



VNiVERSiDAD D SALAMANCA

**Programa de Doctorado Interuniversitario
en Lógica y Filosofía de la Ciencia**

TESIS DOCTORAL

—DOCTORADO INTERNACIONAL—

EL GIRO FENOMENOLÓGICO EN LAS NEUROCIENCIAS COGNITIVAS

**DE FRANCISCO VARELA
A SHAUN GALLAGHER**

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Salamanca, 14 de junio de 2018

TABLA DE CONTENIDOS

A Brief Summary	I
Conclusions (English Adaption)	5
Which were the assumptions of the turn	7
How the performance of the turn was developed?	16
How the turn is being carried on today?	31

A BRIEF SUMMARY

The Phenomenological Turn in Cognitive Neurosciences:

From Francisco Varela to Shaun Gallagher

The thesis that we propose to defend here is entitled *The phenomenological turn in cognitive neurosciences: from Francisco Varela to Shaun Gallagher*. This subject is highly relevant and innovative because, as noted Edmund Husserl ([1911] 2009: 8), we are persuaded –even in our 21st century– that “it is still being discussed until today in what relation is philosophy with the sciences of nature and spirit”. This discussion has been rekindled, again and again, in the last decades with regard to natural sciences and cognitive (neuro)sciences¹. In this thesis, we wanted to contrast the hypotheses that drove our research: one general hypothesis and three special ones in derivation of the first one. Hence, we opted to formulate them as follows:

- *General Hypothesis* (GH). There has been a phenomenological turn in cognitive (neuro)sciences, which was originally led by Francisco J. Varela and continued, after him, by Shaun Gallagher.
 - *First Special Hypothesis* (SH1). The above phenomenological turn is reaction and product of some particular assumptions pertaining to a naturalization project, which we intend to investigate.

¹ When writing “cognitive (neuro) sciences”, we refer to cognitive sciences in general, as well as to cognitive neurosciences, that is, in their specification among the different disciplines of cognition. In our thesis we will separate the different terms, as long as we specially refer to each of them.

- *Second Special Hypothesis (SH₂)*. The above turn was originally promoted by the Chilean neurobiologist Francisco J. Varela in a determined intellectual and historical context.
- *Third Special Hypothesis (SH₃)*. The above turn has been updated and ripened, without injury from other authors who claim a similar action, by the Irish-American professor Shaun Gallagher in a determined intellectual and historical context.

If, on the one hand, GH comprehends all the present doctoral research, SH₁ belonged to Part I, SH₂ to Part II, and, as it could not be otherwise, SH₃ to Part III. But before continuing, let's explain why we titled our thesis of the already enunciated form. Thus, the proposed title of this book is composed of various elements, as diverse was our standpoint: "Phenomenological turn", "cognitive neurosciences", "Francisco Varela" and "Shaun Gallagher". The very presence of these elements showed that we were faced with a research aimed to build bridges and not trenches between the different fields of knowledge. There is no work in our field of study that is strictly parallel to our chosen theme and authors, which reinforced its originality.

By "phenomenological turn", an original expression of ours, we were not willing to mean the positioning towards the mind or conscience as a problematic entity on the part of philosophy or the sciences of cognition, since it was something already done by authors like John Searle (1992), Ray S. Jackendoff (1987) or Owen Flanagan (1993), among others; but rather we denoted with it the exceptional turn towards phenomenology as a complementary method on the part, not of a qualified philosopher, but of a renowned neuroscientist with outstanding philosophical skills: Francisco J. Varela and his philosophical partner, Shaun Gallagher. They tried to step out "the relation between philosophy and empirical science [as] one-way

enterprise [or] an application of ready-made concepts [where there is] no reciprocity, and there is no feedback. The application does not lead to a modification of the original analysis” (Zahavi 2009: 13).

Varela and Gallagher, which didn’t miss the boat, were not obsessed to solve –as we don’t either– the entity of conscience, but getting, through an approach as inclusive as possible, a response to its problematicity. That said, we desired to pay our forces in this thesis to study this question in a systematic and historical way, since we noticed that the tangible and transversal character of this turn wasn’t previously enhanced with enough determination in contemporary philosophy and science. Our thesis, in addition to the introduction, conclusions and bibliography, houses three major parts in response to our three special hypotheses; doing such a thing always at the pace of the general phenomenological turn in cognitive (neuro)sciences that we resolved to investigate:

- Part I: The assumptions of the phenomenological turn: Naturalization (SH1)
- Part II: The performance of the phenomenological turn: Francisco J. Varela (SH2)
- Part III: The continuation of the phenomenological turn: Shaun Gallagher (SH3)

As we can observe in the above ordered list, one can’t study any movement or turn, in philosophy or science, without first paying attention to the assumptions that guide it: in the case of the phenomenological turn in cognitive (neuro)sciences, these assumptions sprout from a naturalization *ab initio*, that is to say, in a previous notion of nature and a particular naturalizing action. Therefore, in Part I, we provided the basic lineaments of this naturalization in two chapters: a chapter for the reductionist naturalization of phenomenology (Chapter 1) and another one for the reductionist naturalization of this *philosophia prima* (Chapter 2).

In Part II, stocked up with three chapters, we studied the Chilean neurobiologist Francisco J. Varela (Santiago 1946-Paris 2001), which was the principal agent of the phenomenological turn and whose thought we

didn't hesitate to consider the main responsible for the performance of this shift in cognitive (neuro)sciences. Varela was, indeed, the creator of neurophenomenology, since he profiled it as a methodological remedy for the hard problem of consciousness as a heuristic and pragmatic exploration of lived experience (Chapter 3). Neurophenomenology is then a transdiscipline of lived experience, which has a solid phenomenological affiliation (Chapter 4) and neurobiological basis (Chapter 5) that we meticulously analyzed in that portion of our thesis. There is no doubt that this second part is fundamental regarding our doctoral efforts: in this part we accurately compiled the central contents, for the turn was historically materialized and meant to remodel cognitive (neuro)sciences. Thanks to his foundational exertions, an *empirically informed* phenomenology was excelled, and, *mutatis mutandis*, we envisaged a "*phenomenologically informed*" (Gallagher 2006: 125) demarche in cognitive (neuro)sciences. Varela and Gallagher thought that this project was, colloquially speaking, the greatest thing since sliced bread. Neurophenomenology gets the best of two worlds: empirical science and phenomenology.

To finalize our book, in Part III, a much shorter section that comprehends just chapter 5, we dwelled on how the phenomenological turn is being prolonged at present by Shaun Gallagher (Pennsylvania, 1948). The professor Memphis is the co-director of this thesis along with the Spanish philosopher Juan José Acero (Madrid, 1948). This last part is also a critical and a complementary moment to what Varela himself, prematurely deceased, could not undertake in his own neurophenomenology. Our thesis would be diminished if we wouldn't say at least some synthetic and critical words about an essential author like Gallagher, who claims for a front-loaded phenomenology and even for a neurophenomenology of astronautics. We defined him, on the one hand, as a prodigious candidate to survey but also straighten out the Varelian approach. On the other hand, the methodology that we followed in this thesis was convenient with the trans-perspective that we opted for from the outset. Finally, this meant that our methodology was, at the same time, systematic and historical.

Moreover, both Varelian and Gallagherian turn demonstrated, each looking after his own, some characteristic transdisciplinary features.

CONCLUSIONS

(ENGLISH ADAPTION)

In order to culminate the labyrinth of what we have been studying, we will strive, finally, in the conclusions of the six chapters which solidify this work and end it in its entirety. It is enough to say that we have proposed to give our thesis a ternary order, perhaps in a more dialectical spiral than a linear path, so as to follow up and crumble the phenomenological turn in cognitive (neuro)sciences. When we used the word “turn”, this pointed out our insights toward some notion of movement, so that what turns itself changes in a certain way from one point to a new one, or to say it in a more embodied lexicon, from a particular posture to a new one. Thus, it has been possible for us to evaluate, as we established in the General Introduction, that this is a turn of *motilities*; which ply Francisco Varela’s early intuitions. Nevertheless, and to put it in a nutshell, the turn is still in transformation. In addition, this turn implies a visible mobilization, without previous historical milestones –which doesn’t mean that it can’t be reformed *a futuro*–, in two perimeters: (1) within cognitive (neuro)sciences and (2) within phenomenology. This dearth of the traditional isolations and the continuous questioning regarding all the assumptions, tensions and stubbornness of both disciplinary territories –in the interests of a transdisciplinary method– is what we wanted our readers to palpate with smoothness in this thesis.

Thus things, we hope that it has been possible to verify that the phenomenological turn in cognitive (neuro)sciences is not something indistinct or at all encircled in a single author, or perhaps frosted in a unique thought. It would have been our awkwardness to have spoken only

on Varela, or, *verbi gratia*, on the latest trend in phenomenology that is present in its most current exponents like Gallagher *et alri*. We had a sweeping desire for systematicity and historicity from these research commencements. Therefore, the subtitle of our thesis exposes much of the idea of a motility turn, which now, after studying the subject painstakingly, we think that it stands out with more prominence: *From Francisco Varela to Shaun Gallagher*. The turn progresses from author to author, but it also oscillates and it's reformable, without either of them retaining it. Sometimes we went, certainly and in the systematic and historical order of our thesis, from the Chilean neurobiologist to the Irish-American scholar, that is, from the South to the North of America, but we also returned to the intellectual persistence that Varela still preserves in the recent exploitation of neurophenomenology in other contexts –Shaun Gallagher is a great example of this– that stimulates our reflection again. However, it is of justice to indicate that, in addition to Varela or Gallagher, there are many other authors of serious importance which joined them, since neither of them worked alone: their contributions are mainly collective, as we read in their papers and books.

Our preference for these two authors in the subtitle of the thesis is due to its clear dexterity of the phenomenological turn, although there are more authors which shadow them and also owe to them their leadership. In fact, when we studied Varela and Gallagher, we learned, in addition, from their fellows and partners. By electing the Chilean scientist and the Irish-American philosopher, we didn't wish to detract from their inspiring co-authors. On the contrary, they served us to see what they get on credit. The works that best represent the turn –which both authors conducted by leading their own naturalization, performance and continuation of this enrolment– become part of community knowledge, as we seen in the quotations and final bibliography. Both authors –without prejudice to their limelight– are prototypes of the phenomenological turn as a community movement, that is to say, a mobilization in the scientific and research

community; since the best knowledge is often achieved in the cultural heritage of the communal *ethos*.

We believe, therefore, that we made available abundant data and arguments to the reader, so that he or she might appreciate the effectiveness of our General Hypothesis (GH)², which we faced under a non-reductionist naturalization –according to the First Special Hypothesis (SH1)–, which twisted this turn exemplified by Francisco J. Varela as its main forerunner –Second Special Hypothesis (SH2)–. But the turn receives its actualization by Shaun Gallagher, in conformity with the Third Special Hypothesis (SH3). For that reason and in the next three points, we bring in the following themes the conclusions that respond to each of these conjectural scenarios, which had been our starting point in the General Introduction.

I. Which were the assumptions of the turn?

In the First Part of our thesis, trying to respond to the SH1³, we investigated the basic characterization of the phenomenological mobilization in cognitive (neuro)sciences, which supports the bases for its initiation and maintenance in the last two decades. We started this thesis with the “radical proposal”, which we uncovered in the light of Zahavi (2009: 14) in the General introduction. In this regard, we hope that the reader was able to interpret a certain dialectical proceeding from the antithetical to the *thetical* in our work, namely what is precisely the opposite to the phenomenological turn but, despite everything, it promotes its assumptions. We said that naturalization is some kind of action, as it seeks to translate this action into scientific research, and not simply doing a theoretical enterprise –naturalism grasped as an overview of

² “There has been a phenomenological turn in cognitive (neuro)sciences, which was originally led by Francisco J. Varela and continued, after him, by Shaun Gallagher”.

³ “The above phenomenological turn is reaction and product of some particular assumptions pertaining to a naturalization project, which we intend to investigate”.

reality-. Driving a broader nature is not the same as its ideological scratch, although sometimes they are identified in practice.

Thus, and in the *first chapter*, dedicated to reductionist naturalization, we studied how, at the furthest point of the phenomenological turn here examined, it constituted without a doubt an armoury of unknowns and setbacks that was, later, the object of an obsessive resolution on the part of the representatives of this ideological project. We could indicate this in other more expressive clauses. At least for now, it's useful –in a very didactic way– the distinction in social psychology, according to degrees of lesser to greater hostility, between *stereotype*, *prejudice* and *discrimination* (Cf. Fiske 2000). Reductionist naturalists often have a stereotype of that kind phenomenology that was first unveiled by Husserl, attributing to that a relegated and secondary functionality with respect to natural sciences, or simply –and this is where the prejudice is appearing– a negative and paradoxical mistreatment. The prejudice suggests, in effect, a disdainful estimation, which is not very often detectable in the research group characterizations: someone can stereotype Husserlian phenomenology by saying that phenomenologists tend to use, for instance, an unserviceable manner of speaking. But one can do such a thing without prejudging phenomenology in a reductionist way. They are two very different things.

However, the most unfortunate of this *démarche* is not other than *discrimination*, that is, the negative feat in conducting the research community –the researcher working alone is not exempted from this– against phenomenology. We observed such a thing in the displacement of higher-order tasks towards sensory perception (Dretske), or in the substitution of classical phenomenology for a trifling heterophenomenology led to a paroxysm (Dennett); as well as in a neurophenomenology famished in the subpersonal levels of an idolized ego (Metzinger). This reduction, which we mark as discriminatory, comes, as we noted, from a general naturalism (Chapter 1, 1.1.), which reverses the transcendental principle of the mental for the empirical one, being

enrolled in a descriptive commitment –little or nothing reflective– and turned into an executing arm of a reductionist way of doing empirical sciences. We indicate, precisely, the physicalism (Chapter I, 1.2.), literally fought by Husserl (2008 [1936]: 301) in *Krisis* as a “physicalism, in the distorted form of logical matematicism”. One might verify this reductionist propensity by discriminating between the plurality of reality levels that are *determined* in the mathematical structural level panorama; as well as in the form of *determinants* that yield their physical micro-compositionality.

In other words, and instead of the phenomenological turn which goes towards a major experiential and experimental unities of vital complexity –typically found in Maturana and Varela’s biological phenomenology that cut across Part II–, the turn –the *anti-turn*, to put it better– would lead both to the most abstract and to the smallest sections in the physicalist material lattice, and then, *in extenso*, to the ontically lowest composition of autopoietic unities. The turn that attests this thesis strappingly disobeys the twilight of complex reasoning, for it is a good example of the kind of phenomenology that Husserl *imploded* in the core of philosophy, the same thing that Varela did *in* cognitive neurosciences (with or without brackets). Dretske, Dennett and Metzinger did well-defined reductionist anti-phenomenological attempts that were expected to damage phenomenology in its Husserlian silhouette and in other versions pooled with this one. In fact, the chosen trio renders their own phenomenological re-edition, moving from prejudice to discrimination and showing a close or distant pairing with respect to Husserl. The actions glimpsed in the three authors that we proposed were prejudicial and harmful to this, but they are not the only ones in making this so far. We don’t vacillate to state that they are exemplary specimens of the onslaught that reduces phenomenology to the reductionist memoranda. According to Dretske’s *transparent phenomenology* (Chapter I, 2.1.), phenomenologizing is equivalent to phenomenal introspection –not phenomenological analysis– and introspection is eminently built upon sensory properties, displacing

superior cognitive functions to representational and external ones. However, we criticized that sensory concretion of complex cognition doesn't disable its structuring complexity. Fairly, this concretion supplies this structuring modularity and procurs to swap its functionality.

In Dennett's *heterophenomenology* (Chapter 1, 2.2), the partiality of Husserlian phenomenology was rejected because, even then, it postulated a privileged access to pure consciousness. However, the antidote of this philosopher was a phony neutrality and objectivity, by which just a physicalist view could be the best scientific way to strike down a classic phenomenological subjectivism and replaced it in this way with a narrative interpretation made through third-person scientific reports. But Dennett, who had the materialist eliminativist doormat, didn't come up with the obstacles that he faced, notably when subjects intended to eliminate their own and other's subjectivity through their private subjective stance. The result of this was a fiction cutted off from Husserlian phenomenology, that is to say, nothing but an enterprise debased at the root by the scientistic ideology (an impossible narrative which was very similar to the old phenomenology that Dennett was trying to beat). For this purpose, the Varelian phenomenological turn had to take into account, in two ways, the limitations of both subjective and objective perspectives, but at any case – as we surprisingly read in Dennett – changing one for the other or eliminating a problem to find another worse one.

The other exponent of the trio that we proposed was Thomas Metzinger (Chapter 1, 2.3.), to whom we don't hesitate to consider as the most moderate of the three cited philosophers, although not less adventurous in this regard. Metzinger resisted a phenomenology of the ego and intentionality in order to accommodate in its place a self-model neurophenomenology focused on attention. Therefore, the author rejected Dennet's avoidance of the subject as an entity, which ultimately fell prey to the subjectivist deceit he sought to renounce in Dretskean transparency. Remaining in simple attention, Metzinger snapped that

neurophenomenology was unavailable – “entirely inaccessible from the first-person perspective”, Metzinger (2003: 145).) – in order to have access to subpersonal levels. We appealed then to the greater moderation of this author, because he didn’t exclude certain availabilities to subjective attention, although we considered as inadmissible and vague his antagonism between Husserlian phenomenology and neurophenomenology —in fact, he didn’t go beyond this opposition (Chapter I. 2.3.1.). It’s a fact, as it’s discernible from the whole of this book, that one of the most outstanding landmarks of Francisco Varela was to establish, with exceptional meticulousness, a pragmatic methodology and a synchronic *heuresis* of the phenomenological method of subjective experience and its neurophysiological correlates, which –obviously– are not directly available to this experience. However, it seems to be a simple ideological idleness the fact that the mentioned authors didn’t directly consider some kind of utility about a phenomenological self-examination. Everything depended, then, on the terrain and the routes that had been previously travelled, consisting of –if we rework our sociological comparison– a sort of stereotypes, prejudices and discriminations that strongly smeared the accounts and belief system of the research group.

Therefore, in the second chapter, dealing with non-reductionist naturalization, the disagreeing assumptions drastically changed, what altered the preceding prejudices and discriminations in such a way that phenomenology was no longer the most reductively impaired, although its classical inflations were reprovved in favour of an open immediacy and commitment to a new naturalization wave. In the second chapter, the assumptions of the turn crystallized through a naturalization that we declared, without patches, as non-reductionist. We are ready to conclude here that reductionism can be baptized as the *anti-turn*, inasmuch as there’s no motility in the *regressio ad infinitum* towards a natural and ontically more insignificant action –not branded, for that reason, as unnecessary–. Not in vain we saw that Varela (1996b: VIII) confederated reductionism with the extreme right conservatism, whereas the methodological amplitude is what

he emphatically spurred and where tended, subsequently, the phenomenological turn. Thus, the non-reductionist movement lavished a greater manumission to complex thought and exempted this view from the sclerosis of an ideology unambiguously locked in natural micro-levels. Indeed, if there is an indelible mark in this turn, it's because, at the same time as it naturalizes, it does so in a way that is not methodologically tribalist at all. That's why this attitude is sneaked by phenomenologists and scientists. It's, therefore, a *new naturalization*.

Because of this, Gallagher (2012) disclosed his disagreement in thinking naturalism as a twin of reductionism, in which phenomenology was unfilled as a sort of revulsive –scientifically ignorant– about nature. The one who does phenomenology is not an outrageous of its integral human condition, so that the new naturalization –we insinuated an unideologized naturalism comprehended as a sort of *actioning (accionamiento)*– requests to expand without the customary sputtering outcomes the phenomenological method in addition to the scientific one. What mesmerized, then, our interest was the naturalization of phenomenology. On the one hand, the contending presumption of scientificity that was brandished by Husserlian phenomenology, and, on the one hand, the empirical pureness of cognitive (neuro)sciences, has been highly controversial in this book. It is not superfluous, either, that these sciences reconsider without stopping the uncrossable contours that are usually conferred to their epistemological demarcation, searching to delineate an impure approach that may be –we don't fear to recognize it– more stimulating for their professional implementation.

After the uprising of neurophenomenology in the intellectual scene in 1996, we appreciated how Varela, along with other French researchers, took to the editorial board *Naturalizing phenomenology* (1999), a work in which they gave high-rise clues about how the new naturalization could be destined. Trailing this publication, we looked at the question of phenomenality (Chapter 2, 1), which, although it has been made invisible

in cognitive (neuro)sciences, had to be brought up in the new Varelian naturalization as a certain mode of *actioning*. How can we say something valuable, if we aspire to be true naturalizers, about what appears to conscience in its states and events, without at least mentioning –if not trying to satisfy– the problem of its radical appearance? Phenomenology is suitable for sciences because, in fact, it defies us not to turn our backs on this problem, and, thanks to it, to be able to reformulate the question about *the phenomenality of phenomena*. The affirmation that the mind is not a more or less complicated machine, but a *phenomenal mind*, that is, an experienced mind in its radical phenomenal power –not only for predicting or expounding innate phenomena, but for examining every new conscious appearance– is an issue that phenomenologists have been reviewing in a very close and flattering tactic. In chapter two, we sighted that phenomenality is at the mercy of all subjectivity (Cf. Roy et al., 1999: 10).

But, having concern for our thesis, we still need to know if phenomenality is the same as intentionality. We think that this hasn't been the central theme of our work but, nevertheless, we will have it very present in future publications. For now, we think, modestly, that if conscious mind tends towards anything it is because it consists, primordially and radically, of a power for it, which is seen in its irreducible background. But intentionality, the conscious faculty of appropriating any object, doesn't float in a vacuum without some kind of greater and permitting integration quality concerning any conscious activity: this is, straight out, what we called *phenomenality*. Perhaps intentionality is the name that receives phenomenality in its appropriation of *intentiones*. It would fit, especially in the phenomenologies of the flesh that are currently in vogue, to reflect about a non-intentional phenomenality. Are they transposable?

Nonetheless, any attempt to explain phenomenality in an absolute fashion by the means of its linguistic and objective derivatives, nor the neurophysiological correlates –not separated and encapsulated before of the mental, but concomitant to this power– is unjustifiable from the

phenomenological seriousness. This would not rescind, by far, the problem of phenomenality. In the non-reductionist naturalizers this phenomenality was natural, although it wasn't possible to empirise or quantify it, once and for all, in the state of research. Actually, the new naturalization of phenomenology doesn't imply the emptying of the width and the natural complexity of the living organisms —this is not much less of the conscious living organism which constitutes the human being. One can't speak, as we read in Varela, of phenomenality, apart from the enactive autopoietic systems, nor in a way that is stuck into these systems, as we discerned in Thompson's (2007: 158) bacterial sample.

But this didn't drag us beyond deflationism or inflationism: the new naturalization challenged the *qualia* and the distinction between *easy* and *difficult* conscious problems, or even the extra ingredients in consciousness (Chapter 2, 1.1.), because, again, we had to plant the flag of discord between what was naturalizable with more affluence in a reductionist form of consciousness —presumably easy— and in its differing account. Chalmers, as we explained, alleged an extra ingredient, certainly in order to make us notice that the easy problems depends on the difficult ones, but this did nothing but gangrene with more viciousness the wound that divided materialists and spiritualists. Therefore, we were in favour of the fact that Husserl incessantly reiterated an *anti-naturalism* (Chapter 2, 2), doing such a thing against an anti-scientific or anti-natural position. It was rather an intellectual answer to the sectarian stance of the anti-turn to which we have been trying to respond in this book. This has been really the case, to such an extent that we wanted to distinguish, without hindrance, that the Austrian professor did not *unreconciled*, more than enough, pure conscience and empirical consciousness (Chapter 2, 2.1). All this was due to the fact that his phenomenological method was sought, precisely, to provide an eidetic and transcendental prevision of the empirical *data* and private mental experiences.

We want to recognize, in addition to these conclusions, that it hasn't been very comfortable for us to characterize the proposed naturalization. Thus, we pictured it as a transcendental re-ordering of ontologies (Chapter 2, 3.), since the naturalization twinned with *hard* natural sciences became obsolete, in comparison with that new version that is currently overthrowing the arbitrary border lines of these disciplines and re-ordering in the same transcendental horizon the different sciences—the regional ontologies (*regionalen Ontologien*) subsidized by Husserl—. We are staunchly studying a variety of portions of the real from a transdisciplinary methodology. Accordingly, we emphasized the sourcing (*fontanal*) transcendental feature. In another expressive metaphor, we maintained that it is not advisable to cut the umbilical cord between the *donor* (*donans*) and the *donation* (*donation*) in the same lived experience.

The transcendental phenomenology, in a very different endorsement of neo-Kantianism, was linked from the beginning with experimental and eidetic psychology; as soon as a quantification and description (Chapter 2. 3.1.) —always in the making— of that experience was permissible. This wedded the new naturalization, although under the clear condition of not coveting again the unilateral reductionism, with the a more integrating methodological *heuresis*. Under no circumstances, therefore, the mathematization or fisicalization of transcendental experience relieved or diminished its transcendentality, but, according to the new naturalization, some particular methodological treatments were encouraged to discover their mutual reference —and also paucity— by facing the same phenomenological horizon.

The quality of this horizon —transcendentality— was a genuine broadening of the concept and the experience of nature (Chapter 2, 3.2.). The “phenophysics” (Roy et al., 1999: 55) could be erratic, if it would be sculpted as a reductionist one-dimensional mathematization and physicalization of Human being's experience. We offered clear examples in this thesis in favour of the methodological unity (transdisciplinarity, as we called it in

Chapter 3) among the diversity of methodologies belonging to different disciplines. This diversity, indeed, provided us with the transcendental approach of phenomenology. Transcendentality is what validated the new naturalization descriptive commitment, but also its limitations. In effect, transcendentality was revealed to us in the shape of both an impulse and a limit, because it validated the same phenomenality and send us back to the *call (Ruf)* of being –in agreement with the quoted Heideggerian term–, forwarding us to what is still pre-attributively and pre-categorially undisclosed in our lived experience.

Without earnest pretensions, we hope that the reader has perceived that this transcendental can undoubtedly help phenomenology and sciences to agree on a mitigated *biocentrism* –of an *irreducible bio-oriented experience*, we prefer–, in which the phenomenological self may not be a bloodless puppet, determined in all its extremities by a life assumed in the most ethereal way. Perhaps this experimental and experiential biocentrism would be more radical than the relegation or trivialization of experience that worships an external life totem, wholly set apart from the same conscious and organic enaction of the body.

2. How the performance of the turn was developed?

In Part II we expounded on SH₂⁴ –we dealt there with the performance of the phenomenological turn in cognitive (neuro)sciences–, the reader will have found the most properly Varelian chapters among those that make up our own systematization. However, this great section doesn't go alone. Underneath the assumptions shell of Part I corpus, we clarified what type of non-reductionist naturalization is envisaged and sparked by the intellectual endeavour of Francisco J. Varela throughout his neurophenomenology and his own research on cognitive (neuro)sciences.

⁴ “The above turn was originally promoted by the Chilean neurobiologist Francisco J. Varela in a determined intellectual and historical context”.

It was possible to distinguish that the new naturalization enlarged philosopher's and scientist's fields of study, thanks to the neurophenomenological approach; so that we couldn't minimally understand the Chilean neurobiologist's ideas without it. We think that Varela's thought is, all at once, innovative and ground-breaking, for he displayed a very eclectic vision of philosophy of mind, cognitive (neuro)sciences, and, of course, of phenomenology as such.

As we wrote in the General Introduction, the proposal studied here is not that of a meek adherent of scientific questions but of one of the most relevant neuroscientists of the contemporary era, who thought and worked on these questions. Varela was introduced to us as the spokesman of the exhaustion, and even the bankruptcy of neuroscientist unilateralism and reductionism, even though he was formed at Harvard University had expressly bragged from this which in the 70s. The primary cry that dramatizes Varela's neurophenomenology has been very audible for us within the very heart of cognitive (neuro)sciences, claiming a much more naturalized assignment than the partial one in this field. It will not have been too obtuse to see that the three chapters of Part II have been arranged in such a way that one can acquire, as soon as one surveys them, an intellection as solid as possible of the Varelian turn. We started Part II, notably chapter 3, from lived experience, letting us to coach the reader, through it, in neurophenomenology; which presumed a certain heraldry in classical phenomenology (Chapter 4.) and, as could not be otherwise, in the cognitive (neuro)sciences historiography (Chapter 5.).

In the *third chapter*, then, we coloured neurophenomenology as a methodological exploration of lived experience, that is, as a new transdisciplinary approach that tries to get a handle on the *explanatory gap* and the *hard problem* of conscience —this one gave painful headaches to philosophers of mind during the 80s and 90s—. In any case, the remedy offered by Varela was methodological and not at all ontological, that is, he was not interested in the *being* of consciousness —according to the age-old

science of *ens inquantum ens*–, but to find a way to nearing it and take it into account scientifically. The neurobiologist attempted to marry “modern cognitive science and a [trans]disciplined approach to human experience, thus placing myself in the lineage of the continental tradition of phenomenology” (Varela, 1996a: 330). Therefore, to scrutinize the being of experience and stretch it its prevalence would signify to judge experience, by appealing to a more general reality –the *esse* of *ens*– and without knowing yet what this experience of oneself and *in* oneself can give. Hence, in the same vein of the Chilean scientist, the experience did not worry him as an entity but as a subjective activity. He drew up neurophenomenology as a practice (*pratique de l'expérience*), in incontestable debt to French phenomenologist Natalie Depraz, who greatly aroused Varela's phenomenological conversion.

In consequence, a general epistemological theory doesn't have to be applied to lived experience (*expérience vécue*) (Chapter 3, 1), in the same manner that ontology was rejected by Varelian *senior hermeneia*. Neurophenomenology, which is interpretive and pragmatic, is based on the irreducible lived experience, and from this starting point, one can empirically describe its own vital behaviour in the irreducible integrity of the human organism (Chap 3, 1.1.). We agreed, in that sense, that there was an analogy between the irreducibility of lived experience and the biological irreducibility, although it was through the first one that the second aspect makes *sense*. Both are needed sure enough for Varela didn't make an epistemology or an isolated biology lost in its own twists: the autopoietic systemic unities are not conceptual but real in their components, being lived in its structure by the self. But this is not the cellular autopoietism featured by Thompson (2007): it is very common to award these radical positions of bacterium's experience to the Chilean neuroscientist.

Varela, an intellectual of maximum score, evolved from his autopoietic and phenomenological biology to a phenomenology of a greater qualitative scope, that is, of the human being as a living experiencer and experimenter.

The human being, who receives by derivation the cellular *autopoiesis*—the self-organization, self-realization and self-production of the living—, is experienced and experimented as an irreducible system of multiple subsystems. That is, since irreducibility is not synonymous with scientific *inexplicativity*, it infers a very complexity that requires us to appreciate biological phenomenology—in the case of the living being’s irreducibility—and neurophenomenology—if we give credit to the analogous irreducibility of lived experience—. If this experience is the first matter that affairs us, it was very rightful that we asked ourselves, considering the deconstructionist critique, if our experience could be explored in any way (Chapter 3, 2.). Our response was of course affirmative, knowing that all self-examination is a linguistically configured interpretation, but also, socially, culturally and historically aligned with our circumstantial life.

We resolved, then, that neurophenomenology tries to explore lived experience in its circumstantial and worldly plot, so that it can be counted among first-person methodologies (Chapter 3, 3.), although it should not be confused with: (1) a “privileged access” (Varela & Shear, 1999: 2), (2) with a “just-take-a-look attitude” (Varela and Shear 1999: Ibid.), or (3) with a secluded description from a first-person point of view. In fact, this neurophenomenology, which is included in first-person methods, is distinguished from the introspective method, that is, from the pure Husserlian phenomenology; and from the meditative and the mindfulness practices. Among other already reputable points, Neurophenomenology configures a transdisciplinary approach in the form of “an *integrated or global perspective* on mind where neither experience nor external mechanisms have the final word” (Varela & Shear, 1999: Ibid.). Unlike the introspective method (Chapter 3, 3.2.), neurophenomenology considers subjective experience with regards to motions and bodily modifications during the enaction of the *soma* as a lived whole.

In contrast to the phenomenological method (Chapter. 3.,3.3.) and although we saw it more thoroughly in the fourth chapter,

neurophenomenology revealed its rejection of empiricism and psychologism, as well as its tenacious and dubious proceeding before any not satisfactorily contrasted affirmation; taking into account a groundwork inquiry that is always in scrutiny. Classical phenomenology considered, in honour of its disciplinary purpose, everything that experience could offer, by the means of intuiting and naming its phenomena and reflecting on them; as well as cordoning its conscious ingredients through the *epoché* and the phenomenological *Reduktion*. Phenomenology, indeed, executes a refinement of the accessory subjective characters. However, we conclude that neurophenomenology requires an embedded, extended, embodied and ecological profiling, which should have in particular a careful appreciation of the techniques, methods and results of cognitive (neuro)sciences and other auxiliary disciplines; helping to phenomenologize those neurophysiological counterparts originally vetoed by Husserl's pure analysis.

As far as it is concerned, the phenomenological turn is not anarchic but, as we have been baring in this thesis, it has clear principles and guidelines. We established, in effect, that in the programmatic article “Neurophenomenology”, Varela (1996a) raised the four moments of the Husserlian *epoché* and the reduction that assisted for his novel approach (Chapter 3, 3.3.1.), in terms of an attitude that begins by bracketing all the considerations of the world that fog up our experience in the most sharpened way. The conclusiveness of this was gaining a conspicuous and unideologized outlook, demanding us to expose, in the context of neuroscientific protocols, both the variability and invariability of *what* we experience and *how* we experience. We can't dismiss moreover its pragmatic, intuitive and intersubjective training, in favour of the stability of the skills trained in second-person by an expert. However, this doesn't stop us from advising the reader that Varela, probably due to his premature death, didn't deepen how to get a second-person training (Cf. Olivares et al., 2015); nor did he take advantage of the expertise in neurophenomenological protocols designed for subjects, less or nothing

prepared for reflective thinking –because of educational lacunae or natural diversity–. We also conclude here that Varela didn't include the cases in which the pathological indisposed subjects were not able to possess the minimum capacities to take part into neurophenomenological experiments.

But, in addition to this very descriptive feature, we immersed ourselves in Varela's phenomenological filiation. In the fourth chapter, adjusted to the phenomenological inheritance of Varelian turn, we wanted to show the continuities and discontinuities in the extensive up-to-date of Husserl's method. Varela spelled out Husserl's phenomenology and that kind of self-examination of other eminent phenomenologists (like Heidegger and Merleau-Ponty), in order “to project phenomenological description back within natural attitude” (Varela, 1997a: 368) and without acquiescing therefore to the caricature of this attitude as a reductionist foolishness. Similarly, the Chilean researcher gave a lug of ears to the mere *neuroscientification* of experience, since the formal and material object of phenomenology had been, for years, the subjective activity in its noematic and hyletic broadening. In neurophenomenology –we should estimate– this scenery has tremendously changed, because the formal object *quo* belongs to cognitive (neuro)sciences in a *transdisciplination* with phenomenology, while the material object *quod* fit for the material data of these sciences, as long as they are synchronized with its phenomenological donation. Of course, neuroscientists can continue working in the autonomy of their disciplines and phenomenologists can do their own by using their accustomed rational musings. Nevertheless, they will not be less professional if they decide to act in the role of neurophenomenologists. What Varela questioned was, simply, the transdisciplinary quality of their intellectual achievements. We affirmed, in fact, that the phenomenological turn is not compulsory for neuroscientists, nor is the neuroscientific turn for phenomenologists. One should recognize that if both look to each other's work, this can be more productive and fitting than an impassable methodological tribalism. It's a better inkling to

integrate different perspectives of the same nature in the same transdisciplinary methodology, without protecting oneself in just one aspect of them.

In this way, we assume that phenomenology was an recurring enclave of interest (Chapter 4, 1) for Varela as a neurobiologist so that to craft his new transdisciplinary and pragmatic approach. In his new neurophenomenology, the Chilean man trumpeted “the centrality of phenomenology” (Varela, 1997a: 359), inasmuch as he enormously corrected the subjectivism of psychology, the objectivism of science and the dogmatism when experimenting and investigating reality in a scientific kaleidoscope. Phenomenology has been one of the most integrative methods that has been hitherto established, since it has not clung to the single *reine Ich* that goes back to Kant and the Cartesian *cogito*. In accordance to Husserl, indeed, *noesis* and *noema* allow us to constitute the world in its materiality—in its *byle*—, doing so in a way other than a guileless subject/object dualism. In this situation, there can be a natural exhaustiveness in neurophenomenology, without undoing the subjective structures of the living system that experiences as a human. Subsequently, what Varela discussed was how to accommodate, without ontological leaps, an unprecedented methodological hybridization which could permit us to open the gates to a naturalized phenomenology and, on its behalf, to a more leading role of phenomenology-friendly cognitive (neuro)sciences. That’s why we take profit of this opportunity to sustain that it’s feasible not only a naturalization of phenomenology but a *phenomenologization* of nature (Chapter 4, I.I.), by the means of a *double circulation* in which naturalization and phenomenology undergo, without respite, to the criticism and improvement of each of these actions.

It was a fact, then, that the importance that Varela conferred to phenomenology made him penetrate Husserl's thought, rediscovering and updating it with high efficiency (Chapter 4, 2.). In a time of maximum splendour in his own career, Edmund Husserl wanted to reconcile the

Cartesian fracture, without completely complaining about Cartesianism, for it was based on the direct and inescapable evidence of the *cogito*. For his part, the Chilean neurobiologist studied the younger Husserl of *Ideen*, where he meant to “purely reflect on consciousness and to discern its main structures” (Varela, Thompson & Rosch, 1993: 44), both in the essences intuition and in transcendental reduction. However, Varela was more spirited than the eidetizing Husserl, studying how to overcome the mentalist deficiencies of his work (Chapter 4, 2.1.) in the transition that exists between *Ideen* and *Krisis*; instead of his “purely mental and accessible [entrance] to conscience in an abstract philosophical introspection act” (Varela, Thompson & Rosch, 1993: 45).

Husserl discovered the lifeworld as the “subsoil” of “multiple pre-logical validities” (Husserl, [1936] 2008: 166), as we read in *Krisis*, and which comprises the *Körper-Leib* intertwine of all conscious activity. For that reason, neurophenomenology restored corporality and embodied rationality in science (Chapter 4, 3.). There is only a single phenomenological body –lived and living– which correspond to the dialectical and multiple unity (*ego-corpus*) that withstands neurophenomenology. According to his, Varela didn’t stop putting his own signature on it, because his neurophenomenology was even more radical than the theoretical reflection on matured Husserl’s *lifeworld* in *Krisis* and who never gave up its Cartesianism (Chapter 4, 2.2.). Neurophenomenology is not a lagging enterprise or some kind of a posteriori theorizing about life. Recalling our methodological principle, it is the experiential and experimental phenomenological and scientific study of human life while we experience in lifeworld. Varela was shrewder than Husserl, attributing to the phenomenological tradition the most cutting-edge investigations and procedures pushing cognitive (neuro)sciences, a fact which would certainly have been anachronistic in the Austrian philosopher.

It goes without saying that Husserl is considered as one of the most prominent phenomenologists in his role of founder of this method of consciousness. This very distinction shouldn't lead us to think that his disciples may be avoided in our investigation. We highlighted, thus, both the surfacing and the overcoming of post-Husserlianism, as Varela put it (Chapter 4, 3.1.), referring in particular to Heidegger and Merleau-Ponty. Both philosophers, as the neuroscientist praised, "underlined a pragmatic and embodied context of human experience, but in a purely theoretical way" (Varela, Thompson & Rosch, 1993: Ibid.). This was noticeable in Heidegger, who created a *Dasein's* ontological and existential analytic, but not –this was what Varela uncorked– a transdiscipline of lived experience in its immediacy and more direct evidence and self-interpretation in the concomitant functioning of the body. For his part, Merleau-Ponty was academically obliged, like no previous phenomenologist, to the treatment of embodiment at the sight of science –this was a key influence in Varela–, but keeping the distant disposition in relation to abstraction. On the contrary, Varela –and Gallagher even more– proposed to bring phenomenology to scientific experiments. Because of this, his neurophenomenology was pugnacious but also coupled with postmodernity. It was coupled with this transdiscipline by questioning the solitary paradigm of consciousness and the instrumentalist-objectivist rationality. It was pugnacious given that Varela's neurophenomenological remedy was not envisioned in the shape of a resignation of scientific and methodological meticulousness.

Having said this, neurophenomenology is not, as in the vulgarization of psychoanalysis (Chapter 4, 3.2.), a symbolic and subjectivist study –in second-person– of a subject's fluctuation of experiences, in such a way that, oddly enough, it's narrated in a subjectivist report (curiously from the first-person point of view). On the contrary, we showed that Varela was a partisan of the rational systematization and neuroscientific *empirization* which are distinguishing features of his hybrid approach –even more inclusive than the psychological one– applied to lived experiences,

particularly those concerning “vigilant attention” (*attention vigilante*) (Chapter 4, 3.3). Varelian *awareness*, unlike mindfulness or Buddhist meditation, was waylaid in a more scientific manner, that is, as a cognitive prime act requiring a rigorous exploration of lived experience in its neurobehavioral phenomenality.

In relation to this, we want to establish in these conclusions that the phenomenological turn, in addition to its fabled pedigree among continental phenomenologists, showed a well-known neurobiological lineage. In the *fifth chapter* we made advance both the second part of the thesis and the fourth chapter by consummating the other aspect –the scientific one– which categorizes the double term “neurophenomenology”. It was, then, our determination to press ahead with the neurobiological bases of neurophenomenology, by comparing them with the intellectual biography of Varela as a scientist. We made a chronologization of his work which is, without hesitation, really novel since it connects neurophenomenology with the rest of the author's career as a biologist. After all, neurophenomenology –and the turn effects that carries our favour– are nothing but the result of the intuitions, requests and hard work of a neurobiologist who, without defecting from his career, pushed himself to the limit by dismantling the monodisciplinary bias in which he was institutionally educated. We dare to conclude, then, that neurophenomenology was developed in a triple biographical-systematic development in accordance with the three stages of the Chilean's academic career and with the systematic and historical method of our doctoral work. In the first stage (Chapter 5, 1.), which goes from 1963 to 1986, the Varelian youth work together with Humberto Maturana converts the biology of cognition into a decorous foretaste of neurophenomenology, by welding the epistemological aspect with the biological one in the same cognitive activity. All this was done in a very uneven way with regards to those who limit themselves in a monodisciplinary way of doing the biology of the mind (Cf. Gazzaniga, Ivry & Mangun, 2014).

Being at the base of the experiential and experimental *unum multiplex* of neurophenomenology, which was always dialectical and multipl), Maturana and Varela thought that cognition could only be explained by cognition, which didn't mean a cognitivist posture –rather a post-cognitivist one (Cf. Gomila & Calvo, 2008), as we pointed out elsewhere (Chapter 5, 2.1.)– nor a biologicism, since cognition is, seamless, embodied life –*process*– and cognitive life –*function*–. In other words, we can't reduce, in the living autopoietic system, neither the process to the function, nor the function to the process. But, in Varela, this stage, along with his countryman Maturana, was emphatically empirical. Indeed, the empirical study of the nervous system and its brain required them to protect a biological phenomenology that had undesirably been enclosed in scientist frontiers (Chapter 5, 2.). Against all kind of *brainism*, the encephalon, unitarily diverse in its very hemispheres and areas, integrates a more complex system –such as the central and peripheral nervous system–, in unity and co-dependency with remaining systems of the total human organism. The total autopoietic structure is, therefore, irreducible in its processes and operations; if we understand it as a structure with unity and autonomy in physical space and time. Consequently, it prevails the condition of systemic unity habitually accredited to the nervous system (Chapter 5, 2.2.). In this way, the structure preponderates to the internal, external or behavioural components –Varela was warning about the ruses that are related to that– of the nervous system, triggering (*gatillando*) the changes that its structure can accomplish depending on itself.

We believe, moreover, that in this first stage prior to neurophenomenology we could read a very striking and vigorous *experiential structuralism*, which was –we can't deny it– harshly different from the mathematizing and meta-experiential structuralism formalized in the last decades. This is then a material archetype of the experiential and experimental life –also susceptible of a post-cognitive and post-connectivist accent– coming from an immanent structuralism related to the nervous system, just like it was expemplified through the *neuron*: in

Maturana and Varela we saw that structurality, systematicity and autopoietic quality occur in the neural micro-level, what made us to derive this very quality to the entire nervous system.

In addition to this, an operational closure and plasticity (Chapter 5, 2.4.) is repeated billions of times in the brain, by the means of their imperceptible neuronal autopoietic quality. This is an example of the fact that young neurobiologists didn't reject localism, although they always appealed to larger scales of irreducible complexity. In fact, the nervous system operational closure marries more with the integrationist theories (Cf. Tononi, 2012), than with the connectionists versions. This statement unlocks young Varela's irreducible choice for biological phenomenology and for his elder one in favour of a phenomenology guided by Husserl's mind-sets. The nervous system ceases, then, to be seen as a mere machine that processes stimuli as a compound of pieces and physical-chemical elements, in order to treat it as a structuring and structured organism which is ductile and producing in a continuous operational change, not in despite of but thanks to its physical-chemical components. The nervous system is a self-producing/realizing whole (and not, at any case, a non-partitive device) which take part in our lived embodied whole.

We also reconnoitred –in the second stage (1986-1996)– Varela's intellectual evolution, evolving from his renowned work as neurobiologist to the Parisian expertise in cognitive sciences as an interdisciplinary domain (Chapter 5, 3.). The scientist consecrated himself as a cartographer of cybernetic, cognitivist, emergentist and enactivist neuroscientific movements in order to leverage, in each one of them, the best skills for his own research plan. We saw how the Varela of those years, director of research and professor in Paris, was proposing a cognitive science concentrated on *embodied action* and *consciousness*, an issue which was undeniably missed in the beginnings of these sciences. In spite of everything, the Chilean neuroscientist had not yet formulated an original methodological remedy for the hard problem in that epoch, that is to say,

an antidote minimally prescribable against the dysfunctions of those movements (whose rule of thung was working in separate segments of reality) with which the Chilean expert entered into dialogue.

Varela imported the biological notions of co-emergence and self-organization to the cognitive sciences palestra (Chapter 5, 3.1.), for which reason we could conclusively admit that he was one of the first –one can’t axiomatically affirm that the he was the first one– to introduce enaction in these sciences (Chapter 5, 3.2.). In fact, he recounted on different occasions having created with Maturana the neologism of autopoiesis. The enactive approach is, precisely, the recouped linkage between this second Varela and that of neurophenomenology, inasmuch as enaction means “a natural mutual fold/unfold of the organism and the world” (Varela 2000: 180) in the cognitive living system living and its immanent structures. If we look for a methodology to study experience, it should be as consonant as possible with the eclipse of dualisms that the Chilean neuroscientist saw confronting each other in neurocognitive methodologies.

But we had to arrive at the birth of neurophenomenology itself. The third stage spanned since 1996 –the year of Varela's famous programmatic article– until 2001, the date of his fateful death. In this way, we affirmed that neurophenomenology was, in loyalty to the Chilean expressions, a *middle way (via media)* between cognitive and ontological extremisms (Chapters 5, 4), which Varela had already examined in the previous stages of his career: if the enaction was considered as an endogenous and exogenous activity, neurophenomenology could’nt be less consistent with the “between-two” (*entre-deux*) (Varela, Thompson & Rosch, 1993: 310) of the lived experience methodology that the Chilean expert was anxious to articulate. We can say, concluding this, that neurophenomenology is heuristic and experiential-experimental and not, *primo sensu*, ontological. Hence, we faced several fronts that authorized us to better surround the contours of neurophenomenology. Facing foundationalism (Chapter 5, 4.1.), as it was undertaken by other specialists (Cf. Bitbol, 2012), Varela’s

program supports the *lack of foundation* (*absence de fondement*), since the presumption of incorrigibility of a predefined foundation could paralyze the consideration of the integral human experience. Neurophenomenology contributed, in contrast, to furnish an “interpretive framework” (Varela & Shear, 1999: 14) aimed to be as integrative as possible for the examination of lived experience, so that perhaps –we could conclude this accepting some contestation on the part of the reader– this framework could be the *most* inclusive one until the days that now take place.

Facing the mind-brain identity theory (Chapter 5, 4.1.1.), Varela subscribed to mind-brain correlation thesis (Cf. Blutner, 2015), although he preferred the term “*constraint*” (*constrñimiento*) more than “*correlation*”, given that the irreducible unity of embodied lived experience. But what the Chilean neuroscientist didn’t sanctioned was the statist and fixist identification in terms of being: living reality is dynamic and we naturally experience it in that manner. Neither, as far as the phenomenalist fallacy was concerned, Varela didn’t accept the doctrine according to which from sensory experience one must derive with logical and scientific necessity the identity of being of subjective phenomena. If Varela were alive, we’d like to ask him if his youth emergentism –still latent in his enactivism– was truly free of the ontological identity: Does the emergence of qualitative states, processes and events of experience suppress causation in *ordo essendi*? Are we, again, before the emergentism of an unknown Humean causation; even if the products of conscious experience are, since they are living events, irreducible? Regardless of Varela’s answers, his enactivism was fixed in the autopoietic actions of the human living who experiences as an embodied *unum multiplex*, and not so much in a separative meta-physical scope.

For this reason, we proposed in an original way that Varela's attempt was, according to his characteristic enactivism, to outline an experiential and experimental monism or even a “matrix experientialism” (*experencialismo*

matriz) (Mejía Fernández, 2017b: 188), quite different from Lakoff's and Johnson's ([1980] 2003) theoretical and semantic experimentalism. His proposal differed and alleviated ontological dualisms and reductionisms: the ego, according to the Chilean neurobiologist, is elusive because it folds and unfolds its intrinsic organicity in the extremities of his own embodied enactive lifeworld. We experience the unbreakable unity of us and life by the means of a subjective modus, although not in the manner of an ontological monism: living doesn't mean ontologizing. Although we live them in a certain unity, the experience and the embodied-ecological lifeworld are irreducible to each other. Hence, it always remains a dialectic tension in the enactive experiential and experimental *unum multiplex*, given that it is lived as immanent and transcendent, what asks neurophenomenology for exploring this particular *unum multiplex*.

Varela's monism rejected radical ontological terms, in such a way that there was no identification nor separation in embodied lived experience. According to his, Varelian experiential and experimental monism is in close consonance with "radical embodiment" (Varela & Thompson, 2001: 418), understood as a neurophenomenological non-identityist and non-rupturist commitment in the neuroscientific domain (Cap. 5, 4.I.I.1.). The neuronal assembly, the phase-locking and the large-scale neurophenomenologically trained experiments concerning a "mentoscience" (Cfr. Northoff, 2014) which corroborates with great evidence the Varelian project. In the Chilean's exceptional monism, experience and life cogenerates (coprincipates) and constrains each other in a radically embodied enaction, having no place for foundationalism, phenomenism, identityism or dualisms (Chapter 5, 4.I.I.2.). In fact, Francisco Varela's notion of experience opened up, not just semantically but also in its quantitative-descriptive modelling, both the phenomenological subjective experience and the scientific empirical experience. Varela was not a semanticist but a vitalist and biocentrist of experience.

3. How the turn is being carried on today?

We deem very suitable to affirm, in a strict and firm way—in derivation of the SH₃⁵ of our General Introduction—, that Part III can't be short on our thesis. The phenomenological turn, activated by Francisco J. Varela, was not liquidated in his germinal efforts. The turn continues to be stirred today by very diverse intellectuals, among whom—already included in these doctoral pages—we designated with more effulgence Shaun Gallagher as one who, without undermining other authors' category⁶, is the one who is forging one of the proposals, at the same time more prolonged and more critical, of the Varelian phenomenological turn.

Just one year after the paper of the Chilean author in 1996, we documented that Gallagher (1997: 197) already supported, in the same journal in which the neurobiologist published, a “mutual enlightenment” of phenomenology and cognitive (neuro)sciences. Currently, the Irish-American thinker is one of the few in which one can find a neurophenomenology itself, which is judiciously allowable and insinuating, based on the non-reductionist naturalizing assumptions that we reported on Part I. This naturalization, as we stated in chapter six, was mutually identifiable in Varela and Gallagher; although the second one has been perceptibly influential in transferring the Varelian turn to new scientific fields, where the gatherings of neurophenomenology have been cautiously evaluated and pertinently qualified. The professor of the University of Memphis chooses this approach aspiring to a graduality and lessening of conscious experience, improving our acquaintance on body schematism. Gallagher is, in truth, a minimalist of the self who seeks a consistent phenomenological turn in cognitive (neuro)sciences.

⁵ “The above turn has been updated and ripened, without injury from other authors who claim a similar action, by the Irish-American professor Shaun Gallagher, in a determined intellectual and historical context”.

⁶ It would be very interesting to write a thesis only devoted to the continuation of the phenomenological turn in Thompson, Depraz, Di Paolo, Lutz, Cosmelli, Bitbol etc.; which would be quite different from ours, although it would obviously spring forth from our current systematic research.

We struggled that Gallagher is a critical *post-Varelian*, if by this we mean his commitment to naturalization, assumed in a much more integrating contract than the simple formal cooperation between phenomenology and science. The Irish-American's post-Varelianism is, simultaneously, *continuatio* and *innovatio* by inclining the phenomenological turn towards sciences and revising obsolete postulates according to the present extent of these sciences. We can't but pact that there will always be a before and an after from Varela's contentions in reason, definitely, of the paradigmatic change of its neurophenomenological approach; which resurged in the incandescent crater of tenets, precomprehensions and methods of cognitive (neuro)sciences.

Gallagher himself has confessed to us, almost before closing this thesis, that Varela has been one of his great masters: his non-reductionist boldness was, in reason of his time, context and repercussion, simply unequalled. His personality was not at all dull thanks to his willingness to take risks and act innovatively. Gallagher's investigations, to which we gave the floor in Part III, have legitimized us in the idea that Varelian non-reductionist and transdisciplinary serendipity continues to endure; although in current and reviewed explorations belonging to an even *more radical enactivism* that looks for enaction in cases of cognitive functional diversity or in convalescences afflicting the self. In the sixth chapter, as we gave voice to Gallagher, we dealt with the aspects both protracted and diverged in comparison with the Chilean neurobiologist. For this reason, we can finalize these conclusions by stipulating the *seven points* of that chapter.

In the first point (Chapter 6, 1.), Gallagher, a significant and intimate Varela's colleague, defends the turn towards phenomenology since it is a *method* for re-examining, socially and narratively, subjective phenomena; instead of having it as a doctrinal and dogmatic script that imposes what these phenomena must be. Phenomenology, as a method of/in experience, may respond to a "neo-pragmatism" (Gallagher & Miyahara, 2012: 499)

with a methodological and refining-embodied function in the social-historical *milieu*: social cognition is hence much more accentuated in the Irish-American philosopher than in the Chilean neurobiologist, who was still very idiosyncratic in its methodology. For one and for another function, Gallagher appreciates so much the *epojé* and the phenomenological reduction, as well as the intersubjective corroboration; since he confines them with the present paths pondering radical enactivism and social cognition.

As we have brought to light in Varela, in the professor of the University of Memphis, transcendental, *in partibus infidelium*, is a feature of the *new naturalization* in the same turn that he himself makes subsist (Chapter 6, 1.2.): in addition to the importance of the empirical dimension, the transcendental dimension –always understood in an embodied way– “is more fundamental” (Gallagher, 2012b: 26); because it opens up new and more integrated perspectives testing the narrowness of phenomenology and science. But concerning new naturalization, transcendentality is not the synthesis of a pure self outside the lifeworld and the human flesh, nor a plan B when science fails; on the contrary, it sanctions us “to have a non-reductionist science of the embodied mind” (Gallagher, 2010a: 21). Gallagher’s radical enactivism, which is “even more embodied” (Gallagher, 2017b: 150) receives a greater socialization, ecologization and multidimensionality than the Varelian one. The radical enactivism of the Irish-American scholar is so far away from a *weak* and *strong embodied cognition* – which is still a representationalist cognition, according to his view–, as well as from a first and second wave reigning in *extended cognition*. Gallagher extols the irreducible and continuous multidimensionality of the cognitive system in the environment, through an affiliation to a *third wave* in these respects. Gallagher don’t want to bury the irreducibility of the experience that Varela snatched, but to presage us that, outside of the optimal health conditions of the subject, the experience might be lived as marginal, strange or dysphoric on case-by-case basis.

On the second point (Chapter 6, 2), apart from the Francisco Varela's Husserlian uniqueness, we clinched that Maurice Merleau-Ponty has been the phenomenologist who has most marked Gallagher's work program, pointing his research to a transdisciplinary redefinition of phenomenology(ies) and cognitive (neuro)sciences, provided that an uncluttered pluralistic eagerness could be guaranteed in his name. Following Merleau-Ponty's exemplariness, it should be accomplished an "impure phenomenology" (Gallagher, 2010b: 184) supporting the plurality of phenomenologies which is impossible to gag in a single author and movement. In this great phenomenologist, it was possible to find "the facticity of the body, the medium that we are, and that puts us in-the-world, [what is] central for understanding human existence" (Gallagher, 2010b: 183) and, without a doubt, for an embodied phenomenology, along with the urgent knowledge of science in order to interpret what they elaborate: phenomenology and cognitive (neuro)sciences shed light in a reciprocal way. The "Cognitive Revolution" (Gallagher, 2012b: 16) has been joined by the *embodied revolution*, which we ferret out in Merleau-Ponty. However, as a caveat, this thinker made an indirect and retrospective phenomenology, which doesn't reach the same quality and excellence of those who do neurophenomenology and front-loaded phenomenology *in situ*.

In the third point (Chapter 6, 3.), we made accessible one of Gallagher's most relevant propositions: the body shaping of the mind. We remembered, then, his 2005 work *How the body shapes the mind*, which is in unequivocal contiguity with his declared proximity to Merleau-Ponty. A neurophenomenology of embodiment is only devisable through the body structuring the manoeuvres in and beneath experience. The body receives an active inscription in what we experience, upsetting –mainly– our affects prior to higher-order functions or mental events superimposed by the self in a reflective manner. Therefore, we haven't been able to omit (Chapter 6. 3.1.) the chief distinction between "body image" and "body schema" (Gallagher, 2005: 19-24): the first one constitutes the system of behaviours

that belongs to one's own body and which is pre-reflectively experienced; while the second one involves the sensorimotor capacities –experienced or not– of this same body. The difference between the two types of this distinction is not, in an unsophisticated way, between the conscious and the unconscious, the subjective and the objective, or even between the phenomenological or the scientific sides of the coin; since Gallagher maintains that body schema can be occasionally made conscious, although there are pathological cases –hemispatial neglect, agnosia, autotopagnosia, schizophrenia, etc.–, which frequently impede a higher experiential level. The distinction between body image and body schema is very advantageous in cases in which both flanks can't be phenomenologically narrowed, for which reason it's necessary to demand the succour of the psychopathological or neurological catalogue. Hence, it is noteworthy that, in Gallagher, we find the contention of a *minimal self-awareness*, understanding the self as a core pattern of the remaining embodied, extended, embedded and ecological patterns, which depends upon an *ipseity* that belongs to the nuclear self between all those dimensions.

In the fourth point (Chapter 6, 4.), we gave an account of the Gallagher who is at the same time more and less Varelian. As the author stressed, neurophenomenology is a renowned contribution performed by Francisco J. Varela, which integrates –in a methodological tripod– (1) a phenomenologically analysable experience in first-person and the second-person training of an expert, (2) the empirical and interpretive input of the theory of biological dynamic systems, and (3) the empirical experimentation of the biological correlates coming from third-person's point of view. This aims to generate new descriptive categories that should be as validated as possible between subjects and different approaches of cognitive (neuro)sciences. Despite his sweeping sustenance, Gallagher replies to Varela that experimental design has to be arranged with more precision and carefulness in those cases in which subjects's training may be more puzzling and challenging –psychopathologies, cognitive functional diversity, brain injuries, communication and learning impairment, etc.–. In

this way, something that we noted without fear in this author (Cf. Gallagher, [2005] 2007a) was that he delightfully differentiated neurophenomenology from neurophilosophy, since the first one doesn't require an intertheoretical reduction –very conceivable, of course– that eliminates the psychological and subjective theories in favour of the scientific ones, by means of a stubborn conception of empirical sciences as *tertium exclusum* with respect to all subjective or humanistic approach.

For the rest, Gallagher has established three counsels for Varela's neurophenomenology: (1) the necessity to fashion a shared mental model, (2) an experimental design with high quality standards, (3) and the training improvement –when possible– in participants and experimenters. But not everything is darts against Varela. A nice sample of Gallagher's proclivity towards neurophenomenology was his questioning of the synchronic decline of this approach, in a sort of indirect phenomenology similar to Merleau-Ponty or Braddock style (Chapter 6, 5.), since we unfortunately lost some of the previous tripod points. The shortage of coordination that auguries an indirect and retrospective phenomenology, or even a Dennet's heterophenomenology based on a rarely neutral third-person methodology, remains a dualistic and reductionist execution that is admonished with forcefulness in the phenomenological turn that we've been drawing in our thesis. In the interest of instituting a more scientifically involved third proposal in design and direct adoption of the phenomenological *philosophia prima*, the professor of Memphis channelled his thinking towards a front-loaded phenomenology (Chapter 6, 6.), provided that this approach could be design in independence on subject's cognitive capacities –skilled or not– to make phenomenology. This phenomenology, mounted without too many postponements, is typical of the professor of Memphis because it constitutes a “third vision” (Gallagher, 2003: 91) between neurophenomenology and indirect phenomenology.

In the case of not having a compensated experimental planning in subjects's training or in empirical results, we are legitimized to "introduce phenomenology directly into experimental design", so that we can drive, in the possibility of lacking the challenging Varelian conditions, to a "experimental design" (Gallagher, 2003: Ibid.). What we need, then, is to originate experimental protocols under phenomenological direct spotlight, which can be more specific and convenient in complex cases, where subject's mental training ability can't be sanctioned in high preparation levels. Here, then, we appreciate Gallagher's great realism –obviously, not naïve– and his professed neo-pragmatism, showing a distinctive trait that uncovers the limits of neurophenomenology (Chapter 6, 6.1.). Prior to the already presumed subjective ability to participate in Varelian neurophenomenological experiments, the previous design of these experiments must be predisposed, in despite of not having the highest phenomenological requirements for trainers and participants that Varela claimed for in his neurophenomenology.

Another illustration of Gallagher's realism and neo-pragmatism is that he contemplates, like *rara avis*, the sense of agency and the sense of property in the application of front-loading phenomenology (Chapter 6, 6.2.), which we unfortunately didn't find in Varela. Gallagher, as a consequence, don't aspire to simplify things either. We indicated that, in the the sense of agency case, the pre-reflective –but in some case *reflexive*– experience of embodied action (the movement of the body and first-order aspects) have an original dwelling in the phenomenological turn critical continuation in which Shaun Gallagher is implicated. All this don't come into collision, although it does vary according to each experimental case, with the I that is agent, to a greater or lesser extent and experience, of its motilities and somatic movements in the sense of property.

Neither the sense of agency nor the ownership are blurred or relieved, in the *unum multiplex* of the living system, by the reflective attributions of agency and ownership (Cf. Stephens & Graham, 2000): the *top-down* and

the *bottom-up* explanations (Chapter 6, 6.3.) constitute complementary analysis levels in the same multidimensional enaction of the living system. Here one can realize Gallagher's radical enactivism. Thus, the type of experience, whether high or primary, entails a type of phenomenological approach that should be in compliance with the experiential modality. In the case of the primary type, one can scientifically distinguish between the sense of property and that of agency, as seen in the Farrer & Frith (2001) experiment. Therefore, Gallagher (2003: 92) gave way to experiments where there is no alleged place for a "higher order cognitive processes".

However, front-loading phenomenology is envisioned to cover, in a more concretized experimental design, the most heterogeneous, spontaneous and daily degrees of experience; so that we could play attention, in debt to its boundary and valid transcendental, to the "imaginative variation" (Gallagher 2003: 93) and the experiential plurality of perspectives (Chapter 6, 6.4.). This plurality, inculcated from the first-person point of view, adds other perspectives to the first and third-person stances, including both egocentric and allocentric ones. In the Irish-American professor, therefore, we are able to contemplate how cognitive (neuro)sciences can challenge phenomenology in cases in which, as Husserlian phenomenology set it, they concern pre-attributive and kinaesthetic field—in an experiential *minimum*—, and not for this reason being outside of all kinds of phenomenology. This pronouncement aids to modulate and adapt, more rigorously, the delineation of our research. In fact, Gallagher has been insisting that his front-loaded phenomenology, in contrast to the Valerian neurophenomenology, is basically thought and practiced for experimental design, being also valid for other animals than humans; as may be other homeothermic vertebrate amniotes with some kind of experience—as in the case of chimpanzees, for instance—.

Finally, we want to put an end to our thesis by providing a clear example of Gallagher's open-mindedness: he's been coining a neurophenomenology of awe and wonder in the domain of astronautics (Chapters 6, 7), which

follows the trace of non-reductionist cognitive (neuro)sciences in an unique collective work (Cf. Gallagher's et al. 2005). The authors combined, in that book, front-loading phenomenology –when designing complex experiments in a Virtual Space Lab (VSL)–, together with a neurophenomenology of the experiences of awe and wonder during the concurrent involvement of participants in the simulated space experiments. Gallagher, as if that were not enough, conducted monitored interviews with the participants just after their immersion in the simulator, in order to gain a more phenomenological intimacy in the experiences of awe and wonder that they there lived. This has allowed Gallagher and us to consecrate, trying to overcome the obstacles, the unthinkable applications and pragmatic transversalities of the phenomenological turn in much more disciplines than the neurocognitive ones. In short, we believe, honouring our General Hypothesis (GH), that the phenomenological turn in cognitive (neuro)sciences has been abundantly contrasted in this book.