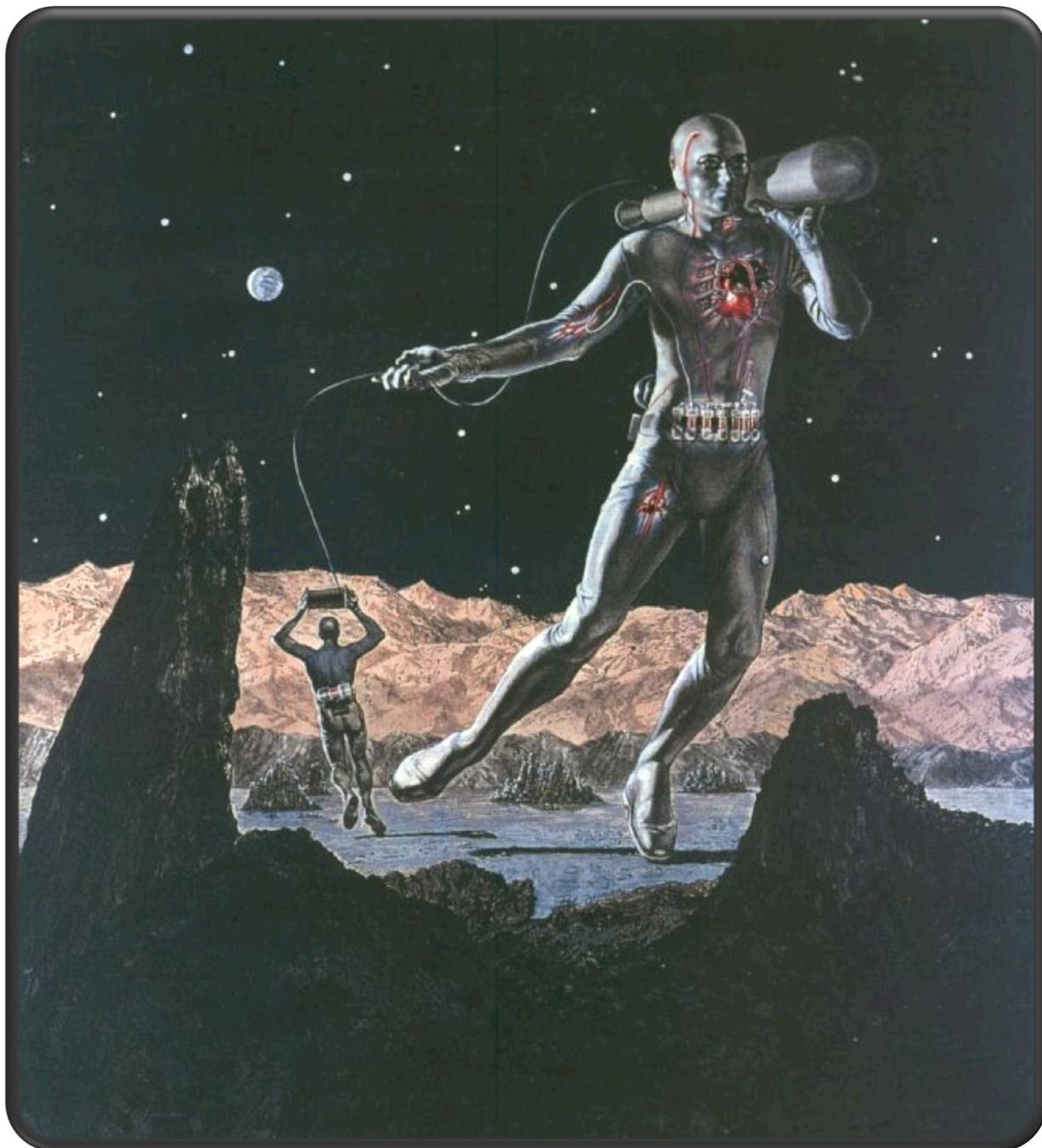


# POLYPHIBIONICS: FROM CYBORGANIC AMPHIBIANS

## TO POLYPHIBIANS

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## EVOLUTION IN THE NOOSPHERE: MONOPHIBIANS, CYBORGANIC AMPHIBIANS, POLYPHIBIANS

Cyborg was originally defined and designed by M. E. Clynes and N. S. Kline<sup>1</sup> in order to enable exploration of space, where the lack of gravity diminishes the experience of physiological pressure on our bodies, while the psychological pressure on our minds increases with increasing distance from what we recognise as home. By escaping the troposphere through stratosphere and exiting beyond the exosphere of our planet, the human mind is deprived of mundane, human-scale distractions. Such direct exposure of the human being, cybernetically enhanced to survive in the outer space, free to explore outwards, would result in even deeper introspection, introverted exploration, as noted by D. S. Halacy, for whom the cyborg represented the threshold “between the inner space and the outer space, a bridge between mind and matter.”<sup>2</sup> Cyborg is therefore crossing the bridge over the unnecessarily abrupt division between the inner mind and outer matter – the matter of the biosphere that underwent the evolution from the emergence of simplest forms of life on Earth to the complexity of self-consciousness and with its capability to escape the gravity of Earth – thus transforming and expanding into a noosphere<sup>3</sup> – the sphere of nous or human mind. The speculative nature of this paper will further extend the evolution of cyborg’s way of knowing into an imaginary organism of living knowledge. In order to proceed with such imagination the possibilities of expanding the human intellect over the present limits will be briefly addressed.

Remarks offered by Halacy, Clynes and Kline, on how looking outwards in turn evokes introspection, and how the absence of physical stress reverses into stress on the human psyche, suggest how human intellect can reach its limits and stretch beyond by apparently switching directions. With its rapidly increasing need for expansion of knowable territories, the intellect cumulates self-awareness of its own limitations and builds up pressure that can only result in a burst of laughter, releasing the unbearable tension. Humour with such laughter outbreaks has

already been recognised as the premise of advancements in the science of pataphysics – the science that goes beyond, and again beyond, physics.<sup>4</sup> In the words of pataphysicist René Daumal: “Pataphysical laughter is the keen awareness of a duality both absurd and undeniable. In this sense it is the one human expression of the identity of opposites.”<sup>5</sup> Taken seriously, humour is the prerequisite to continue the research directed outward in the opposite direction, introspectively, by overcoming the duality division. A cyborg on a quest for understanding the physics of the outer space needs to be prepared for a pataphysical experience, far beyond physically agreeable. For the pataphysicist Marcel Duchamp, who occasionally “strained the laws of physics,”<sup>6</sup> the careful preparation for stretch of intellect through serious humour included not defining himself seriously as an artist nor the anti-artist, for the sake of avoiding symmetry in his argument, choosing provisionally the neutral an-artist term instead. Furthermore, he discovered additional degrees of freedom for stretching the intellect by stripping himself to the basic homeostatic functionality of the human being, proclaiming himself as merely a breather – “respirateur.”<sup>7</sup>

For Clynes and Kline, with cyborganic enhancement of an astronaut, even breathing becomes redundant. In their research on oxygenation and carbon dioxide removal they explain why breathing presents a challenge for the astronaut: “because the space environment will not provide the necessary oxygen and respiration eliminates needed carbon dioxide and involves heat and water losses.” As an alternative solution they propose “an inverse fuel cell, capable of reducing CO<sub>2</sub> to its components with removal of the carbon and recirculation of the oxygen” that “would eliminate the need for lung breathing.” In other words “such a system, operating either on solar or nuclear energy would replace the lung, making breathing, as we know it, unnecessary.”<sup>8</sup> Freeing the humans from innate physiological maintenance mechanisms, such as breathing that can be performed only in the specific conditions of the planet Earth, enables humans to explore environments that would otherwise require our full attention in attempts to survive in the unhuman conditions. Clynes and Kline therefore invent the cyborg as

“exogenously extended organizational complex functioning as an integrated homeostatic system unconsciously.” If the evolution of Earthlings was comprehended so far as endogenous adaptation of the organism, Clynes and Kline, on the contrary, bypass natural selection and choose the solution of cyborg to “deliberately incorporate exogenous components extending the self-regulatory control function of the organism in order to adapt to the new environment.”<sup>9</sup>

With the purpose “to provide an organisational system in which such robot-like problems are taken care of automatically and unconsciously, leaving man free to explore, to create, to think and to feel,” Clynes and Kline enable the human species to survive and thrive both within and without the Earth-like environment thus turning cybernetically enhanced human beings into an amphibious form of being. Amphibians are able to survive in both (ambi) environmental conditions, for instance, in both a medium with and without air to breathe or, perhaps, in both a stronger as well as in a much weaker gravitational field. When escaping the last layer of exosphere, the human mind opens up to the infinite possibilities of noosphere where being amphibious does not suffice. The cyborg augmentation of a human being into an amphibian is the first step that is to be multiplied in order to reach beyond physics into pataphysics. The intellect bursting in laughter explodes beyond dichotomies and accepts the multiplicity of points of view, or rather, points of being<sup>10</sup>, with the shift from the static, visually dominated culture, into a dynamic ever changing culture in an all pervasive network of electronic media a polyphibian is born. To become a polyphibian is therefore to be “able to coexist coherently while dispersed in several media,” thus surviving and thriving after the explosion of laughter: “... polyphibian is being (verb) dispersed and at the same time coherent under one being (noun). Resonating with amphi- the folding of polyphi- implies: on both sides multiplied. Polyphi- results from the tension in amphi-: dichotomies on both sides of the membrane resolve their tension within the ‘infrathin’ interval of the membrane, and consequently there are multiple connections, multiple meanings. Unlike amphibians, which confront the

dichotomy and take it from both sides, and monophibians, who avoid any confrontation, polyphibic awareness emerges within the interface ...”<sup>11</sup>

The speculation on the role of humour in evolution of such organically networked multiplicity appears already in ponderings of the cyberneticist Gordon Pask, when he asks: “Given an evolutionary network, what would induce you to trust it as a decision maker? Not its cleverness, for it can be as clever as we can afford. I believe our confidence can only stem from our experience in conversation with it.” Without an elaborate argument Pask leads us to a seemingly pataphysical proposition: “I shall accept the network if and only if it sometimes laughs outright. Which, in conclusion, is not impossible.”<sup>12</sup> What would convince one of intelligence within a network, if not possessing the ability of realising constraints of its intelligence and the ability to evolve beyond those constraints? Expanding on the cybernetic musings of Gordon Pask, an evolutionary network that “laughs outright” would therefore be an organism able to adapt to multiplicity of conflicting conditions that are ceaselessly changing, a polyphibian in motion, in evolutionary movement, growing organs of a living knowledge. The revival of the archaic knowing from the linear static archived knowledge into a dynamic, alive, lived knowledge is already spontaneously occurring, networked throughout electronic media that expands the journey of the human intellect beyond the confines of the Gutenberg Galaxy.<sup>13</sup>

## **BIONICS AND POLYPHIBIONICS: LIVING SYSTEMS - LIVING KNOWLEDGE**

With electrification of communication media overshadowing the Guttenberg Galaxy of print media, Marshal McLuhan warns us of the immanent peril in our exposure to hyper stimulation of our sense organs. Noting how our central nervous system naturally defends itself “by a strategy of amputation or isolation of the offending organ, sense, or function,”<sup>14</sup> McLuhan attempts to apply “the principle of self-amputation [...] very readily to the origin of the media of communication from

speech to computer.” It becomes clear how “the central nervous system, that electric network that coordinates the various media of our senses” amputates the entire body by displacing itself into a virtual, dematerialised reality of computer networks. The cyborganic augmentations of our being are becoming inevitable requirement for our survival in any medium, in any galaxy. In parallel to Clynes and Kline’s solution of automatized homeostasis for cyborganic amphibians exiting the atmosphere it becomes evident that auto-amputation of our sense organs, to the extreme degree of replacing even our central nervous system with electric network, gives birth to decentralised, dispersed polyphibic consciousness, as an unavoidable solution to survive in the expanding noosphere.

In order to surpass the consequences of accelerated advancements in technology, from homeostasis automatization to auto-amputation, the limits of technology should be taken into consideration. To apply ‘techne’ in technology beyond the logic of rational knowledge, to the knowledge of the mind-at-large, in other words, to the whole spectrum of noetics, Roy Ascott envisions a “convergent field of practice” from all spheres of the nous, defining it as technoetics.<sup>15</sup> From such framework new solutions arise, replacing the obsolete, soon-to-be auto-amputated tools of perception. New cyberceptive<sup>16</sup> organs for the newborn cyborg are now grown from decentralised rather than central nervous system. The “live model of the central nervous system,”<sup>17</sup> McLuhan notes, has decentralised itself into a widespread “nervous network,” telematically globalising its functions, namely, as Ascott points out, “telematique is a decentralising medium.”<sup>18</sup> If our nervous system has decentralised itself and our original organs of sensing, perceiving and knowing have been auto-amputated, the question arises how do we grow new cyberceptive organs, organs for augmented minds, awakening the entire noosphere? Decentralising our nervous network and “connecting to the global awareness with technology,” for Ascott, “not only enhances us with what we invent as tool but increases the use of instinctive tools hidden within us that we have not yet discovered, it opens up like drugs that awaken us and train us to unimaginable therefore widening our imagination.”<sup>19</sup>

Stretching imagination beyond the limits of intellect, reawakens the instinctive and intuitive way of knowing, knowing that is experienced and lived rather than represented and preserved. To harness the power of the dormant instinctive tools we need to reconfigure how these tools are to be reinvented and regrown within us. Invention, augmentation and mutation of organs of knowing are crucial for escaping constraints of the known. If bionics<sup>20</sup> was introduced as a discipline that is to derive its inspiration, its solutions from living systems, then polyphibionics as a non-discipline derives solutions from the non-representable and non-preservable living knowledge. Such would be the knowledge into which a newborn mind is immersed where everything is experienced as novelty, without abstractions and projections onto the already known. An always newborn mind experiences the phenomena directly, rather than through indirect scientific methods, as one of the greatest polymaths, Henri Poincaré, remarks: if “before each new object we should be as the new-born babe; [...] in such a world there would be no science; perhaps thought and even life would be impossible, since evolution could not there develop the preservational instincts.”<sup>21</sup> Direct experiencing as such presents a weakness in ability of surviving, unless we can afford, as cyborgs, to automatize our survival functions, and return safely to the level of plasticity of our newborn state of mind. By extending and exploding cybernetics out of control, beyond the steering of the cyborganic matter into incessant adjusting and awakening of the mind, polyphibionics mutates the cyborg into an ever newborn researcher.

The component of non-disciplined readjustments to disciplines of science comes from the complementary domain of arts, as was mentioned before, with the example of the science of physics, stretched beyond its limitations in generalisation, beyond its metaphysics, into pataphysics. It is not surprising therefore that the anarchistic an-artist and pataphysicist Duchamp, intrigued by Poincaré’s words, strived to be newborn in front of every experience of a phenomenon, as Molderings reports: “This was the idea ‘before each new object we should be as the new-born babe’ that had been guiding Duchamp’s

experimental artistic thoughts and actions since 1913. Art should no longer be based on social convention over what is “aesthetic” or what is “artistic” but should be an activity that makes possible the experience of the incomparable, the rare, the unique.”<sup>22</sup> In this sense a polyphibian is “a newborn Being in front of every experience – the knowing is reborn with each instance. An experiment never yields exactly the same output. The outcome can always be experienced from a different side. Grasp the multi-sidedness of all appearances that the experimental apparatus yields and you grasped the phenomenon with the polyphibic awareness.” The term polyphibic therefore describes “a living multisided knowing of a phenomenon. Compare to prefixes monophi- (on one side), amphi- (on both sides) and polyphi- (on many sides). Add to that bios, the life, the Being in Knowing.”<sup>23</sup>

The non-discipline of polyphibionics differs greatly from disciplines that invent intellectual artefacts. Whereas intellectual instruments are based on generalisation of a problem, to be reused in problems that can be abstracted to the same kind, polyphibionics is to generate new “instinctive organs of knowing that are problem dependent, adapting exclusively to a unique experience of a unique problem solution. No organ of knowing is to be transferred to another experience of this or another problem.”<sup>24</sup> Therefore, “the generated organs” through the non-discipline of polyphibionics are “unique, instinctive and precise instruments, perfectly fitting the unique, specific problem.”<sup>25</sup> Furthermore, a “polyphibic practice” implies experiencing reality “through different imaginary organs – where each of organ variations instinctively executes a ‘logic’ of a different kind. Incessantly mutating its organs, a polyphibian is not to be firmly defined once and for all, on the contrary, it is an ephemeral and evolving organic concept.”<sup>26</sup>

If cyborgs, invented in the quest of exploring the outer space, would, at the same time, inevitably discover the depths of their inner space, then polyphibians, “the organism-solution evolved or invented as an instrument for direct problem-experience,” internalise the observed by metabolising the “external.” Therefore “the experience of knowledge is not mediated from the exterior - it is and remains an interior experience,”<sup>27</sup> that can be telepathically and telematically distributed.

Overcoming the obsolete terms of interior and exterior, the observer and the observed, polyphibionics, with serious humour applied to intellect, invents new instinctive organs that accelerate metabolism, hasten the digestion of the “exterior” into interior – an interior that is in return redistributed and decentralised. While for Bergson “intelligence perfected is the faculty of making and using unorganized instruments” on one side and on the other side “instinct perfected is a faculty of using and even of constructing organized instruments,”<sup>28</sup> polyphibionics, by merging all imaginary solutions, overcoming the limitations of intellect, and awakening the instinct, is a faculty of evolving the cyborg into an imaginary organism of living knowledge with the quest to “ceaselessly create new organs for every new problem in order to know the unique, unrepeatable, and irreducible.”<sup>29</sup>

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<sup>1</sup> Clynes, M.E., and Kline, N.S., 1960. Cyborgs and Space. In: C. H. Gray, ed. 1995. *The Cyborg Handbook*. New York and London: Routledge, p. 29

<sup>2</sup> Halacy, D.S., 1965. *Cyborg - Evolution of the Superman*. New York: Harper & Row

<sup>3</sup> Levit, G.S., 2000. The Biosphere and the Noosphere Theories of V.I. Vernadsky and P. Teilhard de Chardin: A Methodological Essay. *International Archives on the History of Science* 50(144)

<sup>4</sup> “Just as metaphysics was established as a science beyond physics, ‘pataphysics, notwithstanding serious humour, was inaugurated as science of sciences, that “lies as far beyond metaphysics as metaphysics lies beyond physics.” In Shattuck, R., 1960. Superliminal Note. *Evergreen Review*, 4(13), p. 29

<sup>5</sup> Daumal, R., 2012. *Pataphysical Essays*. Cambridge, MA: Wakefield Press, p. 4

<sup>6</sup> Roberts, F., 1968. Interview with Marcel Duchamp: “I propose to Strain the Laws of Physics”. *Art News*, 67(8), p. 62.

<sup>7</sup> Judovitz, D., 1995. *Unpacking Duchamp: Art in Transit*. Berkeley: University of California Press, p. 196

<sup>8</sup> Clynes, M.E., and Kline, N.S., 1960. Cyborgs and Space. In: C.H. Gray, ed. 1995. *The Cyborg Handbook*. New York and London: Routledge, p. 32

<sup>9</sup> Ibid., p. 33

<sup>10</sup> “point of being” as an appropriation of the term “point of view” proposed by Derrick De Kerckhove in De Kerckhove, D., 1997. *The Skin of Culture: Investigating the New Electronic Reality*. London: Kogan Page Publishers, p. 187

<sup>11</sup> Ljubec, Ž., 2012. The Myth of ASCOT and its rival ASCO2.T: Tech-noetic vs. Techno-logic, Round 1, *Technoetic Arts: A Journal of Speculative Research*, 9(2+3), p. 92

<sup>12</sup> Pask, G., 1961. *An approach to Cybernetics*. London: Hutchinson Publishers, p. 113

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<sup>13</sup> McLuhan, M., 1962. *The Gutenberg Galaxy. The Making of Typographic Man*. Toronto: University of Toronto Press.

<sup>14</sup> McLuhan, M., 1994. *Understanding Media: The Extensions of Man*. Cambridge MA: The MIT Press, p. 42

<sup>15</sup> Ascott, R., 1998. Weaving the Shamantic Web. Art and Technoetics in the Bio-Telematic Domain. In *Telematic Embrace: Visionary Theories of Art, Technology and Consciousness*, E. A. Shanken 2003. ed. Los Angeles: University of California Press, pp. 356 - 362

<sup>16</sup> Ascott, R., 1994. The Architecture of Cyberception. In *Telematic Embrace: Visionary Theories of Art, Technology and Consciousness*, E. A. Shanken 2003. ed. Los Angeles: University of California Press, pp. 319 - 326

<sup>17</sup> McLuhan, M., 1994. *Understanding Media: The Extensions of Man*. Cambridge MA: The MIT Press, p. 43

<sup>18</sup> Ascott, R., 1984. Art and Telematics: Towards a Networked Consciousness. In *Telematic Embrace: Visionary Theories of Art, Technology and Consciousness*, E. A. Shanken 2003. ed. Los Angeles: University of California Press, p. 199

<sup>19</sup> Ibid., p. 198

<sup>20</sup> Steele, J.E., 1995. How Do We Get There? In: C.H. Gray, ed. 1995. *The Cyborg Handbook*. New York and London: Routledge, p. 55

<sup>21</sup> Poincaré, H., 1913. *The Foundations of Science: Science and Hypothesis, The Value of Science, Science and Method*. New York: The Science Press, pp. 363-364

<sup>22</sup> Molderings, H., 2010. *Duchamp and the Aesthetics of Chance: Art as Experiment*. Kindle ed. New York: Columbia University Press E-book.

<sup>23</sup> Ljubec, Ž., 2013. The uncertainty of ASCOT and the second-order hesitation of ASCO2.T within the transdisciplinary buffer zone, Round 2. *Technoetic Arts: A Journal of Speculative Research*, 11(2), p. 150

<sup>24</sup> Ljubec, Ž., 2015. *Polyphibianism: Evolving Transdisciplinarity into an Imaginary Organism of Living Knowledge*. Ph. D. Plymouth University, p. 20

<sup>25</sup> Ibid., p. 84

<sup>26</sup> Ibid., p. 55

<sup>27</sup> Ibid., p. 85

<sup>28</sup> Henri, B., 2005. *Creative Evolution*. New York: Cosimo, p.150

<sup>29</sup> Ljubec, Ž., 2015. *Polyphibianism: Evolving Transdisciplinarity into an Imaginary Organism of Living Knowledge*. Ph. D. Plymouth University, p. 145

ICONOGRAPHY : Fred Freeman “*Man Remade to Live in Space*” ; full page illustration of cyborgs in space – probably the first depiction of cyborg accompanying Kline and Clynes' article – published in the July 11, 1960 issue of LIFE MAGAZINE (page 77).