

# Bioluminescence: Toward a poetic ethology.

## Some notes on Stan Breakage's Dog Star Man<sup>1</sup>

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*« Or, il se pourrait que l'image soit du règne animal... c'est sans doute très vrai : elle est du ressort profond de la mémoire d'espèce et la mémoire d'espèce est quelque chose de commun entre toutes les espèces, y compris l'espèce humaine... »*

**Fernand Deligny, Ce qui ne se voit pas<sup>3</sup>**

Henri Bergson reminds us that we are images between images<sup>4</sup> and Fernand Deligny reiterates that we are part of the same kingdom. So we can only conceive cinema as a poetic ethology, art, and science of affects, of encounters between the most heterogeneous bodies. To make cinema as a sympoietic<sup>5</sup> praxis which, immanent to life itself, has neither end nor beginning but is a pure mean that makes life proliferate. That is cinema as a generative process, in which the film as a finished object has no place anymore. It only passes through and, as life, it must not pass only through the celluloid, the screen, but through any surface of contact where sonorities and visualities can interweave, whereby its intensities going beyond the audible and the visible could compose and recompose, fold and unfold as raw material for life. Writing and paper leaf as its surface of passage are already a way of making cinema, like a generative process of life, of inorganic modes of existence that can breathe in the paper.

A cinema-thought that goes along through intersections of intersections, heterogenesis in which it is imperative to affirm the encounter with anything that gives us more intimacy with the world and with life, that inaugurates a constant vibration of vital touch. That's why this poetic ethology unfolds inevitably and simul-

taneously into a bio-chemical-physics and cinematography, like oscillating and overlapped folds wherein science and art find themselves transversally and make proliferate in the paper the fulguration of a new life, what we call here bioluminescence.

This cinema-making, as inorganic poetic ethology, understands that an encounter always catalyzes unpredictable reactions in the materials already and yet to be formed; that it demands a sensibility, an awareness, a sensuality for the very gesture of reuniting, of composing. So this science-art doesn't take up the activating of a body of materials already defined beforehand, as if we'd say metallurgy and then begin to always place the problem of metals and alloys, of extraction and production, of oxidation and casting. There is a variety of very distinct pieces, combined in many ways, which pass through the bio-chemical-physics and the "cinématographe",<sup>6</sup> opening flows to the immanent praxis of making cinema on the most diverse surfaces. Praxis that, as metallurgy, opens up in its finite set an infinity of combinatorial problems and variables, at the same time multiplying its materials, its derivatives, its instruments, and procedures. A modulation of metastable forms which invent their own means of insisting on life on every step, and in which, for instance, in order to get on with its sonorities and visu-

alities (intensities that charge the vital touch) one doesn't need the camera, but an enzyme. This poetic ethology, which is a heterogenesis, which is a sympoiesis, is not done by the intersection of realms or sets that are closed, preformed, determined and isolated. We inhabit the same vital plan as the images do, we're already porous complexes of relations, already intersections of sets derived from distinct movements. Namely: our praxis, as the potency of encounters, as a kaleidoscopic problem that conjures, between sonorities and visualities, multidimensionalities and multirelatednesses in constant transmutation.<sup>7</sup> Thought-cinema as a continuous laboratory of interstellar conversations and cosmopolitical gestures, as sparkling potency in which cinema-matter, from bioluminescence's birth, loads not only silver halides but also cosmic particles which, at all times, want the spiritual force of the encounter as generator of collapses in the clouds of materials already formed and logics already assumed, whence a star will perhaps be born, but also a solar and chromatic explosion. We say hereby of a cinema-making that makes movement by composing, at each shot, a new "ecology of emissions and disseminations"<sup>8</sup> of light, of life, of the bioluminescence that meets surfaces of contact and proliferation on a celluloid film, on a screen, on crystals, rays and stars, on the tissue of jellyfishes, insects and mushrooms, in the composition of bacteria and on the paper surface with some writing. It is but a production of light, of life, of cinema-potency of another nature. A lesser production, often useless, often related with mechanisms of survival which imply many operations aiming at a state of susceptibility to the attack and the devouring, or of vulnerability to the interaction, a state of becoming available to the experimentation of being together which opens to unthought spectra...

It is one and the same species memory that we share with the images, with the sonorities and visualities, we are part of the same co-evolution, where the living that passes through them and through us reminds us that this co-evolution is the history of our mutual disposition as

organic bodies (ours) and inorganic (theirs) in order that a greater and impersonal body, that of light, of a living light, of a life-light immanent to us, can proliferate limitlessly. We as organic and inorganic bodies share the same remembrance and dream: to be minor enough so as to forget our name, so as our lives can be the passage of the life-light. We see not to perceive the world, to see is independent of a who, be it human or nonhuman. To see is an event in which the people of light can exist. We see – giving our eyes as the images give themselves – to be surfaces of this other world of the light people, which is not here, not given, but which sprouts endlessly and is composed through the devouring of our parts. The world of the light people demands our eyes, demands the images, demands everything that is visible, so as one could perceive oneself, so as one could call oneself a bioluminescence. It is fitting for us to be only anonymous operators of a body-thought-cinema that disposes all of itself, that calls itself an idiot in a shamanic-becoming of the sciences so as to be a host, to be worthy of an inorganic pregnancy, where our own bodies are gestated by light. Our species memory won't let us forget that it is light that gestates beings, relations between them, between realms and times... and not the beings themselves, the ones that produce the light. Such memory eventually reminds us that we are sons of the bioluminescence and not the contrary.

So that we compose a body-thought-cinema, as Stan Brakhage did in his film *Dog Star Man*<sup>9</sup>, in which to be worthy of being a descendant of bioluminescence is to welcome this organic-inorganic, human-nonhuman kinship that makes us share the same phylum and ancestry with images. In which we're all surface-organisms that aren't but substrata for light and life to intensify and go on varying. That's what we see when the very body of Stan Brakhage is confounded with a mountain, but also with a solar explosion in the becoming of images, in the proliferation of luminic variations. Substrata that illuminate for a scientist – *luciferins*<sup>10</sup> – surfaces whose variation at a micro level would seem restringed to the molecular multiplicity of the substratum (lucif-

erin) and its mode of relation with a specific enzyme (luciferase), along with rare cases of the existence of more than one enzyme, or even a symbiosis between beings, like bacteria and fishes. Substrata that illuminate limitlessly, for a shamanic-becoming of the sciences – *im-moderatæ luciferinæ* –, i.e. when a differential scale disappears between the micro and the macro levels, and the molecular potential of the substratum happens to be on the scale of the very organism. Surface-organisms, organic and inorganic *luciferian* fractals, allowing us to assert that it's on the level of the organisms that a wide spectrum of variation opens up.

While insisting on a shamanic-becoming of the sciences, the one science which would make an alliance with this body-thought-cinema of ours, immanent as the bioluminescence itself, would be radically opposed to the teleological logics of arborescent, genealogical, chronological and eventually anthropomorphical perceptions. For as we are sons of the bioluminescence, the sure thing is to advance in life all the while inventing a new logic each time and rendering sensible the intense renunciation of a clarity of purposes and the character of experimentation that crosses this vital phenomenon we would call *luciferomorphic*. The light-life, as vital fold of the cosmos, placing all plans in connection, as if they would never stop to be infinitely affected, creating channels of abrupt passages between levels that all of a sudden alter the plans already existent, incessantly breaking in unexpected ways with the clarity of alleged limits. The snow in the mountain of *Dog Star Man*, penetrating the entrails of a body, makes the intensity of the blood's redness to be spilled in pure chromatic variation that connects us with the stars.

An independence and autonomy of the bioluminescence that puzzles the evolutionary theories since bioluminescence may appear anywhere, in any being. Yet this puzzle is nonexistent for the shamanic-becoming of the sciences, for it isn't afraid of welcoming the species memory that reminds us our existence is only possible because we are passages to our vital-fold-mother, the bioluminescence. The birth of a child in Brakhage's film, whose

vital flow walks on the steps and falls of a body trying to climb a mountain; on the insistence of a dog in being together; on the winter's whiteness merging with maternal milk. With all plans in connection, the bioluminescence in proliferation, and at the same time as a solar explosion, may disappear without explanation. As we perceive that if light won't come this way, it certainly would (and will) come from another. "*In each lunation I snake myself about. I am epistemological!*" A light whose capacity of being born is independent of any organism, substratum, environment, and that stirs and affirms itself as an explosion of pure vital energy, the liberation of a cosmic memory of matter. And the question dwells of how we can be worthy of being the sons of bioluminescence, a remembrance that doesn't follow either intelligence or sentiment, or recognition and predictability, but pure intensification of bodies throughout the experimentation of a minor art and science, of a poetic ethology that manifests the risk of being together in a movement of innovation and continuous differentiation.

A rare phenomenon is meant, which offers itself to few, which arises where darkness falls over the earth, in the night of times, in the intimacy of forests and oceans. The possibility of a *luciferomorphical* world is meant. Wherever ceases the dominant regime of white, urban, western, useful, anthropomorphical light. To a multidimensional biologist, with his species memory, it's easy to remind that the bioluminescence is everywhere, immanent to life itself. In fact he's already a bioluminescence, as the filmmaker Stan Brakhage is, along with his inorganic unfoldings, in energy and imaged variation. An all too human biology, which gets but organic remembrances, would say this light exists only between "inferior" beings, the "invertebrate", fishes being the sole exceptions among vertebrate. But the *luciferous* vital force leaks and today "biologists" can assert that bioluminescence happens in all cells, in the processes of energy production, under minimal intensities, inframicroscopic, exceptionally weak, rendering almost impossible its perception. Yet still the vertiginous gesture of

Brakhage's poetic ethology (a multidimensional-biologist-filmmaker) is visible because of a fractal, kaleidoscopic camera<sup>11</sup> that enters in matter till it becomes imperceptible,<sup>12</sup> gathering the unthought, making of each sonority and visuality the possibility of a great intensification of the imaged *luciferous* force, so as the bioluminescence can explode in the birth of a star, of a pure energy in constant gestation. Our bioluminescent phylum makes constellations of us, in constant swaying, each being a starry ocean in eternal variation, whose perception asks for constant passage but becomes visible only when the screen-paper-writing-thought-body is made into a spiritual worktable.<sup>13</sup> A work that doesn't intend to bring light to the secret, but to make us worthy of the secret, of gathering the mystery of a perception which is only possible in the compositions-thoughts that gestate themselves in the luminous plan of immanence,<sup>14</sup> this plan where we are bodies of bodies that enlase themselves by the affect of the same remembrance: our genera may be human-imaged, but our potency of becoming is and will be bioluminescent.

A mystery vibrating in passages of *Dog Star Man*, in the avalanche, in the cascade that are its images. To be worthy of the life-light, knowing that we can no longer wait for the arrival of some rare event, knowing that the life-light that embodies the bioluminescence is already this rare event which happens every day, everywhere, exploding in star and *lucifera* incessantly, demanding a passage, leaking the surface of the screen, of the paper, of life. Light-life that transforms us in pure opening to the lesser brightness that offers itself at all times in the expectant matter. An always contingent brightness, interrupted, uncertain, discontinuous, that constantly changes direction and motive, disobeying any ordering, escaping from judgment. A brightness always alive, intermittent, inordinate. A brightness that communicates, passes, contaminates; that varies, that is potency of fragment, of instability, of restlessness. Brakhage's avalanche goes on, drags on, and the celluloid flickers, gets ruined, gets scratched. The surface wears itself, passes on, and the exuberance of color, of light proceeds. Molecular constellations de-

avour themselves, brightness returns, gets no rest. Its avalanche-force inhabiting oscillating modes of existence, reversible couplings between a visual-molecular cluster and an enzymatic sound which scintillate in a splendor where nothing is imposed, but everything is disposed at the same time. An artisan light that tracks clefs whereby the critical points may explode, which generate a lucidity of another nature. Follow the light not the organisms; see different shining-existing modes expressed in frequencies (colors), speeds, temperatures in which no uniform behavior is interesting. It is the transmutation of landscape-beings, one in the other, in an opening and shutting of eyes; it is the unexpected apparitions in the montages, with sudden passages of beings that brighten up with all their light, that give all of their singular life in one instant, for the most part without offering themselves to any ulterior recognition. A sprouting of a body-thought-cinema that relies on glimpses, a writing that believes in a new field of possibilities; what erupts is a perception that it's necessary to give oneself away, to give everything for the new to sparkle, even if it lasts but for a few seconds; a faith that one needs to seize the occasion (to open the mouth and devour) and keep what matters, for life happens independently of us, of what we see, say, hear. Life interspaces us. The mountain, the solar explosion, the chromatic vibrations, the inaudible music of *Dog Star Man* (even if it is a silent film), makes us remind that we are but this void between one brightness and another.

Every problem of life shines through, it spells a shining out. The eternal instant of the event, of how bioluminescence may pass. They pass through forms, through organisms, but are everywhere, they are a constant devouring of the world, a shagging between worlds, between realms. Bodies of bodies, tissue against-nature, *luciferous* and photogenical tissue proliferating by inorganic nervous linkages and terminations which connect the most unthought of surfaces. Excitements and explosions that, in the name of a cosmic life, connect the woods' winter in the high mountains of *Dog Star Man* with algae shining while this writing happens.

Microscopic algae that render visible the incessant shagging of sea and stars. Encounters between realms, between the organic and the inorganic, between the animal, the vegetal and the mineral. Biospheres, noospheres that entangle themselves between paper, ink, screen, and film. Mycelic bodies fructifying light traps to celebrate encounters between the air, the water, and the earth, between the wood, the maggot and the fly. An entire ecology of light in which one yields brightness to the other, and to yield brightness is not to represent the other, to emphasize its characteristics and properties, but to give the other a visibility and a sonority always different. The tiny *umihotaru* shrimps become blue diamonds and make the crying rocks appear. One doesn't extinguish the other, doesn't harm what Leibniz called "established feelings,"<sup>15</sup> one maybe attracts it, excites it, seduces it, devours it. But devouring is not to extinguish, it is rather to decompose truths into becomings, transmuting forms into forces, sorrows into joys. A full series of possibilities of existence and proliferation of life, which may gain expression in the poetic ethology that interspaces this writing (in the shamanic-becoming of the sciences, that gives way to multidimensional-biologist-filmmakers) into a minor science allied with everything that creates an *Umwelt* which is favorable to the encounter of the *immoderatæ luciferinæ* and the *luciferases*, beyond pre-established biological conditions. We do not talk of biological tissues but cosmogenetic tissues that keep being emanated by a body-thought-cinema only understandable by a nomadic science, whose grains of madness open fields of metamorphoses and pure creation... A body-thought that is not in the light of possibilities, but makes of light itself another possible world. A light that creates a full new perceptive field for beings in never-seen relations, which insist in connecting sky and earth, in connecting the most distant and the nearest, in subverting the "above" and the "below". We don't know when Brakhage's film flow has begun, we do know that the face of a born-child is on the side of the stars and burns with the same intensity of a solar or chromatic explosion. We do know that walking in the snow can undermine our entire perception

and stagger us in a pure vibration. The thing one perceives is always a cosmic shagging that opens a thought-cinema which isn't satisfied with getting stuck in the idea of an organic life, but pursues the fragile potencies of a non-organic life instead, from a certain point of view of light itself. Such a point of view will only be born if "the eyes die", as the shaman Davi Kopenawa tells us<sup>16</sup> regarding what one needs to do to be worthy of the encounter with the animal-ancestors, with the tiny and luminous *xapiri*. Therefore, it's not a point of view about the world (light illuminating the world, or parts of it, revealing things-beings already given) but rather the passages of worlds as waves, luminous flows, through points-beings transformed into mere passages, holes, tunnels. A point of view emptied of the spectating function, free from all representation. Perceptions that are visions, foresights, creators of worlds, that go beyond the senses, the conscience, that listen to the world's shamanizing chant. A cosmogenetic perception that doesn't find a world already given in each species, but the fulguration that is born in each time, the very species rendered into a multiplicity of relations that invents itself in each instant... A full perceptive laboratory turned to the rhythmicity of clairvoyance [*vidência*] instead of the harmony of evidence [*evidência*]; turned to the variation and movement instead of the immobility of forms and steadiness of proprieties. A protocol of experimentation, of being together, of being faithful to our ancestors, to our vital-fold-mother, to the bioluminescence whose procedures, which gives real existence to the light people between sciences and arts, passes through the intensification of delusion, of dreaming, of hallucination, of somnolence that precedes or foreshadows the real sleep of the vision which is possible only with the eyes shut. Vision of a shamanic-becoming of sciences, in which one learns to compose and keep straight a body-thought-cinema, which calls itself a house of bioluminescence, of the light people; which calls itself a writing-film-cosmical-patchwork; which calls itself tissue where *to luciferate* is to act in spirit, to welcome the Yanomami's *xapirimuu*,<sup>17</sup> or Brakhage's *soul-in-action*<sup>18</sup> opening a previous

vision to man, a vision that can pass through us but belongs only to the life-light. To shut the eyes, to blink upon this text and to feel the shinings that drain between words, to let oneself be dragged by delusion, to feel how this writing moves, shines, as paper builds up, folds up; as reading-writing engenders visualities and sonorities; as a daughter of the bioluminescence turns herself into film on this interval, on this text-void, cleft, remembrance of species which reinvents itself at each gesture, which rises from human and imagetic remnants, from biotic and cinematographic remnants, from inorganic remnants, from graphies between sciences and arts.

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<sup>1</sup> The experimentation deployed in the following lines is more of a risk we take in the will of carrying to the limit our relation with the audiovisualities, an always uncertain and roaming program between arts, science and philosophy, that we push forward with the group research multiTÃO <http://multitaocorrespondan.wixsite.com>, and the journal ClimaCom <http://climacom.mudancasclimaticas.net.br/>, Labjor-Unicamp. The Portuguese version of this text, still in press, will be published in *Ciência em Foco*, vol. 3 : *cinema, cultura e pensamento*, organized by Gabriel Cid de Garcia and edited by Garamond.

<sup>2</sup> Orssarara Collective, which is: Susana Dias and Sebastian Wiedemann, but also a multitude, a lab-studio as a radical cosmopolitical experience. We open passages in the academy, but also and mostly in any cleft whereby life could proliferate. We can be found at Unicamp – State University of Campinas, but also in any critical field, where a cradle for life must be created.

<sup>3</sup> F. DELIGNY, “Ce qui ne se voit pas”, in *Œuvres*, Paris, L’Arachnéen, 2007, p. 1774. Previously published in *Les Cahiers du Cinéma* 428, 1990, p. 50.

<sup>4</sup> H. BERGSON, *Matter and Memory*, New York, Zone Books, 1991.

<sup>5</sup> About the sympoietic potential, see D. HARAWAY, *Staying with the Trouble: Making Kin in the Chthulucene*, Durham, Duke University Press, 2016.

<sup>6</sup> R. BRESSON, *Notes on the Cinematograph*, New York, New York Review Books, 2016. (In French, the title of Bresson’s book is *Notes sur le cinématographe*. We prefer to conserve the French term to emphasize the singular meaning that Bresson gives to it.)

<sup>7</sup> L. ORLANDI, “Revendo nuvens” [Reviewing Clouds], *ClimaCom: Dossiê Incertezas* 7, 2016.

<http://climacom.mudancasclimaticas.net.br/?p=6177>. In that article the author presents in a relevant way how the combination between transmutativity and multirelatedness potentialize the problematic field as a force of thought.

<sup>8</sup> P. P. PELBART, *O avesso do niilismo: cartografias do es-*

*gotamento [The reverse of nihilism: cartographies of exhaustion]*, São Paulo, N-1, 2013.

<sup>9</sup> *Dog Star Man* (78 min.), produced between 1961 and 1964 by the celebrated experimental filmmaker Stan Brakhage (1933-2003). The film is composed by a prelude and four parts and is considered one of the major works of Brakhage, an epic-cosmological poem in which perception adventures itself in a direct encounter with the stars, in which vision is overwhelmed in a constant myth of creation, or we could say, in a constant birth of bioluminescence. The film could be considered as a radical experience which Brakhage called close-eyed vision. In order to get more intensely involved with Brakhage’s thought, see S. BRAKHAGE, *Essential Brakhage*, New York, Documentext, 2001.

<sup>10</sup> For a wider comprehension, in scientific terms, of the bioluminescence and also of the luciferin and the luciferase, see O. SHIMOMURA, *Bioluminescence: Chemical Principles and Methods*, London, World Scientific, 2012; and T. WILSON, J. WOODLAND HASTINGS, *Bioluminescence: Living Lights, Lights for Living*, Cambridge, Harvard University Press, 2013.

<sup>11</sup> On the hands of a multidimensional-biologist-filmmaker as Brakhage, the measurement instrument (i. e the camera) is becomes an instrument of falsification, a multidimensional portal. The camera un-measures this world, devours it and opens passages to other ones. It becomes uterus for the bioluminescence.

<sup>12</sup> G. DELEUZE, F. GUATTARI, *A Thousand Plateaus*, Minneapolis, University of Minnesota Press, 1987.

<sup>13</sup> For us, worktables are movable, horizontal spaces that dispose our bodies in a flat and immanent plan where concepts, ideas, and things exacerbate their material dimension. It means their affordance to instaurate hybrid connections beyond organic or inorganic components of a chain of individuation, where matter becomes material, where a spiritual dimension is not an “a priori”, but something to be unfolded as the virtuality that maintains the process of individuation open and unfinished. They are at the same time a montage table and a plan of animical assemblages. They work as a radical spiritual pragmatism, as a pragmatics that radicalizes the techniques’ potency in favor of life and its energetic fluxes.

<sup>14</sup> G. DELEUZE, A. UHLMANN, “The Exhausted”, *SubStance* 24(3), 1995, 3-28.

<sup>15</sup> I. STENGERS, *The Invention of Modern Science*, Minneapolis, University of Minnesota Press, 2000.

<sup>16</sup> To dive more densely in Davi Kopenawa’s thought, see D. KOPENAWA, B. ALBERT, *The Falling Sky. Words of a Yanomami Shaman*, Cambridge, Harvard University Press, 2013.

<sup>17</sup> Our humble attempt to welcome the Xapirimuu can be seen and heard in the homonymous film we: <http://climacom.mudancasclimaticas.net.br/?p=6295>.

<sup>18</sup> S. BRAKHAGE, *Metaphors on Vision*, in P. ADAMS SITNEY (ed.), *Film Culture* 30, 1963.