

## IRRITABILITY (NEED) AND AN-IRRITABILITY (FATIGUE): A DISORDER OF RHYTHMS – THE ONTOLOGICAL BURNOUT

### Part A: Excessive Irritability: A disorder of (bio)-rhythms – need, satisfaction of need, fatigue<sup>1</sup>

**Dr. Marina Christodoulou**

*Institute of Philosophy and Sociology – Bulgarian Academy of Sciences*

**Abstract.** In this paper I propose to bring forward the symptom of fatigue, and/or exhaustion and burnout, brought up by the social-cultural speeds, rhythms, and acceleration, that manifests not only as a quotidian tiredness and fatigue, but also as what I will call a *ontological burnout*, that is, as an exhaustion of being as being. I will also refer to the concept of *irritability* and how I associate it with *need*, and to the concept of *an-irritability* (the absence of irritability) and how I associate it with *fatigue*. In other words, how over-irritability or excessive irritability, mostly as encountered in humans, is a *disorder of (bio)-rhythms*, and how the constant, intensive satisfaction of *need(s)* leads to *fatigue*.

**Keywords:** fatigue; exhaustion; burnout; speeds; rhythms; need; irritability

### Introduction

In order to put this paper into a context, it derives and borrows concepts from my doctoral Thesis, entitled “Life as Addiction” (Christodoulou 2022), where I propose the cluster of *addiction to life* (the *stubbornness* and *irritability* two-fold, as I call it, which comprises what I conceptualize as the “addiction to life”); in other words, we, as living beings, are addicted to living, that is, to life itself; we are addicted to living, namely, to whichever biochemical or other homeostasis or endo-stasis or state we call life, as much as all beings are addicted to *be-ing*, and this is how they manage to keep on *be-ing*, or “to go on being”, to make use of D.W. Winnicott’s phrase.

In order to explain in further details, I appose a short summary of my doctoral research, where I conceptualized life as an addiction. “Life as Addiction”, in terms of content, attempted, or assayed, to conceptualize life, as a habit, or rather as an addiction, as well as to re-conceptualize philosophically the concept of addiction, and more specifically the concept of the addiction to life. It attempted an original

(and very heterogeneous in its resources and influences) conceptualization / concept-formation of life as an addiction. I also mean “*life*” as a mode of being, which mode, the “beings” (either inorganic, organic, or living) have developed as a mode or form of addiction to being. I defined and described the addiction to life as being two-fold, or composed of a two-fold, which I called the two-fold of addiction. This two-fold consists of what I defined as *stubbornness* and *irritability*. I proposed the concepts of *stubbornness* and *irritability* as formative of the addiction to life, and of life itself, based on authors such as Hans Jonas, some vitalists, Jakob Johann Freiherr von Uexküll, and others. Inasmuch as addiction is two-fold, it is composed of both *stubbornness* and *irritability*, at various degrees in each different living organism, as it does in the “being” of organic and inorganic entities – in the inorganic case, “addiction” is not quite an addiction, because it consists only of *stubbornness*–. I focus, mostly, on living organisms, whose being is manifested as life, especially as they differ in terms of living-forms and “taxonomic ranks” (*taxons*). In addition to trying to define life as addiction, based on biology, metaphysics, and ontology, I also endeavored to give a phenomenological definition of life, and, in the Conclusion, an anthropological-philosophical one was attempted as well, accompanied by a feminist and post-humanistic / posthumanities perspective –(we are “addicted to” the human, as well as to humanism and the Humanities)–. Moreover, in that work, except from engaging in a re-conceptualization of habits-of-life or *forms-of-life*, or even styles-of-life, which are conceptualized in accordance to what I called the ontological, fundamental, originary, or primary addiction to life, in parallel, I also attempted to propose a re-conceptualization of habits-of-thought, that is, of philosophy not only as the highly systematic institutionalized discourse (to which in a sense we are “addicted to”), but also and foremostly as an essayistic one.

As a preamble, in this paper I propose to bring forward the symptom of fatigue, exhaustion and burnout, brought up by the social-cultural speeds, rhythms, and acceleration, that manifests not only as a quotidian tiredness and fatigue, but as what I will call an *ontological burnout*, that is, an exhaustion of being as being. I will also refer to the concept of *irritability* and how I associate it with *need*, and to the concept of *an-irritability* (the absence of irritability) and how I associate it with *fatigue*. In other words, how over-irritability or excessive irritability, mostly as encountered in humans, is a *disorder of (bio)-rhythms*, and how the constant, intensive satisfaction of *need(s)* leads to *fatigue*.

### **Excessive Irritability: A disorder of (bio)-rhythms – need, satisfaction of need, fatigue–**

In general, humans are an irritable species at the expense of their stubbornness to *being* or to *life*. Ants, says E.O. Wilson, have changed little since the day of dinosaurs, and have only a million neurons in their brains, compared to humans that have 100 billion. The human is also a million times heavier than an ant, but

the ants constitute more than half of the weight of the earth. The brilliant human is a “fractious” and “impatient” species (Wilson 1996, p. 69), it is a “rushing and trembling mind” (Epstein 2008, p. 27) what we have, in contrast to the ant, but the ant, for sure, outlasts the human in years on earth; so the human’s irritability might cost him the longevity – and thus the stubbornness. What I conclude, from this, is that the *stubbornness to live* and thus *the addiction to life*, in terms of the historical facts, is safer transacted by stubbornness, while it is unknown whether irritability, or how much of irritability is safe to use in order for the addiction not to be depleted, in case that it ever does.

The excessive irritability, especially as propelled by the patriarchal, and thus the capitalistic structure and mentality of society – *speeds, vitesses, la vie intense*, acceleration, or simply, what can be called *a disorder of (bio)-rhythms; rhythms* both in nature and in culture- have been very well theorized, in conjunction with the synthesis of time and especially of the present, by Gaston Bachelard in *The Dialectic of Duration (La dialectique de la durée, 1936)*, Henri Lefebvre in *Rhythmanalysis: Space, Time and Everyday Life (Éléments de rythmanalyse, 1992)*, and also by Gilles Deleuze, who I will refer to in a while, and can be found also in Paul Virilio, Jérôme Lèbre, Hartmut Rosa, and others.<sup>2</sup>

This excessiveness ends up depleting the irritability to the point of *fatigue*, that is, to the point of an *an-irritability*, posing a danger to the addiction to life, and thus to the future of the life of the human.

Concerning the concept of *need*, according to Lamarck, as Guido Giglioni writes, “the milieu precedes the organism and the habit creates the need”:

Paradoxical as this may seem, Lamarck maintains that, from an ontological point of view, the milieu precedes the organism and the habit creates the need. As he points out in the *Système des animaux sans vertèbres*, ‘it is not at all the form either of the body or of its parts which gives rise to the habits and to the way of living of the animals; on the contrary, it is the habits, the way of life and all the influential circumstances that in time constitute the form of the body and of the parts of the animals’. The environment shapes organic life not as a prolongation of the animal organism, but as a form of “intussuscepted” vital energy. And it cannot be otherwise since the activation of life in the universe comes always from the outside, and not from the very being of the material system. (Giglioni 2013, p. 44).<sup>3</sup>

Moreover, the *sentiment intérieur* [internal sentiment] (Lamarck 1815 – 1822, p. 17)<sup>4</sup> of the living being “is triggered by external factors, by ‘needs which drive them and make them act immediately, without premeditation, and without the contribution of any act of will’ (Lamarck 1815 – 1822, I, p. 17)” (Giglioni 2013, p. 44). According to Hans Jonas, the inorganic entity has no *need* (and thus no need for irritability) “to maintain that identity by anything it does. [...] It is there once and for all.” (Jonas 1992, p. 35) The “once and for all” connotes the stubbornness of the inorganic. The living or biological entity or being, though, which is the organism, is

freed from the sameness of its matter, but needfully is so; this *freedom* is, as Jonas says, a *necessity*, a *need*, a *non-autarky*:

The dependence here in force is the cost incurred by primeval substance in venturing upon the career of organic—that is, self-constituting-identity instead of merely inert persistence. Thus the need is with it from the beginning and marks the existence gained in this way as a hovering between being and not-being. The “not” lies always in wait and must be averted ever anew. Life, in other words, carries death within itself. (Jonas 1992, p. 35)

With not/n-being always lurking, the living being is constantly *concerned* about its existence or its very being. *Being* (both as a verb and as a noun) becomes a *task* for the living, rather than a *given state*, as it is for the nonliving (Jonas 1992, p. 35). The living being needs to *emphatically* re-affirm itself. The reward for this task is *to feel itself*, this feeling of oneself is a “dimension” of reality lacking from non-living matter, and its presence by itself is better and rewarding, instead of its non-presence (Jonas 1992, p. 36). Life is, anyway, as I explained in my doctoral Thesis, an irritable revolt to the anorganon.

It becomes clearer, while reading Deleuze, that this concept of *need* coincides with the concept of *irritability*, and that, in excess, it degrades to *an-irritability*, which is *fatigue*.

*Difference*, in Deleuze, is *rhythmic*, as he says in *A Thousand Plateaus* (Deleuze & Guattari 1980, p. 314). Difference, and *not* mere repetition, is what produces the organ-ic *rhythm*. A short definition of rhythm, in Deleuze and Guattari, could be the following, provided by John Protevi:

RHYTHM: primordial constitutive element of milieus as they relate to the Cosmos. DG call the ‘chaosmos’ the interlocking relationship or space of rhythm and chaos (in this usage NOT the deterministic chaos of self-organizing systems; rather, entropy), the border zone between the two intervals in a differentiated system (the chaosmos of night and day, or of living and dying). Rhythm itself is intensive, not extensive, and it is the condition of spacing by intervals, the condition of difference, but not of repetition, which is a feature of the territorial motif. Rhythm and melody together form the refrain, which as motif (and in combination with other motifs) draws the landscape and the territory. (Protevi 2006, pp. 137 – 138).<sup>5</sup>

A passage from Deleuze-Guattari that clarifies, I think, the notion of *rhythm(s)* and what I call *the disorder of rhythms*, is the following from *A Thousand Plateaus*: Of course, there is no reason to think that all matter is confined to the physicochemical strata: there exists a submolecular, unformed Matter. Similarly, not all Life is confined to the organic strata: rather, the organism is that which life sets against itself in order to limit itself, and there is a life all the more intense, all the more powerful for being anorganic. There are also nonhuman Becomings of human beings that overspill the anthropomorphic strata in all directions. But how can we reach this “plane”, or rather how can we construct it, and how can we draw the “line”

leading us there? For outside the strata or in the absence of strata we no longer have forms or substances, organization or development, content or expression. We are disarticulated; we no longer even seem to be sustained by rhythms. How could unformed matter, anorganic life, nonhuman becoming be anything but chaos pure and simple? (Deleuze & Guattari 1987, p. 503).<sup>6</sup>

Rhythm emerges from the sequence and the intersection between *need* and the *satisfaction of need*, and then another *need* and the *contemplation on its satisfaction*; rhythm is *idion* (in medieval scholastic philosophy, esp. Duns Scotus, the term is *haecceity*), that is, unique to each organ. “Even in cases of inter-systemic synchrony, each system pulses at its own rate, drawing its own difference, contracting its own habit”, and, for example, “[r]espiratory rhythm seldom matches heart rate”, as Tano Posteraro explains (Posteraro 2016, p. 99). Posteraro goes on explaining what is “the organ’s living present”:

The organ pulses to a rhythm of contraction, defined by the intersection of anticipation and retention, need and fatigue. The duration between the two constitutes the organ’s living present. With every contraction, with every satisfaction of need, a present moment passes. (Posteraro 2016, p. 99)

Time, the habitual contraction of discrete impressions, is lived in three directions at once: the present as the *now* of repetition, the past as the retention of preceding elements, the future as the expectation that the pattern will continue. (Posteraro 2016, p. 96)

The future is the expectation of *re-being*, to *re-be*, while the present is the *being* (*v.*); the pattern or habit, which is repeated, is that of the past, of *having been*. Habit is a memory being felt, enacted, embodied; a tangible reminiscence and recurrence of (the) moments past. Deleuze writes that “[t]he present is the repeater, the past is repetition itself, but the future is that which is repeated.” (Deleuze 1994, p. 94) “The present lodges itself into the continuum of habit, occupying some temporal space between the prior time of the habit, and the future a habit always looks forward to”, Brian O’Keeffe writes (O’Keeffe 2016, pp. 71 – 93), and while habit, for Deleuze, constitutes what he calls the “passive synthesis of time”, (with memory being the “active” counterpart), it always precedes the active synthesis of time, it is “the foundation of time” and it also “constitutes time as a living present” (O’Keeffe 2016, pp. 84 – 85). The problem is that habit generalizes and ends up as a routine or a repetition of the same, while the problem with memory is that it particularizes, it is enormously selective of “some past presents over others”, and “particularities aren’t necessarily different moments” (O’Keeffe 2016, p. 85). The memory draws the self to an obsessive end, while habit to a faddish one, as Brian O’Keeffe, once more, observes, based on Deleuze, who takes inspiration from Beckett (O’Keeffe 2016, p. 86).

In order for “authentic repetition” to occur, habit must let go of the past and look into the future, that is, anticipate the next *decision* or *point of view* that

will rise out of contemplation. The moment of decision is the lived present, the *now*<sup>7</sup>; this decision forms a point of view, which is a difference occurring from repetition, and in order for any decision to be formed, there must be contemplation. Contemplation, in its part, forms multiple little selves, or as Deleuze calls them, “larval selves” (Deleuze 1994, p. 78), and all these little selves together, form, *unconsciously*, a habit to say ‘I’<sup>8</sup>. The following example of the bacterial memory of *E. Coli* might clarify the terms used and mostly how a decision is made out of contemplation. The example comes from John Protevi’s “Larval Subjects, Autonomous Systems and *E. Coli* Chemotaxis”. Protevi commenting on Dennis Bray’s (Bray 2009) studies on the bacterium *E. Coli*, says, by quoting Bray, that *E. Coli* “‘continually reassess their situation’ by means of ‘a sort of *short-term memory*’” (Protevi 2011, p. 45).<sup>9</sup> This reminds Humberto Maturana’s and Francisco Varela’s (The Santiago School) *autopoiesis* and *cognition* theories (The Santiago Theory of Cognition). *E. Coli* is in direct communication with the environment and it occupies all of its present organic moments in reassessing its interactions with the environment. As Tano Posteraro explains, in a simple way, while referring to John Protevi’s paper:

*E. coli*’s bacterial memory is tested by measuring its response to an incremental adjustment in the concentration of an attractant like aspartate. *E. coli* responds to change. It stops responding once the concentration of attractant has settled into an equilibrium. In Bray’s words, “by measuring the rate of change in the signal [the aspartate], the receptor cluster [the bacteria] has in effect performed calculus!” (94). In its incremental adaptation, the bacterium performs a differentiation: it has, as Protevi so nicely puts it, “repeated its measurement of aspartate and drawn a difference from that repetition” (“Larval Subjects” 45). In terms more properly Deleuzian, the bacteria contemplates the attractant and synthesizes it in adapting to fluctuations in its concentration. And every synthesis implies a duration, a present defined by the intersection of retention and protention, need and fatigue. Indeed, the case is no different with bacterial contraction: in navigating a field of concentrations of attractant, the bacterium preserves its past in the form of an adaptive pattern, and integrates this retention as it continues to follow a projective, anticipatory trajectory. The interval between its past and future, between adaptive retention and futural projection, is approximately 10 seconds. In a similar study, Howard Berg writes that “this [interval] sets an upper limit on the time available for a cell to decide whether life is getting better or worse. If it cannot decide within about 10 seconds, it is too late”. Navigation becomes a rhythmic affair: the cell must repeatedly draw differences from its environment if it is to negotiate it successfully. Every contraction is implicated in a relative duration, and every duration is articulated rhythmically. (Posteraro 2016, pp. 99 – 100)<sup>10</sup>

Thus, contemplation happens constantly in the present moment, forming decisions and points of view. “Need”, therefore, as Deleuze writes, “is the manner

in which this future appears, as the organic form of expectation” (Deleuze 1994, p. 73), and “[t]he present extends between two eruptions of need, and coincides with the duration of a contemplation.” (Deleuze 1994, p. 77) Deleuze continues on the same page:

Repetition is essentially inscribed in need, since need rests upon an instance which essentially involves repetition: which forms the for-itself of repetition and the for-itself of a certain duration. All our rhythms, our reserves, our reaction times, the thousand intertwining, the presents and fatigues of which we are composed, are defined on the basis of our contemplations. The rule is that one cannot go faster than one’s own present – or rather, one’s presents. (Deleuze 1994, p. 77)

But “[f]atigue marks the point at which the soul can no longer contract what it contemplates, the moment at which contemplation and contraction come apart. We are made up of fatigues as much as of contemplations.” (Deleuze 1994, p. 77)

Generally, it is a law that “biological phenomena typically operate at rates higher than do geological rhythms.” (Posteraro 2016, p. 106; referring to Delanda 2002) Insects seem to have the higher “frequency profile” of all organisms; concerning mammals, we are rather high, too. It is thus logical that insects have a short life, since they are over-irritable, however, we do manage well as individuals to endure for a relatively long time, because of the Civilization we built, but this does not mean that the same durability applies for the collective level of us as a species. I quote, in relevance to this observation, a comment on Deleuze’s theory of rhythms and organic time, from John Protevi’s “Larval Subjects”:

Every iteration of a process, each case in a series of organic syntheses, is a contemplative soul, each has its own rhythm, and it is the consistency of those rhythms that allows the cell to live. Death, we can speculate, occurs when the rhythms of the processes no longer mesh. Shifting musical terms, we can say that life is harmonious music; death is disharmony. On the supra-organismic scale, death as disharmony is the condition for creativity, for the production of new forms of life, new processes. But on the organismic scale, while we can also affirm disharmony as the condition of creativity, a prudent experimentation is called for: ‘Dismantling the organism never meant killing yourself’ (Deleuze 1987, 160). (Protevi 2011, p. 37)<sup>11</sup>

Concluding, each living being seems to live at some frequency, and it is addicted to this particular frequency. Thus, life is the addiction to a certain, maybe changeable maybe not, frequency for each being, but for sure to a *frequency*. Inorganic entities (can be called beings as well, because they *are*, too, and they *were*, even before the organic and living ones, as the prototype of being) do also have frequencies but these frequencies are in accordance with the universal-ecumenical frequency of the physical matter. The difference is that living beings are, as I deliberately call them, *autopoiētika onta*, which means, they are beings capable of *autopoiesis*, or

put in simpler terms, they are capable of a self-organization and interaction with the environment (cognition) for the sustainment of that self-organization. This takes us to an older view in the history of science, which is the view held, in different times, by animists, vitalists, and organicists. This view consists of the proposition that is clearer in Xavier Bichat's theory, claiming that

each living body as an organic unit besieged by the forces belonging to the surrounding inorganic world. Although living forces are in organized matter only for a limited time, they are able to exert their dominance over physical ones. [...] Thereafter, the physical forces reassert their dominance, causing the organism to decompose and gradually to become one with the simpler, more stable and predictable realm of inorganic nature. (Bichat 1984, p. 15)<sup>12</sup>

Therefore, the *being* of the inorganic matter, or the inorganic entities, is stronger, because it is highly and exclusively *stubborn*. Whereas, organic, and even more, living matter or living entities, are highly *irritable*, and are thereas prone to over-irritability, *exhaustive* and *exhausted irritability*, and thus *fatigue*, due to the constant, ceaseless satisfaction and re-satisfaction of *need*, which depletes and exhausts one and one's irritability, not only on the quotidian level, but also more deeply and fundamentally on the existential and ontological level, as an *ontological exhaustion*, that is, an exhaustion of existing and being.

## NOTES

1. This article is prepared as part of my postdoctoral research project "Ontological Exhaustion: Being-Tired, and Tired-of-Being: a philosophy of fatigue, exhaustion, and burnout" at the Institute of Philosophy and Sociology, Bulgarian Academy of Sciences, implemented with the financial support of the National Programme "Early-stage and Postdoctoral researchers" – 2, Stage 1, 2022 – 2024.
2. See, Bachelard (2000), 136–155 and Lefebvre (2004). The original term "rhythmanalysis" was first used by the philosopher Lúcio Alberto Pinheiro dos Santos, who used it mostly for the physiological rhythms in his book *La Rhythmanalyse [Ritmanálise]* (1931).
3. In-text reference to Lamarck (1801), 15.
4. "Mais, quoique ce soient les plus parfaits d'entre les *vertébrés* qui puissent le plus agir volontairement, c'est-à-dire, à la suite d'une préméditation, parce qu'en effet, ils possèdent, dans certains degrés, des facultés d'intelligence; l'observation atteste que chez les animaux dont il s'agit, ces facultés sont rarement exercées, et que dans la plupart de leurs actions, c'est la puissance de leur *sentiment intérieur*, ému par des besoins, qui les entraîne et les fait agir immédiatement, sans préméditation, et sans le concours d'aucun acte de volonté de leur part."
5. See, also, Protevi (2011), pp. 37 – 38, and Posteraro (2016), pp. 103 – 107.

6. Cf., Montebello (2015), section entitled “Répétitions intérieures et rythmes”.
7. For an interpretation and actual measurement of what is the (organic) “now” or how long is “now”, for each organism (a different duration for each one), including the human, meaning how much it lasts, see, Posteraro (2016), pp. 103 – 107 (the organic now is referred to as a “frequency profile”, measured in Hertz). See, also, Deleuze (1994), p. 77, and Protevi (2011), pp. 37 – 38 and 45 – 46.
8. Cf., Deleuze (1991), x: “Isn’t this the answer to the question ‘what are we?’ We are habits, nothing but habits—the habit of saying ‘I’”.
9. Quoting from Bray (2009), p. 7. John Protevi’s article is also published in his monograph Protevi (2013), pp. 155 – 178. See, also, other papers/works of John Protevi, which discuss Deleuze and the (mainly Life-) Sciences, such as Protevi (2010); Protevi (2012), pp. 239 – 64; Protevi & Bonta (2006 [1<sup>st</sup>: 2004]); Protevi (2001); and Protevi (2013). Cf., also, other authors such as: M. de Beistegui (2004); Buchanan (2008); and Grosz (2007), pp. 287 – 300.
10. Reference by Posteraro is made to Berg (2004), pp. 49 – 50.
11. Cf., my earlier footnote on the duration of the “now”, and the in-text definitions of “Rhythm”.
12. Cf., Sinclair (2018), pp. 131 – 153.

## REFERENCES

- BACHELARD, G., 2000. Rhythmanalysis. In: *The Dialectic of Duration* [La dialectique de la durée, 1936]. Translated from French to English. Mary McALLESTER JONES (trans.); Cristina CHIMISSO (introduction). Manchester: Clinamen Press, pp. 136 – 155.
- BEISTEGUI, M. de., 2004. *Truth and genesis: philosophy as differential ontology*. Bloomington and Indianapolis: Indiana University Press.
- BERG, H., 2004. *E. Coli in Motion*. New York: Springer.
- BICHAT, X., 1984. II Animism, Vitalism, and the Medical University of Montpellier. *Medical History*, **28**(S4) (Xavier Bichat and the Medical Theory of the Eighteenth Century), 15 – 46. Cambridge University Press. Available from doi.org/10.1017/S0025727300070393
- BRAY, D., 2009. *Wetware: A Computer in Every Living Cell*. New Haven: Yale University Press.
- BUCHANAN, B., 2008. *Onto-Ethologies: The Animal Environments of Uexküll, Heidegger, Merleau-Ponty, and Deleuze*. New York: SUNY.
- CHRISTODOULOU, M., 2022. *Life as Addiction* (PhD diss., Alpen-Adria-Universität Klagenfurt & Université de Toulouse II – Jean Jaurès). Unpublished.
- DELANDA, M., 2002. *Intensive Science and Virtual Philosophy*. London: Continuum.

- DELEUZE, G., & GUATTARI, F., 1987. *A Thousand Plateaus: Capitalism and Schizophrenia* [*Mille plateau: Capitalisme et schizophrénie*, 1980]. Translated from French to English. Brian MASSUMI (trans.). Minneapolis: University of Minnesota Press.
- DELEUZE, G., 1994. *Difference and Repetition* [*Différence et Répétition*, 1968]. Translated from French to English. Paul PATTON (trans.). New York: Columbia University Press.
- DELEUZE, G., 1991. *Empiricism and Subjectivity* [*Empirisme et subjectivité: essai sur la nature humaine selon Hume*, 1980]. *An Essay on Hume's Theory of Human Nature*. Translated from French to English. Constantin V. BOUNDAS (trans.). New York: Columbia University Press.
- EPSTEIN, M., 2008. *Going on Being: Life at the Crossroads of Buddhism and Psychotherapy*. Boston: Wisdom Publications, [1<sup>st</sup> 2001].
- GIGLIONI, G., 2013. Jean-Baptiste Lamarck and the Place of Irritability in the History of Life and Death. In: S. NORMANDIN & C.T. WOLFE (Eds.). *Vitalism and the Scientific Image in Post-Enlightenment Life Science, 1800–2010* (History, Philosophy and Theory of the Life Sciences 2). Dordrecht: Springer Science+Business Media.
- GROSZ, E., 2007. Deleuze, Bergson and the Concept of Life. *Revue internationale de philosophie* **241**(3), pp. 287 – 300. Available from: doi.org/10.3917/rip.241.0287
- JONAS, H., 1992. The Burden and Blessing of Mortality. *The Hastings Center Report* **22**(1), pp. 34 – 40. Available from: doi.org/10.2307/3562722
- LAMARCK, J-B., 1815–1822. *Histoire naturelle des animaux sans vertèbres*. Vol. I (of 7 vols). Paris: Verdière.
- LAMARCK, J-B., 1801. *Système des animaux sans vertèbres*. Paris: Deterville.
- LEFEBVRE, H., 2004. *Rhythmanalysis: Space, Time and Everyday Life* [*Éléments de rythmanalyse*, 1992]. Translated from French to English. Stuart ELDEN & Gerald MOORE (trans.). London, New York: Continuum, 2004.
- PINHEIRO DOS SANTOS, L.A., 1931. *La Rythmanalyse* [*Ritmanálise*]. Rio de Janeiro: Société de Psychologie et de Philosophie.
- MONTEBELLO, P., 2015. *L'autre métaphysique*. Dijon: Les presses du reel, [1<sup>st</sup>: 2003 Desclée de Brouwer].
- O'KEEFE, B., 2016. Deleuze on Habit. *The Comparatist* **40**, pp. 71 – 93. Available from: doi.org/10.1353/com.2016.0004
- POSTERARO, T., 2016. Habits, Nothing But Habits: Biological Time in Deleuze. *The Comparatist* **40**, pp. 94 – 110. Available from: doi.org/10.1353/com.2016.0005

- PROTEVI, J., 2012. Deleuze and Life. In: Daniel W. SMITH & Henry SOMERS-HALL (Eds.). *The Cambridge Companion to Deleuze*. New York: Cambridge University Press, pp. 239 – 264.
- PROTEVI, J., 2010. Deleuze, Jonas, and Thompson: Toward a New Transcendental Aesthetic and a New Question of Panpsychism. Paper presented at *Society for Phenomenology and Existential Philosophy*, Montreal, Quebec.
- PROTEVI, J., 2011. Larval Subjects, Autonomous Systems and E. Coli Chemotaxis. In: Laura GUILLAUME & Joe HUGHES (Eds.). *Deleuze and the Body*. Edinburgh: Edinburgh University Press, pp. 29 – 52.
- PROTEVI, J., 2013. Larval Subjects, Autonomous Systems and E. Coli Chemotaxis. In: *Life, war, earth: Deleuze and the sciences*. Minneapolis: University of Minnesota Press, pp. 155 – 178.
- PROTEVI, J., 2006. Rhythm. In: J. PROTEVI & M. BONTA (Eds.). *Deleuze and Geophilosophy: A Guide and Glossary*. Edinburgh: Edinburgh University Press, [1<sup>st</sup>: 2004], pp. 137 – 138.
- PROTEVI, J. & BONTA, M. 2006. *Deleuze and Geophilosophy: A Guide and Glossary* (Edinburgh: Edinburgh University Press, [1<sup>st</sup>: 2004]).
- PROTEVI, J., 2013. *Life, war, earth: Deleuze and the sciences*. Minneapolis: University of Minnesota Press.
- PROTEVI, J., 2001. *Political Physics: Deleuze, Derrida and the Body Politic*. London and New York: The Athlone Press.
- SINCLAIR, M., 2018. Habit and time in nineteenth-century French philosophy: Albert Lemoine between Bergson and Ravaisson. *British Journal for the History of Philosophy* **26**(1), pp. 131 – 153.
- WILSON, E. O., 1996. *In Search Of Nature*. Washington D.C.: Island Press/Shearwater Books.

✉ **Dr. Marina Christodoulou, PhD**  
ORCID iD: 0000-0002-5721-833X  
Institute of Philosophy and Sociology  
Bulgarian Academy of Sciences  
E-mail: marina.n.christodoulou@gmail.com