LOCAL ANTHROPOGENIES – SEMIOTICS

PHILOSOPHY OF PHOTOGRAPHY

POSTSCRIPT

NEW THEORETICAL PERSPECTIVES

Ten years have passed since this work was first published by the Brussels Centre for Fine Arts in November of 1981. It was deemed unnecessary to alter the final version published in the spring 1983 issue of the *Cahiers de la Photographie*, with the exception of two or three mistakes.

However, certain clarifications were meanwhile brought in. The text strongly insists on the fact that, unlike any other type of imagery, only photography (and consequently also photoengraving), is able to capture the "quantic" character of the Universe by virtue of its granularity, that is to say its physical composition consisting of grains. Physicist - and Erwin Schrödinger in particular - have long since pointed out that without the quantic structure of energy (the irreducibility of h, the quantum of energy), our Universe would be absolutely continuous, and therefore unable to instigate events or give rise to individuals. Thus, the photograph is already philosophical by virtue of its granularity. However, when the quantic character of the photoelectric effect intervening in the *formation* of its negative was fully thought-out (it is the photoelectric effect as interpreted by Einstein that helped to give Quantum Theory its definitive shape), it left the quantification of the *development* of the negative foolishly obscure. But things have changed since the discovery of the intervening "quantic size effect," as the authors explain in their article "La Photographie Révélée" of the 1990 January issue of *La Recherche*. The appearance of the word "quantic" in this text confirms this original and cosmological aspect of the photographic process, even though the authors do not employ it in the radical sense as with photoelectric effects.

But the philosophy of photography is further illuminated by lights coming from further afar. Firstly, light is shed by what is today often called an intelligible ontology. Secondly, a better understanding of our primate visual system offers additional clues as well as a more anthropogenic model of man. A brief exploration these three perspectives will give new resonance to the connections between Indexes and Indices, as well as to the differentiation between Reality and the Real, and between the World and the Universe - themes that form the backbone of this book.

1. Photography and Intelligible Ontology

Homo sapiens sapiens as primate, and even already as mammal, has always perceived that his environment contains folds, ridges, crests, holes and so on. And whoever tries not only to identify persons and objects, but also to draw out and pay close attention to the germination of forms in a photograph must follow these creases, edges and fault lines.

What has changed over the last few years is that catastrophes and alternations of form brought about a certain mathematization with the introduction of differential Topology and differential Analysis. As such, what had always appeared as an ensemble of *de facto* practical characteristics has refashioned itself in *de jure* systems. The realization grew that the fold, the cusp, the swallowtail, the butterfly, the hyperbolic, elliptic and parabolic umbilic (the order is meaningful) account for the seven elementary catastrophes responsible for many (the ensemble of?) macroscopic formations and transformations in the Universe. The first edition of René Thom's *Structural Stability and Morphogenesis* (SSM1) was published in 1972 by Benjamin, Massachusetts, while a second expanded edition (SSM2) in French was published by Interedition in 1977. His *Semiophysics: A Sketch* was originally published in 1988 as *Esquisse d'une Sémiophysique* (ES), also by Interedition.

In this new frame, distant or near surroundings (as well as photonic imprints of the surroundings) no longer simply offer an aleatory table of samplable objects one knows little about, but a formal *field* occupied by *morphic attractors* whose combination determines the pool of morphic attractions that compatibilize divergent forces, thus facilitating *gradients of morphic potential* with differing rates of smoothness, abruptness, simplicity or complexity. As transformations do not cross from one form into another in a continuous and equal fashion but in a catastrophic manner through morphic *leaps* - effecting *stable, unstable and meta-stable* states - the Universe is able to assumes its "quantic" nature not only through the behavior of its elementary particles or of its "small" size effects (photographic development), but also - and this evidently concerns a much larger scope - through the forms of its mountains and living organs, from one species to another, and perhaps especially from one epigenetic stage to another.

As such, some SENSE is conferred on the sequence flower-bud-fruit, on the succession of leafages of our embryos, the umbilic of our mouths, stomachs, anuses, matrices and "peaks" (the elliptic umbilic) of seminal injection. On the basis of the "singularity" $f(x) = x^4$ and the "universal unfolding" $F(x,u,v) = x^4 + ux^2 + vx$, the creases of a Coco Chanel skirt flirt with the planetary syncline and anticline faults, as laid down in the "Riemann-Hugoniot Catastrophe." One can now even start to understand something of the nidification and nursing of birds, which the behaviorist theory of reinforced efficient sequences had rendered quite mysterious. Jorge Luis Borges has taught us so well that, even for the most perverted imagination, monsters are limited, very limited, in number. The pioneer in this field was D'Arcy Wentworth Thompson whose *On Growth and Form*, first published in 1917 and since then subsequently revised and extended, showed that, for animal forms, the Universe operates morphically according to "chreodes," or pathways of probability, which are relatively limited in number. This is the

concern of that transmutational multi-frame that is called the comic, which is the constant verification of this evidence. Indeed, we attempted to illustrate this point in *La Bande dessinée, une cosmogonie dure* (Cerisy Symposium, Futuropolis, 1989).

In this respect, the photograph occupies quite a remarkable place. While the signs of a painting are inevitably prefigured even when they distort or seek to be pre-formed like with Renaissance marbling, a photograph, as an indexable indicial imprint, offers all its forms together with its non-forms, on the brink of catastrophe. The photo not only gives evidence of the fold, but also of folding.

This is even more so the case as, technically speaking, the photograph is in itself a catastrophe, and conspicuously so, which René Thom does not fail to stress while seemingly speaking of something entirely different, i.e. the notion of "mean field": "Is not photography a *controlled chemical catastrophe* the germ set of which is the set of points of impact of the photons whose existence is to be demonstrated?" (SSM1: 113). Thom adds that "the same is true of the bubble chamber or scintillation counter in the detection of elementary particles" (Ibidem), explaining that the germ set is the "set of points where the new phase appears" (SSM1: 106).

Furthermore, when in one of his paragraphs René Thom ventures into art, he of course hints at paintings, poems, musical phrases, and dance steps, but he above all makes us think of the phototonic imprints of the photograph: "the work of art acts like the germ of a virtual catastrophe in the mind of the beholder. By means of the disorder, the excitation, produced in the sensory field by looking at the work, some very complicated chreodes (of too great a complexity to resist to the perturbation of the normal thought metabolism) can be realized and persist for a moment. But we are generally unable to formalize, or even to formulate, what these chreodes are whose structure cannot be bent into words without being destroyed" (SSM1: 316).

"Complexity" here means "ystematically excited" and refers to an execution which seems "directed by some organizing center of large codimension" (Ibidem).

Stéphane Mallarmé must have turned in his grave upon hearing this mathematized version of his equally rigorous definition of artistic production: "Vertigo! / How space quivers / Like an enormous kiss / That wild to be born for no one can neither / Burst out or be soothed like this." Thus, for every photograph, the cerebrum of the photographer only constitutes a minimal part of its "organizing centre," which is largely comprised of the chreodes of an ambient Universe. This is even better news for those in search of an "intelligible ontology".

Besides, the refreshing view instigated by differential Topology and Analysis complements the present-day revival of a general Topology. For those who always believed that the existential FIELD activated through art, literature, publicity, love, religious fervor, or the discreet ecstatic happiness of sitting in an armchair by a window at a certain hour of the day (ah! Rousseau!) was not the work of denotations, and connotations, nor of the signifier or the signified, nor of reference and code, nor of expression and contents, nor of circular permutation, nor of barred signs, nor of floating signifiers, nor of a "Punctum" turning the viewer or listener into some sort of semiotic Saint Sebastian, but who instead believed it was due to original RATES of opening/closure, close/distant, globalization/enclosure, contiguous/non-contiguous, continuous/non-continuous, compact/diffuse, route/non-route, adherent/non-adherent, and so on, through which the Universe resounded sovereignly and fragilely - what enormous

vindication to all of them to hear that the topologist - this fundamental mathematician - cannot stop talking either about vicinity, adjoining points, open, closed, continuous/non-continuous, contiguous/non-contiguous, globalizing, enclosure, included, adherence, routes and nodes!

What a happy encounter between mathematics, physics, embryology (Conrad Hal Waddington's *Organizers and Genes* of 1940), and even phenomenology, which Lévi-Strauss considered the philosophy for starry-eyed young girls. Edgar Allan Poe's *The Raven* is therefore not just a matter of tonal equivalences, as Jakobson contended. Instead, it concerns the RATE of close/distant sounds (and so many other aspects). In brief, we are dealing with a mode of existence! This also holds for photographs.

Nonetheless, one must keep in mind that intelligible ontology is far from completion. As Waddington (SSM2: xiv) briefly noted, in order to truly understand the formations and transformations of minerals and living beings, we still need to undertake the considerable task of reconciling the *macroscopic* morphological views of differential topology with the (steric and allosteric) *microscopic* morphological views of chemistry. More precisely, we still need to know how to pass from a space with a very large number of dimensions, such as the space that parameterizes the biochemical states of a cell, to the merely four-dimensional space-time of embryology. This enduring perplexity tones down our joy.

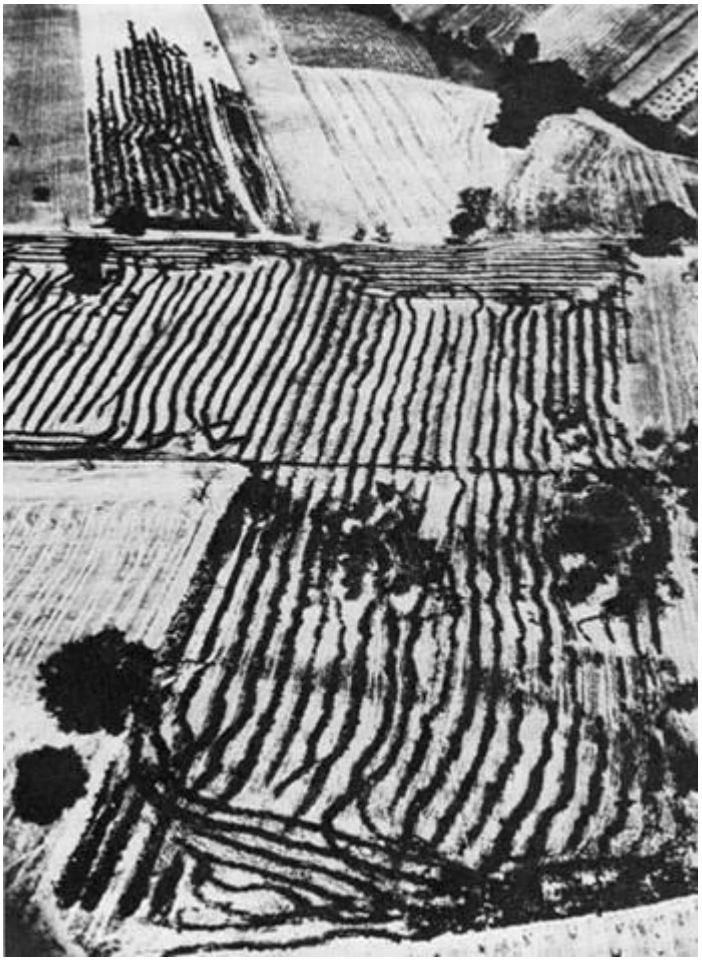
2. Photography and Primate Vision

1982 saw the publication of David Marr's *Vision: A Computational Investigation into the Human Representation and Processing of Visual Information* (Freeman). After his battle with leukemia, the author died two years prior to the publication of his book. Since 1973, Marr had benefited from the exceptional research facilities and discussions at MIT's Artificial Intelligence Laboratory. His work, although never finished, is Mozartian, as if it were written as a *Requiem* on his own death at thirty-five, at the same age as the composer. "This book is meant to be enjoyed" is the opening sentence of this masterpiece of suppleness, which the publisher further emphasized by opting for an open format and ductile paper. Bless the country where they erect tombs like these for you!

David Marr inaugurated the computational theory of vision. This means that he is not concerned with the location of visual operations within different areas or relays, which is studied by physiologists, but with the a priori computes (filters, zero crossings, etc) and with their sequence along differing levels. This series in fact enables our nervous system to elaborate a 2.5 dimensional "viewer centered" object from our two-dimensional retina. In a last step, this "viewer centered" object becomes three-dimensional, or "object centered." In the fifth and closing chapter of *Vision*, Marr asks himself how, once it is constituted, this object can be identified, stocked and retrieved by memory. He answers that the object distinguishes itself through the number and proportions of segments it takes up in an ideal cylinder of reference. One of the most distinguished researchers focusing on the cerebral cortex of the cat and the primate would conclude shortly after: "Meeting these challenges is the immense task awaiting visual neurophysiologists in the coming decade" (Guy Orban, *Neuronal Operation in the Visual Cortex*, Springer-Verlag, 1984, p. 341). With respect to our discussion, it is particularly relevant

to note how neural computations are capable of deciphering indices by indexing them in various ways. This confirms the cleavage function of the retina (and the cerebellum or "little brain," which, moreover, is an evagination of the cortex), and the countless feedbacks between optic relays (*The Human Neuronal System, Sydney*, 1990, chapter 28).

The photograph, as a contingently indexed indicial imprint, is intimately affected by these problematics that address the indexation of an indiciality. The photo is so well provided for in this respect that photographers took as a photographic subject the exploitation of the chemical catastrophes that are produced from the moment of the shot and the development of the negative, right up to the positive and the photogravure. The viewer is therefore able to wander through the preliminary stages of visual construction, in 2.5 dimensions (Mario Giacomelli), or through the progressive nomination of the object (Ralph Gibson).



Giacomelli: Paysage

In addition, the reference to physiology clarifies another curious point, as looking at a photograph can strike us foremost as a bizarre performance. Indeed, on the one hand, here we have a peculiarly immobile and inert object due to its Cyclopean nature and its registrational isomorphism, and which is furthermore often simply rendered in black and white. On the other

hand, this object is captured by a primate visual apparatus whose structure is the result of millions of years of natural selection motivated by the imperative to differentiate food, enemies and partners in high tropical and multi-colored forest, where it was beneficial to have at least three types of visual receptors, namely two working in low frequency, and one in high frequency, and where a simultaneously lateral and centering eyesight was equally efficient in the continuous delousing and grooming and the recognition of faces and ocular expressions of congenerics, who precisely displayed the peculiarity of comparatively differentiated faces. Therefore, is looking at a photograph, especially a black and white one, not a vertiginous performance of abstraction, construction and coding?

We should perhaps not overstate the point. In effect, over the last two decades it has been confirmed that, in primates' vision (and in that of others as well), signals of form, color and direction of movement are transmitted from relay to relay and from area to area according to predominantly coaxial and distinct - yet interconnected - neural pathways. One can gain some understanding on this topic after reading the chapters on vision (i.e. 28 to 31) in *Principles of Neural Science* (Elsevier, third edition, 1991), or *Eye, Brain and Vision* (Scientific American Library, 1988) by David Hubel, who is one of the pioneers in the field, or more succinctly but no less significantly in the article *La construction des images par le cerveau* (*La Recherche* of June 1990) written by Sémir Zeki, another pioneer. According to the hallowed expression, there is no "grandmother cell" of the blue-teapot-pouring-tea, or even simply of the blue teapot.

In other words, even in our perceptual zones, which are however the most continuous - therefore the most "idealistic," as Jean Nogué called it in his useful *Esquisse syst• me des qualités sensibles* - there is unity of the perceptible in terms of operational unity. More precisely, there is only unity of the perceptible within the complete cycle *perception → motoricity → perception*, etc, where the dominant arrow always points to the outside (towards the prey, the partner, the enemy), therefore in global precipitation (*prae-caput*, or head-first) of the mammalian organism towards its environment, which entails that it perceives literally *onto* its environment, and *within* the segmentalization it brings about there. As with all other objects, a photograph is "viewed" *across* this independence of receptors but *within* this objectivizing circuit and milieu, which means that the viewer needs no abstraction, and often even no real interpretation to form unities. Moreover, the cerebrum of superior mammals is extremely suited to pluri-centration, that is to say, to changes of centers of attention (while observing a dog on the sidewalk, for instance). Furthermore, at least with humans, visual pluri-centration does not even necessarily presuppose movement of the eyes.

As such, the physiology of vision clarifies the perceptual functioning of photography, which in return clarifies our vision. The savage would perhaps not succeed in reading a photograph after a first attempt, as he must recognize its character of non-reversed imprint. But, after this initial hurdle, anything should be possible.

3. Photographs and Anthropogenesis

In general, the human sciences are in such decline because they seldom consider the anthropogenesis, i.e. the order in which human accomplishments are set up in space, and because no attention is paid to the establishment and reestablishment of every individual's epigenesis and the instances when man's vigilance rouses him from sleep, torpor, distraction and loose focus, which are his most constant, not to say primary states (negentropy is always but a local and transitional lifting of the general entropization). By adopting the flattering credo that humankind was born with language, anthropology ignores the perceptual and motoric field effects of images, as well as the pre-linguistic indicial field. Thus, anthropology distorts things from the very beginning.

Examined rigorously, the photograph asks us to put things back into their right place, or rather, in their right sequence. Unfortunately, we lack sufficient space to develop a full anthropogenesis here. However, we can outline certain aspects so as to invite the reader to associate these with any photograph so he can gain a better understanding.

This is therefore a condensed anthropogenesis. *Sapiens sapiens* is the primate who progressively distributes his environment in increasingly stable *segments* by virtue of his simultaneously focused and broad primatial vision together with his upright posture and two flat hands with thumbs on either side, of course combined with a correlative neocortical development. Furthermore, with the transversalizing comparisons favored by flat hands, thus rendering them indexational, topologizing, and geometricalizing, certain environmental segments are captured as interchangeable, as being different or elsewhere than they actually are. In other words, they have been *possibilized*. The technical domain therefore strictly consists in the panoply of segments of an environment where the *animal instrument* (the frontal extension of the body) turns into a *human tool or instrument* (transversalized and possibilized). These segments function at the same time as *indices* of one another: transversalized and possibilized, the nail is the indicial of the hammer, and vice versa. In addition, a well-understood indiciality is already a first imagery or potential diagrammatization, or, put differently, a first set of distant reciprocal projections between segments. Moreover, in the context of indicial, transversalizing (diagrammatical) and possibilizing technics, modular respiration, even dentition and a high pharynx (compatible with upright posture), call forth *sustained sounds* of music, and (after, during, before, or in a circular causality of these three) the *discreet sounds* of language, the latter having selected the development of the digitalizing centers of our left hemisphere (the *arcuate fasciculus* connecting the Broca Area with the Wernicke Area). In this manner, the analogical and digitizing representations of technics were able to organize the fully analogical signs of painting, the simultaneously fully analogical and digital signs of the words of a language, as well as the "figures" in writings. As for indexes, once they were transversalized, they gave rise to mathematics and the general coordination of indexations (direction, consecution, and repetition). Seen from this angle, physics, chemistry and biology are intent on recapturing the transversalized indiciality of a technicized environment through the coordination of progressively more powerful indexes, thus within a diagrammatization and mathematization that wants to be as comprehensive as possible.

What is remarkable about photographs, as slightly and possibly indexed photonic indices, is that they take up the anthropogenesis we have just been sketching, which, incidentally, will be further explored in my *Fundamental Anthropology*. Painting, sculpture, literature, and even music push us (in an illusory fashion) to approach things directly from the climax or the ending, thus from fully calculated signs, while discarding indices and indexes, as well as the indicial technique, as merely subaltern phenomena. Generally speaking, philosophy has forgotten these phenomena, much in the same way it has forgotten the photograph. However, photography continuously confront us with the inverse anthropogenic situation, which holds that one must *first* cope with an environment through segmenting, comparing, exchanging, transversalizing, possibilizing, indexing, and indicializing it. All this takes place amidst still highly active perceptual-motoric and logical-semantic fields. *Only subsequently and episodically* will things be represented more extractively and abstractively through full analogical and digital signs (with determined referents), which gives us the illusion that they suffice to encompass the World, which has become nothing more than a simple Referent of which we are now its creators and demiurges. The platonic and Kantian conception at the basis of mathematics is the culminating point of this pretense, whereas its general coordination of concrete indexes and its subsequent abstract indexations explain both its labored historicity and the permanence of its knowledge - in short, the construction of its transcendental status.

(Just to note in passing, our definition of mathematics as the practice of the general *coordination* of indexes, or rather indexations, kills several birds with one stone. Besides possibly elucidating the simultaneously exact and still somewhat magical or mystical status of mathematics (nothing is more precise, magical and mystical than a empty referential sign), our definition renders the index (unlike the indicial) in photography or elsewhere, a huge and ordered field whose virtualities mathematics has explored for centuries, rather than just a general term. On the other hand, in face of the pure index understood as the preeminent *coordinable*, art detaches itself as the (rhythmic) *compatibilization* of the *in-coordinable*. It would then be necessary to verify whether it really are the indexes and indices which manipulate the mathematician. One could become more receptive to this idea after perusing the elementary but abundant mathematical "objects" collected in Hugo Steinhaus's *Mathematical Snapshots*, and its subsequently revised editions starting with the 1938 version published by Oxford University Press up to Flammarion's 1964 translated version entitled *Mathématiques en instantanés*. The book speaks exclusively of directions, markings of origin and finality (ordinality), small quantities and collections (cardinality), rotations (modulo), projections, lateralizations (left, right), routes-paths, and so on, rather than addressing measure, which is merely a particular case. We still need to make sure that sophisticated mathematics plays with similar but more refined and generalized "objects". In any case, the sister of mathematics, formal logic, breathes the same atmosphere, especially considering the name Spencer-Brown uses for his system, i.e. the *logic of indices*.

Furthermore, anthropogenesis, which tirelessly leads us back to the photograph, does not only provoke modesty, but also induces a better understanding of our loftiest achievements. Everywhere, the position of genius was a restoration of initial anthropogenic stages, regardless of whether it concerns a Pre-Socratic philosophical text, Riemann's mathematics, a pen stroke by Mozart or Proust, or a photo by Stieglitz.

Lastly, and with respect to a fundamental anthropology, photography will undoubtedly lead us to a final conversion by encouraging us to get past the west's primary and traditional

categorization in terms of *world - consciousness* in order to adopt a categorization more suitable to our new situation in the Universe, i.e. *functionings - presence(s)*. Once freed from the presumptions which unduly privilege fully referential signs, an act which ultimately pits Consciousness against World, one would perhaps be more willing to see that, from start to finish, the Universe is surely nothing more than (describable) functionings and (non-describable) presences. It are these two irreducible orders which Latin, Christian, Cartesian and Sartrean *con-scientia*, in response to rational craftsmanship and also to initial industrialization, believed would merge, over two millennia, to form a "freedom" paradoxically conceived in terms of presentifying functionings as well as functioning presences, and whose aporias have already been examined by Kant (The categorization functioning/presence(s), together with its principle moments, has been defined by the author in *Les philosophies du temps*, published by the Brussels Centre for Fine Arts in 1983 in the catalogue "L'art et le temps").

By virtue of the anthropogenic anteriority it grants to indices and indexes photography is more presential than conscientiel and to a certain extent frustrates the pretensions of creation and pure freedom of the classical "conscience." For this reason, photography is still the most philosophical object, or rather process, there is.

The suppression of "Questions of method" should not distract us from what is most essential. I would like to thank my colleague and Agfa engineer Roger Huybrechts for his always elucidating responses. I would like to finish with this book's dedication, which, thanks to its dissimulation, is all the more sincere: IN LOVING MEMORY OF ROBERT CAPA

Henri Van Lier