Christoph Ernst

The Mediation of Perception in Mythological Thinking. On Diagrammatic Explication, Speculative Reasoning and the Myth of the Martian Civilization

Absztrakt

The text discusses the role of diagrammatic reasoning as a speculative type of thinking. With regard to the well known stories of the Martian canals at the end of the 19th century and the so called â[]mars-faceâ[] in the 20th century it can be shown that diagrammatic reasoning is an integral part in the interpretation of ambivalences and ambiguities of the perceptions provided by modern technical media such as the telescope and photography. Diagrammatic reasoning thus plays a central role in the cultural phenomenon of mythological thinking.

Szerző

Christoph Ernst, Phd., Research assistant at the Institute for Theater- and Media-Studies at Friedrich-Alexander-UniversitÄ¤t Erlangen-Nuremberg, main research interests: media-theory, semiotics (esp. diagrammatic reasoning), aesthetics and philosophy of writing, photography and film. Latest publications:Â *Diagrammatik*, Bielefeld 2010 (with Matthias Bauer), *Konstruktion und Geltung. BeitrÄ¤ge zu einer postkonstruktivistischen Sozial- und Medientheorie*, Wiesbaden 2012 (with Joachim Renn and Peter IsenbÄśck).

E-mail: Christoph.Ernst@thewi.phil.uni-erlangen.de

Christoph Ernst

The Mediation of Perception in Mythological Thinking. On Diagrammatic Explication, Speculative Reasoning and the Myth of the Martian Civilization

I

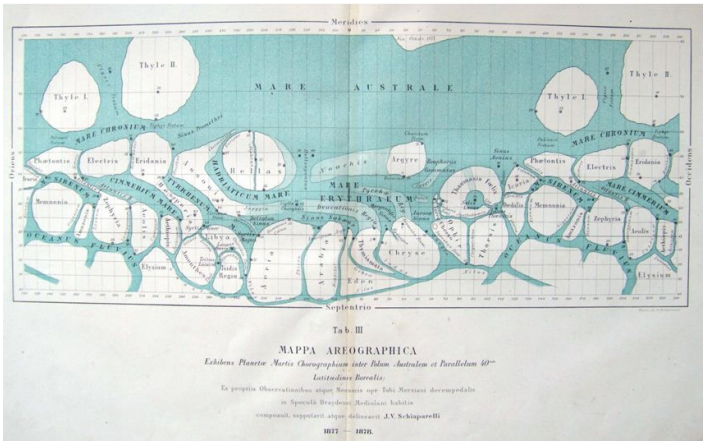
My essay will focus on the issue of perception and technical media. I am going to try to discuss this question by adopting a problem in theories of mythological thinking. ?Mythological thinking? is a term coined by Ernst Cassirer, highlighting the fact that myths ? taken as a discourse ? are always connected with a certain rational type of reasoning, or, if you will, a specific ?in-built-logic?. [1] During the long history of theories about myths, especially in the 20th century, mythological thinking has often been conceived of as a narrative phenomenon. Myths, so it is said, are thus being told and transformed *by* and *in* an act of storytelling.

Therefore one might claim that the ?creativity of a myth? ? for example its ability to translate into new contexts and transform into new variations ? can be explained in a way focusing on the linguistic and the ritualistic aspects of mythological thinking. Also, one has to focus on the perceptive side of myths, their iconicity, taken here as the visual aspect of mythological thinking. In order to do so, it is necessary to ask the question how mythological thinking is usually accompanied by a specific type of reasoning called diagrammatic reasoning, which is important especially in the context of media technologies and their various types of iconic imagery. To illustrate this thesis, I want to give an example of diagrammatic reasoning in the context of modern technical media.

II

In 1877, Italian astronomer Giovanni Schiaparelli examined a map he had created to objectivize his telescopical observations of planet Mars. [2] Things discovered in the map confirm what he had already seen looking through his telescope: a network of unusual straight lines can be recognized on the surface of Mars. Schiaparelli decides to name these lines ?canali?. [3] At that point, the consequences of his actions were not clear to him at all. But the faulty translation of the Italian ?canali? with the English word ?canal? (instead of ?channel?) was not the sole culprit in the subsequent events, [4] the later myth about the Martian canals. The real origin of the myth can be

found somewhere else: even before its narrative conceptualization, the myth of the famous Martian canals had already been realized in the maps Schiaparelli had drawn. [5] We might therefore conclude that the map is the original medium of the myth of the Martian canals ? a medium that was used at the time as a kind of supplementary heuristic medium to translate and secure the elusive data of the view through the telescope. [6]



Schiaparelli Mars-map 1877-1878

So it is the map and its specific ?mythological geography? ? another term by Ernst Cassirer [7] ? which functions as a mediating third: between the human perception and the medium of the telescope and, consequently between the visual phenomenon and its narrative objectivization, making its explication possible in the first place. The map allowed Schiaparelli to fix and record the diffuse sensations of the view through the telescope, enabling him to conceptualize the mere perception of the related patterns of lines which he had seen through his telescope, or as Immanuel Kant would have put it, to assign the sensation under the rule of a concept. Schiaparelli?s discovery not only took place within the constraints and possibilities provided by the medium of the map, the use of the map was in itself a necessary reaction to the ambiguities of the visual medium of the telescope.

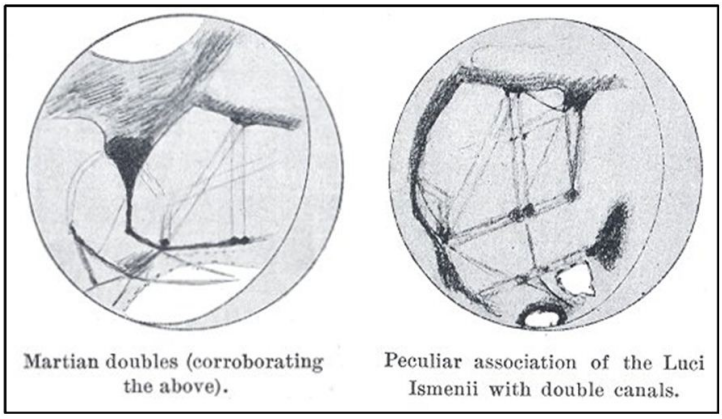
Since Galileo Galilei, telescopes have provided us with pictures of something, as German Art-theoretician Hans Belting puts it, which the human perception alone cannot observe. [8] Joseph Vogl, a theoretician in the field of German media studies, also refers to this argument. He points out that Galilei?s view through the telescope can be regarded as an observation of second order: telescopes do not simply present us with pictures, they present images which give shape to the boundaries of visual perception as such, thereby creating an objectivization of the difference between visibility and invisibility. [9]

Telescopic observations of the heavens uncover the fact that the observer only perceives limited detail of the cosmos as determined by the technical medium. In consequence, there has to be a technically induced surplus of possibilities remaining invisible within the ?submedial? space below, or, in our case, beyond the images provided by the telescope. [10] Because of that, every telescopic image is ?visible invisibility?, a visibility haunted by the possibility of something that

remains invisible, of something that is not present within the image, but nevertheless has to be there ? the latency of an unseen, guaranteed and hidden by the medium at the same time. [11]

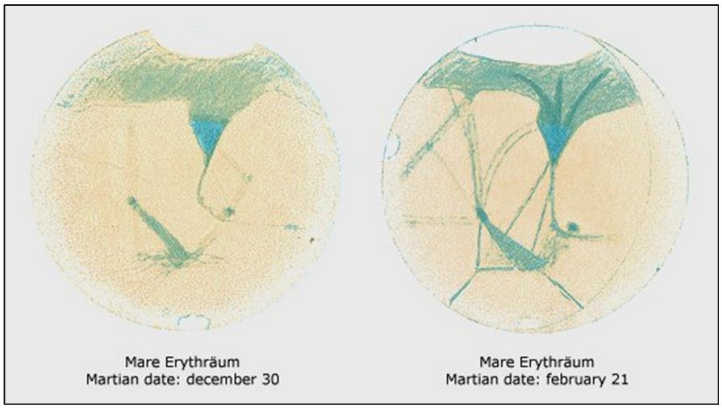
This technological horizon of possibilities implies some important consequences for the objective validity of telescopic imagery. Epistemologically speaking, the paradox of the ?visible invisibility? enhances the significance of the relations between elements visible in the picture. But for the purpose of drawing conclusions about relations between the visible and the invisible these relations have to be explicit and variable. Given the fact that the picture might contain something beyond its visible surface, it becomes a space for further inference.

Galilei meditates on this when he notes in his *Letters about the Copernic System* that in the map of the heavens ? for example his famous moon-map ? it is not the visually presented objects that are important, but rather the inferences about the relations between those objects represented by the map. [12] Consequently, the telescope establishes, as Vogl calls it, a ?variable visibility?, [13] transforming science into a ?travel-agency for the imagination?. [14] In short: telescopic imagery stimulates our faculty for speculative thinking. The sensual certitude that Galilei established against the ideology of the theological worldview is revealed here as a type of scientific evidence which roots not in immediate perception and intuition, but emerges from the deduction based on a map.



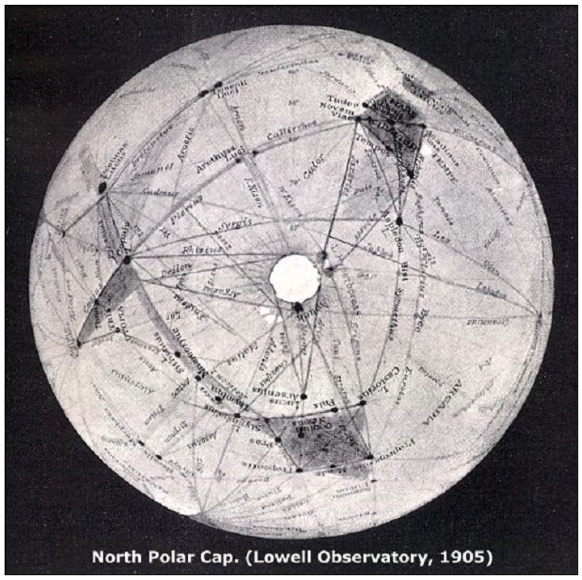
Lowell?s Maps of the Canals (Illustration 2)

In fact, Schiaparelli?s observations of the Martian canals were confirmed by other astronomers up to 1895. But the problem remained that everybody who observed the structured lines saw a different pattern, a different configuration of the lines. So while only few doubted the validity of the observation of the canals, the question remained of how to account for this incoherence on the basis of the observational data. Most importantly, up to 1895 it remained unclear whether or not the canals were indeed artificial canals or natural channels. [15] This changed when American astronomer Percival Lowell reconsidered the available maps of Mars, projected his own observational data onto them and came to the conclusion that a regularity, a temporalized pattern can be identified within the cartographically represented relations. [16]



Lowell: Seasonal Change of the Canals (Illustration 3)

Within the medium of the map, which is used to stabilize and objectivize the view through the telescope, Lowell observed the variation in the patterns from 1877 to 1895. He now sees them as interconnected and believes that he might be able to deduce a continuity, which he interprets as an actual, teleological process happening on planet Mars. This thought led him to the rather ingenious conclusion that the variation within the structured patterns of lines is proof of a highly advanced civilization residing on Mars and trying to cultivate the infertile regions of the planet by building gigantic canals for water supply. [17]



Lowell: Mars North Polar Cap and Canals (Illustration 4)

The Martian civilization, according to Lowell?s thesis, is a civilization in an autumn-like decline, and for that reason is forced to redirect water from the polar regions of Mars into the deserted equatorial regions of the planet. [18] From this we might conclude that by means of the paradox of a ?visible invisibility?, a possibility is put forward according to which the canals are not only real, but are in fact artificially created. It is precisely this possibility that is taken for granted by Lowell. Still, we should not blame here the susceptibility for error of the view through the telescope. Lowell?s specific usage of the map is also responsible, namely that he establishes it as a space from which hypothetical inferences may be drawn. As K. Maria D. Lane puts it in her work on the *Geographies of Mars*: ?At the root of the inhabited-Mars narratives lay a series of detailed maps.? [19] But why is the map so important? What are the specific features of the maps that makes them special? The answer that I will now try to delineate is the following: it is the semiotic nature of a map as a diagrammatic system.

III

In his late writings on pragmatism from around 1902, the founder of pragmatism and modern semiotics, Charles S. Peirce, develops the notion of a reasoning process called diagrammatic reasoning. [20] At the same time he continues to develop his theory on the abductive structure of perception. In a manuscript called *Logic, Regarded as Semeiotic* of 1902, Peirce writes the following: ?By diagrammatic reasoning, I mean reasoning which constructs a diagram according to a percept expressed in general terms, performs experiments upon this diagram, notes their results, assures itself that similar experiments performed upon any diagram constructed according to the same percept would have the same results, and expresses this in general terms.? [21] For Peirce a diagrammatic system is an externalized semiotic system. A diagrammatic system has material and

semiotic properties. Such a system is usually represented in a medium like a sheet of paper or a digital representation (e.g. CAD). Those media provide easy accessibility and fast manipulation of the system. The most striking aspect of diagrammatic systems, however, is the (often misunderstood) iconic aspect of structural resemblance. Diagrams do not represent their related objects by means of mimetic, or ?image-like? resemblance, as Peirce calls it. Instead, diagrammatic resemblance is a ?resemblance of second order?. That is a resemblance which represents a limited set of elements of the object and, most importantly, the relations between those elements. [22] While the iconicity of images establishes a mimetic point-to-point resemblance, diagrammatic systems provide a ?skeleton-like? structure in which aspects of the object are made explicit ? the relations between elements. Those relations are not necessarily visible in regular perception. Because of this, diagrams are often used to visualize abstract information.

Given this context, it is one of the most intriguing features of diagrammatic systems that they are able not only to represent information, but also to create it. This is what fascinated Peirce. Diagrammatic systems have the ability to create additional information about their objects not contained in the premises of the construction of the systems. In the very act of projecting relations the diagrammatic systems not only ?map? the structural relations of the system. They create a system, in which, as Peirce notes, ?hidden relations? of the object can be discovered and made explicit. [23] It is important to see that the explication is provided by the diagrammatic system itself. Information about relations, or even ?hidden? new relations are not simply ?read off? the diagram but created by the diagrammatic system itself. This is called the ?interventionality? [24] of diagrammatic systems, making diagrammatic systems powerful tools in processes of intermedial ?transcriptions?, such as translation of abstract data into a spatial form. [25] A simple but nevertheless striking example for this feature of diagrammatic systems is referred to as a ?free ride?. [26]

Let us take, for example, the diagrammatic representation of the image-schema Container. According to George Lakoff, Container consists of the following features: i) *Structural elements*: interior, boundary, exterior, ii) *Basic logic*: either inside or outside the container (P or not P) and transitivity. [27] Those features and their ?in-built-logic? constitute a simple reasoning process, such as the following:

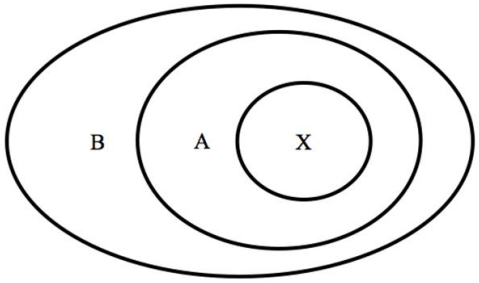
If A is in Container B and

X is in Container A

then

X is in Container B

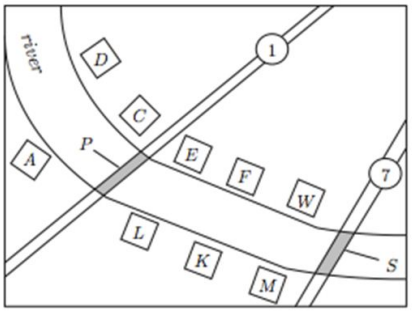
In contrast to its linguistic representation, a diagrammatic system gives you this reasoning process not only ?at once?, but also for ?free?, hence the notion of a ?free ride?: [28]



Free Ride and CONTAINER-Schema (Illustration 5)

?Free rides? do not come naturally. To read off the conclusion, you need to be familiar with the normativity of the diagrammatic system. But once you know the rules of the diagrammatic system, e.g. that the boundary of a circle cannot be crossed, [29] the diagrammatic system gives you the information fairly easily. Similar effects can be observed in more complex diagrammatic systems, such as maps. To illustrate this, we can refer to a simple example taken from the dissertation written by Atsushi Shimojima.

From memory, Harry draws the map below and explicitly knows that building K is located halfway between L and M [30]:

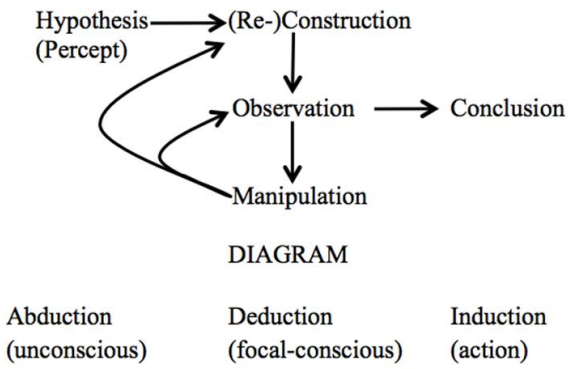


Free Ride and Harry?s map (Illustration 6)

Once Harry has drawn the map, the map delivers ?for free? much more information about the relations between building K and other buildings as Harry had in mind when he drew his map. Additional information is implicitly presupposed as constraints. Thanks to the map, Harry is now able to make them explicit, e.g. the information that building F lies on the river across from building K.

As Jan Wöpking points out, explication is one of the most important features of diagrammatic ?interventionality?. [31] Based on phenomena like this one, Peirce develops in his later philosophy the concept of ?diagrammatic reasoning?. [32] For Peirce the process of perception is that of an unconscious, continuous and abductive reasoning in signs. This process is transformed into a conscious reasoning process, when a percept no longer fits the established schemata and categories of perception and subsequently the schemata of action (what Peirce calls ?habits?). It is one of the aspects of Peirce?s notion of diagrammatic reasoning, that it comes into play as a mode

of making explicit a problematic percept in a diagrammatic way. A percept that cannot be explained by the habits of abductive reasoning is made explicit and externalized into a diagram (?diagramatization?). [33] One of Peirce?s basic ideas is that by means of structural resemblance a diagram works as a medium to externalize the implicit explanatory rule of the abductive mode of perception, which Peirce terms the hypothesis. The hypothesis is externalized and transformed into a diagram. Thus it becomes a deductive schema or pattern, upon which experiments may be performed. For Peirce the most important thing about the diagram is that it constitutes a logical space for the eye to perceive logical connections not present or hidden in the original percept. What we get is ? as this slightly transformed illustration by Michael May and Ferderik Stjernfelt shows ? the following reasoning process: [34]



The process of diagrammatic reasoning (Illustration 7)

The conclusions can be reached in two ways:

i) the diagram ?automatically? leads to the conclusion (Peirce calls this corrolarial deduction)

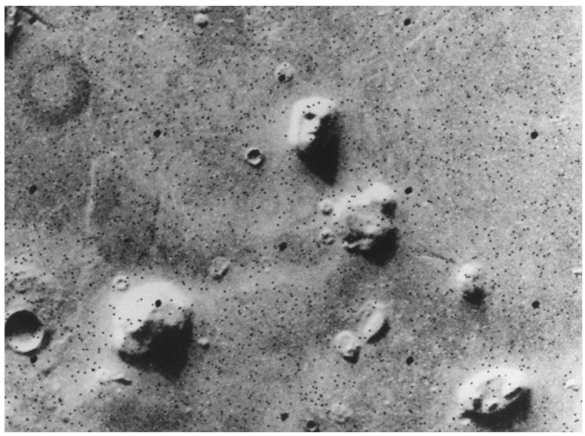
ii) the diagram has to be transformed or even rebuilt (Peirce calls this theorematic deduction) [35]

A ?free ride? is a ?corrolarial deduction?. Nevertheless, one can easily imagine situations in which the conclusion is not as evident as in the given examples. In those cases it is necessary to transform and manipulate the diagram, and the conclusion does not come for free. Still, it remains one of the basic motivations of every construction and transformation of a diagrammatic system to create effects like the automatic explication evoked by a ?free ride?.

IV

Keeping that in mind, we can now get back to our example, and recontextualize it from the late days of modernity into the early days of postmodernity. While the natural sciences of the early 20th century became more and more skeptical, the myth of the Martian Canals, camouflaged as hard scientific knowledge, translated itself from astronomy into fiction and popular culture (1898 H. G. Wells, 1938 Orson Welles). [36] However, no final proof has been presented about the absence of civilization on planet Mars until space probes visited the planet. The Mariner-missions

from 1964 finally made clear that there was neither life on Mars nor any vegetation, canals, or other signs of civilization. Still, history has shown that it is never a good idea to underestimate the power of myth. In 1977, exactly 100 years after Schiaparelli?s observation of the Martian canals, the myth stroke back. One year earlier, NASA had published a photograph of the Cydonia-region of Mars. The picture had been sent by probe Viking I on its Mars-mission. What happened was almost exactly the same thing as in 1877, only this time within the conditions of the medium of photography. [37]



The Mars-Face

Legend has it that a gigantic artificial human face can be recognized on one of the Viking-Pictures. This story leads back to two NASA computer engineers, Vincent DiPietro and Gregory Molenaar of NASA?s Goddard Space Flight Center. NASA had dismissed the Mars-face a few days after the picture was taken as a photographic coincidence based on a trick of light and shadow. [38] But DiPietro and Molenaar, not satisfied with this explanation, went to the archives and to their surprise discovered a second picture of the face, taken from another angle and at another time ? NASA had labeled it as ?Head?. DiPietro and Molenaar now submitted the pictures to digital analysis. [39]

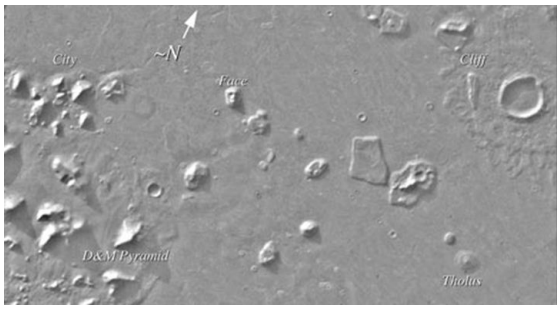
By that, they believed to have shown that the face was intentionally carved out of solid rock and shows a human face with a tear in its eye. They published their findings in a small book with the title *Unusual Mars Surface Features*, which was soon out in four editions. [40] But there is more. When DiPietro and Molenaar started observing other pictures, they discovered some pyramid-like structures in the vicinity of the Mars-face. Their findings soon got the attention of science journalist Richard C. Hoagland, who believed the pictures to show an ancient city, henceforth called ?Inca-City?.

This provides a full mythological scenario: is the Mars-face the intentionally placed relic of a lost Martian civilization ? perhaps containing a message for people on Earth? Do the pictures of the Viking probes represent a lost prehistory of our own history? We see that the ?real? Martianculture in the era of the telescope has been transformed into a ?lost? Martian civilization in the eraof photography, a civilization which sends us a visible message right onto the lens of the spaceprobe from the depths of history. This brings me to the medium of photography.

In his early writings, Roland Barthes argued that photography always contains the status of a ?message without code?. Barthes sees this as the possibility of photography to evoke and in that very evocation revise the notion of a real similarity to the object it refers to, a pure iconicity on the level of denotation. [41] By analogy to the object, we see in photography the object as itself. But because it is just an analogy and not the real thing, we see the object paradoxically not as itself. In consequence we see an analogical difference that evokes, once again, in the present visibility of the object its own absent invisibility. According to Barthes, this paradox can be dissolved through linguistic codes. This gives rise to the build-up of connotational systems, which constitute very different messages; for example myths, considered by the early Barthes to be a parasitic secondary connotational system. [42]

Now if we have a closer look at the difference Barthes makes between denotation and connotation, we find that it follows the old difference between word and image. The denotation, the message without code, is considered by Barthes as a dense, figurative and continuous analogy, the connotation as a disjunct, differentiated linguistic form. But it is interesting to notice that according to Barthes a third element between denotation and connotation is needed. Barthes refers to this third element as the ?relais function?. [43] As it may be guessed, this third element can be found in the diagrammatic system of the map, which transforms the dense-figurative mode of the photography into a diagrammatized space.

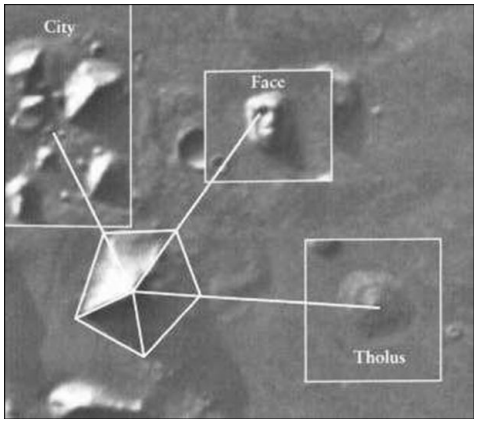
First mythopoets like Richard Hoagland and others referentialize the Mars-face cartographically by building up a diagrammatical system; for example they locate a north-south-axis, giving them the opportunity to isolate and locate objects. [44]



Referentialisation

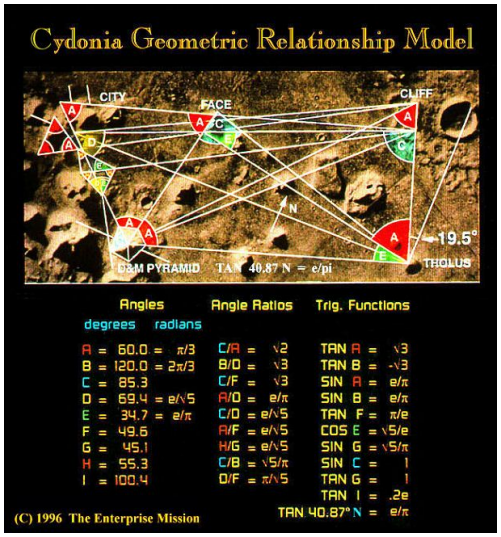
But not only do they locate objects in the spatial structure of the diagrammatic system, they also see relations in them, thereby putting them into a position to argue that there are implicit

relations, which can be made explicit by various practices of separation, differentiation, classification, as well as by cutting and editing. [45]



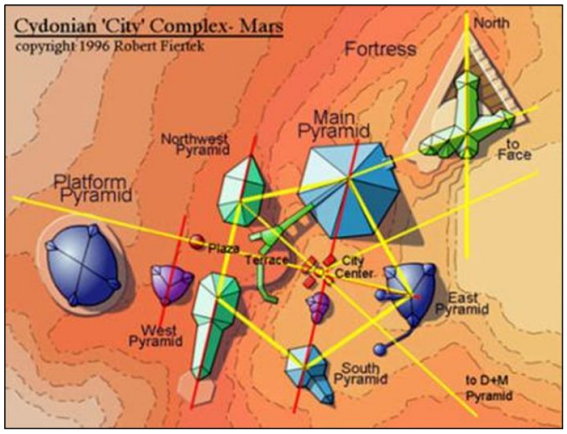
Measuring and Reconfiguration

By means of establishing a diagrammatic system, a framework is established, creating information about relations, which are reduced to their geometrical content and mathematical principles. [46]



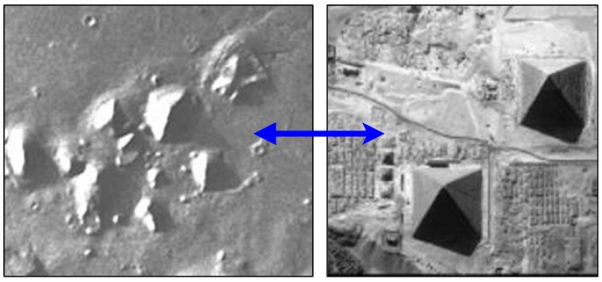
Richard Hoagland Cydonia Geometric Relationship Model

Taken as a whole, this ensemble conveys, as Michael Lynch in his notion of a rhetorical mathematics? writes, ?an impression of rationality? [47] which is subsequently enriched (and narrativized) by imagination and fiction: [48]



The fictional ?city?

On that basis a mythical analogy is created, which has a vague core and different, highly adaptable variations. One of those adaptions is the unavoidable analogy to the pyramids in Egypt. [49]



?Pyramids? on Mars and the Gizah-Plateau

I think it is fair enough to say that we can observe here a process of diagrammatization: the bird?s eye perspective of the pictures of Viking I predetermine a top-to-bottom view. The perspective leads the view to the territory represented by the picture. The reading of photography contains what is necessary to implant a code into the ?message without code? by means of the ?relais function?, that is: the insertion of disjunct relations into a space ? transforming the space of the picture by means of this ?diagrammatization? into a deductive space from which conclusions can be drawn.

V

The diagrammatical differentiation of the continuity of the picture in discrete elements and disjunct relations transforms the picture?s ?paraobjective? bird?s eye perspective into an analogical reasoning-scheme, or as I would prefer: a diagram. The bird?s eye perspective of photography is thus transformed into a top-down-perspective for deductive reasoning. Thereby, diagrammatic relations enable the mythopoets to identify not only single elements but also relations between these elements ? giving the picture a proto-logic and through that logic a proto-narrative form. The reason for this is that the whole ensemble can now be transformed into complete truth-conditional sentences with a propositional structure, allowing corrolarial inferences, such as ?the

pyramids on Mars lie west of the Mars face? or ?Mars-face and pyramids share the same axis? and providing a deductive space to be theorematically reconfigured. So we arrive at two conclusions:

i) the iconic element of modern myths relies on an externalized diagrammatic system, such as maps. Those systems are used as tertium comparationis to translate the ambiguities of iconic imagery into conceptual language. Practices of diagrammatization seem to be a reaction to the iconic ambiguities of visual technical media: the mediation of perception in technical media correlates to various practices of diagrammatization in modernity.

ii) Because of their ability to explicate implicit relations and logical consequences, e.g. via the means of free rides, ?automatically? by means of a ?built-in-logic?, diagrammatic systems provide predetermined sentences in mythological thinking. These sentences constitute a matrix for the speculations and narratives of mythological thinking.

On the one hand, an element of diagrammatic reasoning is present in all ?transcriptions? between imagery and their mythological interpretation. On the other hand, this shows that diagrammatic reasoning is not necessarily an element of a process in which we make our ideas clear, but rather of a process in which we confuse them.

Jegyzetek

1. Cassirer, *Philosophie der symbolischen Formen* 2.
2. The use of maps in the 19th century is discussed in Lane, *Geographies of Mars*, esp. 23-63., the Schiaparelli map is discussed ibid. 33-39.
3. Cf. Lane, *Geographies of Mars*, 2.
4. ibid., 24.
5. Schiaparelli?s Mars-maps and excerpts of his sketchbooks are documented on http://www.brera.inaf.it/MARTE/marte.html
6. An overview over the canal-affair can be found in Crowe, *The Extraterrestrial Life Debate*, chap. 10, Rauchhaupt, *Der neunte Kontinent*, 36-50., Sheehan, *The Planet Mars*, chap. 8-12., the importance of maps is impressively demonstrated in Lane, *Cartographic Projection* and Lane, *Geographies of Mars*.
7. Cassirer, *Philosophie der symbolischen Form*, 104-110.
8. Belting, *Himmelsschau und Teleskop*.
9. Vogl, *Medien-Werden*. With regard to the connection between the medium of the telescope and the Martian canals see also Wendler, *Interpretation und Illusion.*
10. See for the notion of a ?submedial space? cf. Groys, *Unter Verdacht*.
11. Cf. Vogl, *Medien-Werden*, 118-119.
12. ibid., 120.
13. ibid., 119.
14. Belting, *Himmelsschau und Teleskop*, 212.
15. As the compilation of original sources in Crowe, *The Extraterrestrial Life Debate. A Source Book*, 470-517,

shows, Schiapparelli himself was not sure of how to interpret his observations.

16. Lowell, *Mars and its Canals*, 285. For the complete story of Lowell see Hoyt, *Lowell and Mars*, Lane, *Mapping the Mars Canal Mania.*
17. Lowell: *Mars and its Canals*, 44.
18. Cf. Lane, *Mapping the Mars Canal Mania*, 200-201.
19. Lane, *Geographies of Mars*, 23.
20. A reconstruction of Peirce?s concept can be found in Stjernfelt, *Diagrammatology*, esp. 49-116., see also Hoffmann, *Erkenntnisentwicklung*.
21. Peirce, *The New Elements of Mathematics, Vol. IV*, 47-48.
22. Cf. Wöpking, *Raum und Erkenntnis*, 33-38. The dissertation of Wöpking is not yet published. Some of his arguments can be found in Wöpking, *Raum und Begriff*, and Wöpking, *Space, Structure and Similarity*.
23. Peirce, *The Essential Peirce, Vol. I*, 227-228.
24. Cf. Wöpking, *Raum und Erkenntnis*, 18.
25. Cf. Jäger, *Transkriptivität*.
26. Cf. Shimojima, *On the Efficacy of Representation*, 17-43.
27. Lakoff, *Woman, Fire, and Dangerous Things*, 272-273.
28. The notion of ?free ride? is also discussed in Wöpking, *Raum und Erkenntnis*, 45-52.
29. As I will argue in a forthcoming study there is reason to believe that the normativity of diagrams is motivated by image-schemas such as Container.
30. Shimojima, *On the Efficacy of Representation*, 38. (Figure 3.2)
31. Wöpking, *Raum und Erkenntnis*, 52-53.
32. Cf. e.g. Stjernfelt, *Diagrammatology*.
33. Peirce?s theory of perception is discussed in Roesler, *Illusion und Relativismus*.
34. May, *Diagrammatic Reasoning and Levels of Schematization*, 186., Stjernfelt, *Diagrammatology*, 104.
35. Cf. Peirce, *The Essential Peirce, Vol. II*, 298: ?Deductions are either *Necessary* or *Probable*. Necessary Deductions are those which have nothing to do with any ratio of frequency, but profess (or their Interpretants profess for them) that from true premises they must invariably produce true conclusions. A Necessary Deduction is a method of producing Dicent Symbols by the study of a diagram. It is either Corrolarial or Theorematic. A Corrolarial Deduction is one which represents the conditions of the conclusion in a diagram and finds from the observation of this diagram, as it is, the truth of the conclusion. A Theorematic Deduction is one which, having represented the conditions of the conclusion in a diagram, performs an ingenious experiment upon the diagram, and by the observation of diagram so modified, ascertains the truth of the conclusion.?
36. Cf. Wendler, *Interpretation und Illusion*, for the attempt of British Astronomer Edward Maunder to debunk the myth of the canals.
37. NASAs official press with the image from July 31, 1976 on http://www.msss.com/mars_images/moc/extended_may2001/face/1976pio.html
38. Cf. the official version of NASA at http://science.nasa.gov/science-news/science-at-nasa/2001/ast24may_1/
39. DiPietro/Molenaar/Brandenburg, *Unusual Mars Surface Features*, Fig. 50 + 51.
40. DiPietro/Molenaar/Brandenburg, *Unusual Mars Surface Features*.
41. Barthes, *Der entgegenkommende und der stumpfe Sinn*, 11-68.

42. Barthes, *Mythen des Alltags*.
43. Barthes, *Der entgegenkommende und der stumpfe Sinn*, 34.
44. For over 25 years the story of the Mars-face is told in countless para-scientific publications, such as Tonnies, *After the Martian Apocalypse*, or Butlar, *Leben auf dem Mars*. Likewise, most of the imagery cited here is endlessly reproduced by other websites and books with the same content, cf. e.g. http://dudeman.net/siriusly/cyd/city.html, Hoagland: *Die Mars-Connection*.
45. Cf. http://dudeman.net/siriusly/cyd/city.html
46. Cf. http://www.enterprisemission.com/jplimaging.html, see also Hoagland, *Die Mars-Connection*, Ill. 13.
47. Lynch, *Pictures of Nothing*, 2.
48. The picture was initially drawn by Robert Fiertek. The original website is down, but the image can still be found on various websites, e.g. http://www.enterprisemission.com/cydonia.html
49. Cf. for the ?mars-earth?-hypothesis http://mars-earth.com/cydonia_eygpt/ or http://www.mt.net/~watcher/pyramid.html, or http://therealjosesoto.blogspot.de/2012/08/jose-soto-show-mars-rover-chick-fil.html. The story is often combined with the works of so called ?alternative? historians, like Robert Bauval or Graham Hancock, who believe in a ?lost civilization? on Earth before ca. 10.500 B.C. Cf. for a critical discussion of this discourse Fagan (ed.), *Archaeological Fantasies*.

Irodalomjegyzék

- Barthes, Roland. â[]Mythen des Alltags,â[]in *Texte zur modernen Mythentheorie*, edited by Wilfried Barner, Anke Detken und JÄśrg Wesche. Stuttgart: Reclam, 2003. 91-105.
- Barthes, Roland. *Der entgegenkommende und der stumpfe Sinn*. Frankfurt a. M.: Suhrkamp, 2009.
- Belting, Hans. â[]Himmelsschau und Teleskop. Der Blick hinter den Horizont,â[]in *Bild/Geschichte. Festschrift fÄźr Horst Bredekamp*, edited by Philine Helas, Maren Polte, Claudia RÄźckert and Bettina Uppenkamp. Berlin: Akademie, 2007. 205-218.
- Butlar, Johnnes von. *Leben auf dem Mars. Entdeckungen der NASA-Viking-Missionen*, Munich: Herbig, 1987.
- Cassirer, Ernst. *Philosophie der symbolischen Formen.* Zweiter Teil: *Das mythische Denken*. Hamburg: Meiner, 2010.
- Crowe, Michael J. *The Extraterrestrial Life Debate, 1750-1900. The Idea of a Plurality of Worlds from Kant to Lowell.* Cambridge: Cambridge Univ. Press, 1999.
- Crowe, Michael J. (ed.). *The Extraterrestrial Life Debate. From Antiquity to 1915*. Notre Dame/Ind.: University of Notre Dame, 2008.
- DiPietro, Vincent/Molenaar, Gregory/Brandenburg, John. *Unusual Mars Surface Features*. Glenn Dale, Md.: Mars Research, 1988.
- Fagan, Garrett G (ed.). *Archaeological Fantasies. How Pseudoarchaeology Misrepresents the Past and Misleads the Public*. London: Routledge, 2006.
- Groys, Boris. *Unter Verdacht. Eine PhÃ¤nomenologie der Medien*. Munich: Hanser, 2000.
- Hoagland, Richard C. *The Monuments of Mars. A City on the Edge of Forever*. Berkeley: North Atlantic Books, 1987. (German Translation: Hoagland, Richard C. *Die Mars-Connection. Monumente am Rande der Ewigkeit*, Essen: Bettendorf, 1994.)
- Hoffmann, Michael H.G. *Erkenntnisentwicklung. Ein semiotisch-pragmatischer Ansatz*. Frankfurt a. M.: Klostermann, 2005.

- Hoyt, William Graves. *Lowell and Mars.* Tuscon: University of Arizona Press, 1976.
- JÄ¤ger, Ludwig. â[]TranskriptivitÄ¤t. Zur medialen Logik der kulturellen Semantik,â[]in *Transkribieren. Medien â[]LektÄźre*, edited by Ludwig JÄ¤ger. Munich: Fink, 2002. 19-42.
- Johnson, Mark. *The Body in the Mind. The Bodily Basis of Meaning, Imagination, and Reason*. Chicago: Chicago Univ. Press, 1990.
- KÄźmmel, Albert. â[]MarskanÄ¤le,â[]*Medien in Medien*, edited by Claudia Liebrand and Irmela Schneider (Cologne: DuMont, 2002), 67-88.
- Lakoff, George. *Women, fire, and dangerous things what categories reveal about the mind*. Chicago: Chicago Univ. Press, 1990.
- Lane, K. Maria D. *Geographies of Mars. Seeing and Knowing the Red Planet*, Chicago: Chicago Univ. Press, 2011.
- Lane, K. Maria D. â[]Mapping the Mars Canal Mania. Cartographic Projection and the Creation of a Popular Icon,â[]*Imago Mundi* 58.2 (2006): 198-211.
- Lowell, Percival. *Mars and its Canals*. London: MacMillan, 1906. Online-version accessed September 26, 2012. http://ia600404.us.archive.org/5/items/marsitscanals00loweuoft/marsitscanals00loweuoft.pdf
- Lynch, Michael. â[]Pictures of Nothing? Visual Construals in Social Theory,â[]*Sociological Theory* 9.1 (1991): 1-21.
- May, Michael. â[]Diagrammatic Reasoning and Levels of Schematziation,â[]*Iconicity. A Fundamental Problem in Semiotics*, edited by Troels Degn Johannson/Martin Skov/Berit Brogaard. Kopenhagen: Nordic Summer University-Press, 1999. 175-194.
- Rauchhaupt, Ulf von. Der neunte Kontinent. Die wissenschaftliche Eroberung des Mars. Frankfurt: Fischer, 2010.
- Peirce, Charles S. *The Essential Peirce. Selected Philosophical Writings.* Vol. 1 (1867-1893). Bloomington: Indiana University Press, 1992.
- Peirce, Charles S. *The Essential Peirce. Selected Philosophical Writings*. Vol. 2 (1893-1913). Bloomington: Indiana University Press, 1998.
- Peirce, Charles S. *The New Elements of Mathematics by Charles S. Peirce*. Vol. IV. Atlantic Highlands/NJ: Mouton Humanities Press, 1976.
- Roesler, Alexander. *Illusion und Relativismus. Zu einer Semiotik der Wahrnehmung im Anschluss an Charles S. Peirce*. Paderborn: SchÄśningh, 1999.
- Sheehan, William. *The Planet Mars: A History of Observation and Discovery.* Tucson: Univ. of Arizona Press, 1997. Online-Version accessed September 26, 2012. http://www.uapress.arizona.edu/onlinebks/MARS/CONTENTS.HTM.
- Shimojima, Atsuhi. *On the Efficacy of Representation*, Indiana: Indiana Univ. Diss., 1996. Online-Version accessed September 26, 2012. http://www1.doshisha.ac.jp/~ashimoji/Personal_Page/Thesis.pdf
- Stjernfelt, Frederik. *Diagrammatology. An Investigation on the Borderlines of Phenomenology, Ontology, and Semiotics*. Dordrecht: Springer 2007.
- Tonnies, Mac. *After the Martian Apocalypse. Extraterrestrial Artifacts and the Case for Mars-Exploration*, New York: Paraview Books, 2004.
- Vogl, Joseph. â[]Medien-Werden. Galileis Fernrohr,â[]*Mediale Historiographien* 1 (2001): 115-123. Online-Version accessed September 26, 2012. http://www.medientheorie.com/doc/vogl_galilei.pdf

- Wendler, Reinhard. â[[Interpretation und Illusion. Probleme mit teleskopischen Bildern am Beispie der MarskanÄ¤le,â[[in *Das Technische Bild*, edited by Horst Bredekamp, Birgit Schneider and Vera DÄźnkel (Berlin: Akademie, 2008), 120-131.
- WÄśpking, Jan. â[[Raum und Begriff. Zur Wiederentdeckung der epistemischen Bedeutung von Diagrammen in der Geometrie,â[[in *Konstruktion und Geltung. BeitrÄ¤ge zu einer postkonstruktivistischen Sozial- und Medientheorie*, edited by Joachim Renn, Christoph Ernst and Peter IsenbÄśck (Wiesbaden: VS Verlag fÄźr Sozialwissenschaften 2012), 205-232.
- WÄśpking, Jan. *Raum und Erkenntnis. Elemente einer Theorie epistemischen Diagrammgebrauchs*, Berlin: Freie UniversitÄ¤t Diss. 2012 (unpublished).
- WÄśpking, Jan. â[[Space, Structure, and Similarity. On Representationalist Theories of Diagrams,â[[in *Studies in Diagrammatology and Diagram Praxis*, edited by Olga Pombo and Alexander Gerner (London: College Publications 2010), 39-56.