays a fundamental role in both aesthetic and everyday cognition is therefore far from exceptional.

5. The narrative schema is a principle for semantic composition[6]

If the narrative schema is deeply rooted in perception, it should be expected that it serves other purposes than being a principle for combining large chunks of text and thus producing discursive coherence. It is indeed not difficult to show that it functions as a semantic configurational principle in other domains than the literary, and even at linguistic levels far below the clause. In Bundgaard, Ostergaard, and Stjernfelt (2006), we show that many compounded linguistic expressions can be suitably characterized in terms of the narrative schema. In recent cognitive linguistic literature (Fauconnier and Turner 2002, 2003; Coulson 2001), compounds have been used as evidence to prove the shortcomings of compositional approaches in semantics. It is, for sure, impossible to predict semantic behavior in otherwise identically constructed compounds (a police station is a station in which there are police, the same does not apply to a fire station; a gun wound is a wound from a gun; a hand wound is a wound on a hand, etc.). Nevertheless, it is quite easy to establish that semantic unpredictability does not imply that compounds do not combine significations in a principled way. One of the most pervasive principles for semantic composition is indeed the narrative schema. The idea we expose in our article is that if in an *XY*-compound, the *Y*-term evokes some idea of purposeful action or functionality, then the *X*-term will specify one of the constitutive elements of a purpose-oriented process, i.e., it will take on one of the actantial roles available in the narrative schema (e.g., *positive purpose* [what should be obtained or furthered], *negative purpose* [what should be prevented], *subject* in charge of realizing the purpose, *instrument*, *raw material*, *result* [insofar as it differs from the intended result]). Indeed, compounds exploiting this frame probably constitute the most comprehensive category of all compounds, because the *X* of the construction refers to potentially any part or aspect of teleological processes, be it purpose ('sleeping pill'), raw material ('meat grinder,' 'salt mill,' 'pig slaughter'), the process itself ('filleting knife,' 'slaughterhouse'), the agent for the process ('masterwork,' 'police station'), the tool used ('pancake,' 'gun wound,' 'railway station,'), what should be fought (the anti-subject of the process: 'fire station,' 'error seeker,' 'insect poison'), recognition of the result ('prize question,' 'award winner').

What is most interesting here is that it becomes possible to give a principled explanation of the semantic variations in compounds containing

the same *Y*-term, as in 'paper mill' (purpose), 'corn mill' (raw material), 'saw mill' (tool), 'water mill' (energy source), 'peasant mill' (agent), 'state mill' (destinator), 'grinding mill' (the process). As is easily seen, each *X*-term takes on a specific meaning relative to the position it occupies within the general narrative schema (contributed by the *Y*-term). The compositional import of the narrative schema therefore also explains another phenomenon: even though the semantic variation through the different expressions with, e.g., '*X*-mill' is considerable, the default interpretation of each expression is easily and automatically fulfilled. The reason why this is so is, of course, that the schema strongly constrains the range of possible representations and hereby guides interpretation. So just as verbs by virtue of their argument or semantic role structure ('valency') are 'small dramas' (to use Lucien Tesnière's [1959] famous expression), the structure underpinning the semantics of many lexical entities is also framed as a micro-narrative and therefore serves the same semantic binding function as Tesnière's verbs.

In this context, it is not very important to spell out the exact nature of the narrative schema, i.e., to lay down the exact number and nature of the stages and narrative roles it must comprise as well as its internal temporal structure. The schema can be quite full-fledged, as in the 'mill' example above, in which to each narrative role or function corresponds a possible semantic slot to be instantiated by some *X*-term. Or it can be very simple, boiled down to fundamental process schemata. The latter is the case in examples with '*X*-safe' (e.g., 'child safe' versus 'shark safe') or '*X*-wound' ('hand wound' versus 'gun wound'); in cases with 'safe,' the underlying 'drama' is one opposing a source of danger (or 'anti-subject') and a protected subject (or a subject to be protected). Since the schema can be instantiated either with focus on 'source of danger' or with focus on 'subject to be protected,' this explains the canonical dual signification of 'safe' (safe *from* some source of danger [sharks], safe *for* some subject [child]). The same is *mutatis mutandis* the case for 'wound': as a phenomenon a wound is framed as having a *location* and a *process history* (an origin).[7] An *X*-term in a compound with 'wound' as a *Y*-term will therefore either foreground the location slot or the origin slot in the molecular narrative frame.

6. Closing remarks

I believe these examples suffice to show that the narrative schema also combines meanings at semantic levels far below the diegetical level proper. It qualifies thus as a major principle for semantic composition. There are, as mentioned above, not only cultural, but also bio-semiotic

reasons for this. It is a prerequisite for adaptation and thus survival in our surroundings that we can distinguish between mechanical and intentional movements. Intentional movements are understood as purpose-oriented, that is to say in terms of molecular narrative programs (schematic representations of a goal and a means to achieving it). It is therefore not simply a symptom of humans' creativity which is laid bare in Heider and Simmel's experiment on the anthropomorphizing interpretations of apparent behavior, but rather a deeply entrenched cognitive ability: the necessity of interpreting movements in terms of a narrative schema whenever these movements display the right temporal correlations. In its subsequent use, this schema organizes the stories humans tell each other, but originally it was (and it still is) a crucial cognitive means to interpret actions in our surroundings.

Notes

1. The narrative schema in its most primitive version can be reduced to the relation between a subject and the goal for the subject's actions.
2. Just as in a series of cognate experiments, Michotte (1963, originally published in 1946) demonstrated the existence of the direct perception of causality, not only mechanical causality, but also intentional causality: if one figure approaches another, and if the other starts moving away from the first before being in contact with it, subjects are likely to say that the second *escapes* from the first.
3. This hypothesis has already been developed by René Thom in his topological semiotics (Thom 1990). He would say that a predator acts (and anticipates) according to a fully displayed 'predator schema' whenever it is in an unsatiated state and perceives an index of a prey.
4. Also phylogenetically, since the capacity of representing counterfactual scenarios ('what-if …' or 'if-they-do-X-we-do-Y' scenarios) evidently constitutes a major evolutionary advantage.
5. Ramachandran and Hirstein (1999) mention the non-generic point of view in their text on the essential properties of aesthetic objects. Committing a *metabasis*, they nevertheless wrongly claim that non-generic configurations are generally avoided in art. Their idea is that in everyday perception we do not like such 'suspicious coincidences' — simply because they (mainly due to the visual ambiguities they convey) attract our attention most compellingly and therefore excite the cognitive system quite intensely. Therefore, they claim, such non-generic 'suspicious' configurations are avoided in art. It is however a plain empirical fact that non-generic points of view are pervasive in art, where they are used to enhance the saliency of object as well as to assign accrued signification to determinate configurations in the painting. Ramachandran and Hirstein seem to overlook that complex, ambiguous, and improbable constellations may be a source of thrilling pleasure in aesthetic experience simply because aesthetic experience is not about recognizing objects as fast as possible.
6. The analysis in this section was developed in collaboration with Svend Ostergaard and Frederik Stjernfelt and published as Bundgaard, Ostergaard, and Stjernfelt (2006). I thank Stjernfelt and Ostergaard for letting me use our analysis in this paper.

7. Michael Leyton's conception of asymmetries as necessarily implying a process history that accounts for their existence confirms this analysis. If I see a wound, which is a non-natural and therefore highly significant part of the body, I will try to conceive of a possible process history that could justify its existence. Such process histories are molecular narratives in the present sense. This in fact also applies to another schema whose cognitive import has been laid down by George Lakoff and Mark Johnson, the source-path-goal-schema, the most basic schematic representation of purpose-oriented action (cf. Lakoff 1987).

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