

**NEURO-ENHANCEMENT AND THE NOTION OF LEGAL RESPONSIBILITY**

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## Abstract

This thesis sets out to critically examine the relationship between neuro-enhancement and the notion of legal responsibility. Considering various advancements in neuroscience some authors (Dawkins, Greene, Sapolsky, Chasmore and so on) argued that autonomous action and responsible behavior is definitively undermined. Moreover, recent developments in neuro-enhancement technologies were supposed to compensate the loss of the autonomous legal subject as well as modification of individual behavior, and thus avoid various delinquencies. In contrasting these stance, this thesis presents a fourfold argument: a) it argues that the notion of responsible legal person or autonomous subject has not fallen in the aftermath of findings in neuroscience; b) it expounds the pertinent possibilities offered by neuro-enhancement in transforming legal behavior; c) considering current results in the field, it propounds behavioral patterns as well as factors constituting the notion of responsible legal person as such; and d) it explains the degree to which penal systems might be affected by advancements in neuroscience and eventual prospects paved by pertinent findings. Finally, this thesis, presents a scholarly contribution on proving that the notion of responsible legal person still remains intact and without viable alternative.

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## 1. Introduction

According to Dawkins, the mechanistic outlook of the nervous system essentially discards the conception of legal responsibility. This implies that retribution as a legal principle becomes totally incompatible with scientific explanation of human behavior; hence, the fundamental purpose of law might be to provide prevention, treatment, deterrence or removal of dangerous individuals from social environment (2006). Analogously, scholars such as Greene, Cohen, Sapolsky or Chasmore maintain that classical methods of retribution are seriously contested, considering that the notion of legal person is undermined in the light of the ever-advancing developments in the field of neuroscience. The structure of criminal system, they argue, needs being revised accordingly (Vincent 2013, 3-4). Moreover, in Dawkins' eyes, this process inaugurates the enlightenment ideals which maintain scientific advancements.

Considering that general progress in neuroscience might entirely disfigure the autonomous nature of human subject, Habermas went even further in suggesting to eventually curb pertinent investigations – a proposal which, so to say, ironically makes him adopt certain obscurantist 'anti-enlightenment' stance. The main issue at stake is not merely that rigorous inspection of the alleged ongoings in neuroscience would be practically impossible in the times of dispersed researches and diverse sources of scientific knowledge. Instead, deciding to abandon scientific evidence in order to protect the autonomous individual entails that, scientifically, human autonomy would be radically questioned (Daly 2004, 92-94). The principle of responsible and autonomous person would definitively be displaced to extremely fragile bases and entirely contested grounds.

Habermas prominently reacted against the unconstrained subordination of human behavior to biotechnological manipulation, as it undermines or subverts the very capability of 'being oneself', namely, the sense of personal original authorship over ones own action (2003, 53-58). Manipulation of genetic or neuronal structure of humans will imminently affect capability of 'being oneself', hence risking the essentials of communicative action based on symmetric and mutual recognition (ibid. 63). Nevertheless, following the pace of developments in the pertinent field, the exclusive alternative at disposal seems an open-minded confrontation with the whole

range of consequences, including the revision of normative structures, or in this case, the reappraisal of the said penal-legal values.

Enlightenment's discourse is much defined according to the univocal affirmation of the autonomous and reasonable subject, as well as the self-reflective attitude in adjusting its framework given the radical 'anthropological insulations' (recall the notable triad: Copernicus, Darwin, Freud), which entirely transformed the conception of human subject as centripetal reference of whatsoever discourse. Neurobiological account, meanwhile, seemingly provides the last stroke on the human 'narcissistic self-perception' while reducing the human being to a complex bio-chemical machine. Therefore, by questioning the notion of responsible legal person, developments in neuroscience might exert a larger impact than usually thought, particularly in the domain of jurisprudence. Accordingly, the challenge of this text is to critically elaborate on the alleged challenges of responsible legal person as well as contributing in the field by proposing an alternative explication of the responsible legal person, while always considering the climacteric developments in neuroscience, including the possibilities of neuro-enhancement. This also entails radical questioning of numerous and widely used concepts and definitions regarding the relationship between legal responsibility and developments in neuroscience.

Morse, for instance, argued that determinism in itself does not impose an imminent challenge to the legally responsible person, hence liability, since even epiphenomenal consciousness might operate with reason. Determinism, therefore, also might account for the criteria of justification which are elemental in constitution of legal-penal systems (2013, 40). Alternatively phrased, Morse contends that if rational disposition is inferred from one's behavior, that person might be held responsible regardless of what neuroscience can indicate regarding the issue at hand (Morse 2007, 200). Although in a different context, Gazzaniga maintained that normative structures – including the conception of responsibility – cannot be expounded from the cerebral structure of the brain, as the former essentially results from the social contract (2008, 413).

However, as manifested in legal discourse, it seems that consequences stemming from developments in neuroscience are directly pressing on the fact that revealing the cerebral structure and pertinent functions is not simply reducible to explanation of given physical region but rather pointing to content of individual behavior, nay transformation the entire range of attitudes, hence questioning the foundations of autonomous legal person as fundamental

postulate of legal responsibility. Moreover, developing knowledge on the neuronal substrate of individual attitude does not merely entail the possible decryption of behavioral content, but also various manners in which it might be modified or altered. Numerous scholars, though each in their own understanding, are increasingly employing the terms transhumanism/ posthumanism while indicating the possibilities to reshape cognitive functions and behavioral patterns through biotechnological mechanisms (Ferrando 2013).

Obviously, the recent findings in neuroscience are increasingly playing a role in the forensic-psychiatric institutions within penal systems, peculiarly when defendants' mental disposition is assumed as impaired (Rogers and Shuman 2005). Nevertheless, the effects entailed from the neuroscientific advancements are not solely useful to penal investigation but, moreover, they impose discussion of available consequences, including the eventual loss of responsible agency, prevention of specific delinquencies, modification of behavior or deflection of various kinds of legal transgression. Some authors, on the other hand, also discuss the eventual institutional obligations to enhance the condition of the impaired individuals (Buchanan, Wikler 2001). Perhaps the question of neuro-enhancement lies at the intersection between the responsible legal person and its underlying physical-neuronal configuration.

Succinctly said, in confluence with current findings in neuroscience, this text elaborates the complex relationship between responsible legal person and the possibilities enabled for recuperation of physical defects, impairments or even transformation of the individual behavior. Malabou rightly holds that the issue is not simply about uncovering certain freedom within the physical structure of brain given the plasticity of brain to release this freedom and, moreover, disengaging it from numerous ideological presuppositions, which implicitly govern the whole field of neuroscience (2008, 11). Although this text slightly presses on some of the related issues, delving in such problems is beyond scope of the current elaboration.

In a nutshell, the aim of text is fourfold: a) critically elaborating on the normative basis and general framework of the conception of the responsible individual as such; b) examining the extent to which neuroscience managed to transform the individual behavior and pertinent behavior; c) expanding the notion of legal person and give an alternative account on general conditions of responsible attitude; d) discussing the prospects of the legal-penal liability and propound a different perspective for the scope of penal systems. Throughout the argumentation,

this text takes an entirely different route from Dawkins' point. The main arguments, which hopefully will make an original contribution to the field, are presented in detail in the concluding chapter.

## **2. The General Metaphysical Context: The Meaning and the Challenge of Responsible Legal Person**

The autonomous subject who bears the full responsibility for his own action in social environment is a crucial postulate to modern political discourse. The principle of autonomous individual, according to Habermas, shall be affirmed as a constitutive factor in normative discourse as opposed to the self-evident and pre-existing legal structures of the state (1990, 16-19). As modern discourse is marked by an increasing attention to the conscious subject, this predisposition is also mirrored in the sphere of legal responsibilities and liabilities, which bring augment attention on the willingness of the defendant. Concentration on *mental element* – the subjective intentional commitment – is peculiarly in the criminal responsibility and criminal liability judgment (Vincent 2013, 2). In parallel to the focus on conscious subject, however, the modern politics also developed disciplining mechanisms, which, among others, constructed the discursive frame on mental abnormalities and behavioral disorders that remained immanently related to specific power relations (Foucault 2006). Thus, scientific advancements manifested in the neurobiological sphere enabled an increasing objectifying attitude towards individual behavior (ibid.). The conscious subject itself, therefore, turned into an object of scientific investigation. There seems to be a permanent tension between affirmation of the phenomenological experience of the conscious subject and the inclination to convert it into an object of positive domain of knowledge.

Notably, Kant's legal discourse affirms the ideal conjunction of reciprocal coercion and respect for the universal human freedom. However, the Kantian conception of freedom itself is somehow ambivalent: transcendental consciousness is the ultimate course of general categories which regulate experience, hence in causal laws structuring the nature finds no place for human freedom. Seen from an empirical angle, freedom and responsible action is conceived as a fundamental ethical postulate. Given the practical situation, notwithstanding empirical external-

internal pressures, intentional action is assumingly derived from causally undetermined noumenal 'I' (Kant 2002). Thus, although displaced in practical discourse, Kant's idea of freedom, in a way, rests upon a metaphysical basis. At one point Kant (1996) even literally suggested that even if a physical disease might cause the violation of legal or ethical rules, the medical condition is principally insufficient in explaining the ill-oriented behavior. Kant's scientific revision of metaphysics – the radical attempt to extrapolate the metaphysical speculation in a necessary tenable and universal basis – seemingly paved the path for a scientific overcoming of metaphysics. Positivism thus is a side effect and not a radical departure from Kant's metaphysical speculation (Rorty 1982). Challenging the Kantian conception of freedom, historically after him, was diffracting the conception of metaphysical freedom into neuropsychiatric discourse (Kroeber 2007, 253-256). Seen from a scientific angle, henceforth, the point was to discovering the psychosomatic basis of individual behavior. This situation was also reflected in the legal-penal sphere.

As regards legal discourse, gradually the conception of diminished responsibility, given mental pathologies or impairments, turned universally into prominent principle of legal-penal codes. Numerous scholars increasingly pointed to psychosomatic disorders which diminish the role of the responsible subject (*ibid.*). Irrespective of nuances – normatively speaking – the legal person is not held responsible if incapable of understanding the wrongfulness of his action due to an internal disturbance in the nervous system. Accordingly, legal responsibility is conceived proportional to the mental capacity degree (*ibid.*, 256-257, Sparks 1964). According to one contemporary definition, legal person cannot be responsible for criminal conduct if, as a consequence of a mental defect, the capacity of understanding the wrongfulness conform his behavior to the requirements of law, is impaired to the extend which the responsible action cannot be confirmed or justified (Redding 2006).

Given various technical difficulties in measuring the exact amount of legal responsibility in a given context, some scholars even argue that developing techniques in neuroscience will provide rigorous evidence to inform the penal system in which cases the practice of insanity defense might be justifiably applied (Freuehwald 2011). Nonetheless, the consequences of this argument might go further than foreseen. Once neuroscience provides an account for empirical-physical explanation of individual behavior or strict prediction of criminal responsibility, the notion of

responsible legal person risks being irreversibly eroded. The idea, therefore, is not simply to exploit eventual benefits stemming from brain science in penal investigation, but, rather, whether this process would gradually dissolve the conception of conscious subject into biochemical function, hence annihilate the responsibility of the legal person as such. Historically, Comte purported the ‘phrenological physiology’ as an objective basis for moral discourse, relying on Gall’s vision that each innate faculty is localized into particular parts of the brain and their interaction also governs moral judgments (Changeux, Ricouer 2000, 12). Yet, as indicated, objectification of moral or legal behavior through scientific observation will inevitably question the basis of responsible subject itself. The performative attitude of autonomous subject dissolves into pre-determined cerebral functions of the brain.

It seems that an essential step to protect the notion of responsible legal person is arguing – contra physical tendencies – that conception of actions itself points not only to overt the characteristics of behavior, but also the agent’s purpose or intention: the notion of action accounts for the intentions governing personal behavior, hence it is intrinsically related to the conception of responsibility and to what someone might be held responsible for (Taylor 1964, 27-36). Therefore, as responsibility entails a self-initiated and goal-directed action, it also involves a teleological explanation and not merely a decrement of a physical one. Correspondingly, the main risk in objectifying attitude of these scientific tendencies to biochemically explain human behavior, in one way or another, jeopardizes the idea of autonomously and responsibly acting legal person. Against the dominant thought that crime might be caused by inscrutable free will of individuals, Lombroso (1911), for instance, claimed that modern science and medicine shows that responsible action does not exist in advance as a cause of a criminal act). Thus, when conscious intentional action was reduced into brute empirical explanation, the loss of responsible legal person seems eradicated from juridical discourse. Yet, following this line of argumentation, numerous scholars cited above maintained that neuro-enhancement might contribute in preventing crime and modifying (delinquent) individual behavior. Responding to this, the elaboration begins with threefold challenge: first, reviewing the current findings in neuroscience related to conscious performance and intentional action; second, assessing various possibilities enabled by neuro-enhancement to reshape human behavior; third, arguing the scope of mental action within material structure of the world.

## 2.1. Physical Revision of Legal Person: Prospects of Responsible Action

Among various experiments testing whether conscious performance is pre-determined by brain physical occurrences, evidence offered by Libet still remains a major point of reference. Briefly said, Libet shows that voluntary acts are preceded by electrical changes emerging in the brain 550ms before the beginning of the act. Individuals, meanwhile, become aware of their intentions 340-400ms after the electrical change and 200ms before the motor act. Thus, seemingly the volitional process as such is unconsciously initiated and physically pre-determined from happenings in the brain. Brain elicits an awareness of a certain event only after a neuronal activation period of about 0.5s. Notwithstanding this, Libet's experiment also shows that conscious functions could still control pertinent outcomes or physical inclinations. Therefore, in Libet's eyes, the conscious veto might effectively exert a control function and not a mere process becoming aware of a pre-determined act (Sinnott-Armsgrong, Nadel 2011, 1-9). Libet's experiment indicates that conscious performance is a sufficiently potent factor to control the brain-initiated predisposition (2004). Translating this evidence into criminal-penal discourse, still does not entail the loss of responsible legal person.

The remaining question, however, in numerous accounts, is how the volitional act might emerge from the allegedly mechanic structure of the brain. Namely, how and to what extent the conscious action is independent from the cerebral basis. Enclosing the gap between the consciousness-mind and the brain through neurobiological analysis, says Churchland, would not trigger an irreparable loss, but rather a deeper understanding of the human subject (1989, 481-482). Yet, this does not suggest that uniform reduction of conscious subject into an objectified cycle of neuronal circuits. Given the wide clinical and experimental evidence, Churchland contends that brain structure neither conforms the strict localization hypothesis, nor the holistic model of explanation. The complex brain activities, including, peculiarly, the cognitive ones, differ at various degrees and highly complex neurological factors depending on particular cerebral regions (ibid., 171). Churchland's assumption, however, is that more advanced neurobiological outlook will provide a scientific explanation of the particular content of individual attitudes and behavior (ibid. 396). By contrast, this text will take a different direction in the meantime.

Paul Churchland (1981) also maintains that neuroscience will enable empirical explanation – hence, overthrow metaphysical speculation - of personal attitudes or behavior. Thus, Churchlands’ eliminative materialism entails the radical converting of mental state or personal attitudes to a pertinent physical condition. Along this vein, as said, the postulate of responsible legal person devaluates into a mechanical component of deterministically regulated physical universe. From this perspective, responding to the aforementioned Dawkins’ claims seems extremely difficult, nay impossible.

It would be too simplistic perhaps to argue that Churchlands’ work, in effect, risks draining the whole sources of intentional and responsible behavior. Patricia Churchland, for instance, considers that the feeling of care and responsibility originates from neurobiological disposition of bonding and depends on oxytocin-vasopressin neuronal network. Subsequently, they might be modified accordingly, allowing an increment feeling of care/ responsibility and increasing proneness to learning social practices (2011). This stance is peculiarly intriguing not merely when it comes to attempts to neuronal understanding of social behavior, but also in emphasizing the possibilities to improve or transform social behavior through neuro-enhancement practices. However, to put it short, at least three questionable points arise here: first, seen from a technical angle, manipulation of such feeling without the high risk of long-term adverse side-effects is almost impossible given the extreme complexities of nervous system (Ranice 2010); second, approached from a personal angle, such bio-chemical manipulation might flatten the very concept of responsible conscious subject as, so to speak, responsible action is not merely about objective consequences but also about the authentic subjective commitment to justifiably affirm such an act. Akin to this claim, Lévinas talks about the traumatic encounter with the *Face of the Other*, which raises the radical subjective ethical responsibility (1985, 97). Experiencing this encounter constitutes the ‘I’ as the possible responsible agent as long as it shows that the Other as such cannot be objectified or externally determined. Thus, there seems to be an irreducible subjective dimension which constitutes the concept of responsibility as such; third, considered from a normative prism, the dilemma is whether pharmacologically enhanced and stimulated responsible behavior would be translated into the unreflective appropriation of social practices as well. Namely, whether the subject would automatically internalize the contingent or sporadically given rules of social framework.

Apparently, in the technological era, benefits from neuro-enhancement are undeniable. Numerous scholars, however, have argued that neuro-enhancing technologies should subjugate to human ethical standards: individual – regardless of the tremendous technological progress – the human subject shall remain principally intact and not turn into self-transforming object of brain science. Sandel, for instance, argued that biotechnologies should ultimately serve for treatment rather than neuro-enhancing purposes. This distinction, however, is more blurred than often deemed, as neuro-enhancement and therapeutic treatment might often be blended with each other.<sup>1</sup> As authors differ in interpreting the legal consequences of neuroscience, they might dissent on the effects of neuro-enhancement as manifested in the notion of responsible legal person (Vincent 2013). The main concern, however, is whether neuro-enhancement as such immediately entails the irreparable loss of authentic individual behavior as well as destruction of legal agency (Parens 2005). As the point of this text is not to solely describe the current perspectives on the related issue, it makes two interrelated assumptions: a) neuro-enhancement as such, in principle, is not opposed but rather might expand the prospects of authentic and responsible behavior; b) neuro-enhancement, in principle, cannot be deemed as an alternative to compensate the loss of responsible agency. Posterior to this elaboration, the attention turns to available opportunities provided by neuro-enhancement, as a prerequisite to proceed further with its relationship to the notion of responsible legal person.

### **2.1.1. Towards Questioning of the Authentic Self**

Modern scholarly discourse has generally aimed to unfold the intrinsic potential of consciousness as such. The affirmation of individual reflective consciousness takes the form of radical reaction to the whole range of alien forces of pressures imposed to the alleged self-founded authentic selfhood. Taylor also emphasized the relevance of the authentic individual attitude as a moral ideal implying that self-fulfillment is also related to self-responsibility (1991). However, one of the pressing questions is whether the self-reflective and authentic individual is substantially threatened or alienated in the aftermath of developing neuro-enhancement technologies (Parens 2005).

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<sup>1</sup> Recall, for instance, that improvement of vision, memory or attention might qualify as treatment as well as enhancement. Thus, restoring normal health develops altogether with enhancing personal standard performance (Ackerman 2006, 113).

True, numerous psychotropic substances have been medicinally proven to influence the content of personal behavior: selective serotonin reuptake inhibitors (fluoxetine, citalopram, paroxetine etc.), serotonin and norepinephrine reuptake inhibitors (duloxetine, venlafaxine etc.), norepinephrine and dopamine reuptake inhibitors (bupropion etc.) or numerous atypical and tricyclic drugs (mitrazapine, doxepin, protriptyline and so on) are broadly prescribed to treat anxiety, depressive or certain mental disorders (Mayo Clinical Staff 2014). Moreover, Methylphenidate is commonly used to enhance cognitive performance, especially attention; Modafinil is widely prescribed for narcolepsy, sleep apnea and recently is used to support alertness for individuals with sleep-wake regular cycles and so on, to mention but the few (LeDoux 2003, Glannon 2008, Moore 2011). In one way or another, all pertinent disorders, prevent the subject from individual self-fulfillment. Yet, the issue is whether similar sorts of behavioral modifications also entail characterological alteration and diminishing individual responsibility. Who is the 'I' – in what sense one can talk of authentic, reflective and responsible self – whose performance is constituted, say, under the artificial pharmacological influence?

Glannon argues that central to authentic selfhood is having a higher-order reflective capacity to control or re-direct the motivational state that affects the individual action (2008, 46). An individual who is capable of translating self-reflection into behavioral self-modification is essential to the authentic and responsible subject: the responsible actor might exert authorship in managing motivational states and freely direct his own behavior.

Numerous kinds of psychological frustration can disrupt higher-order reflective stance of individuals. Managing such experiences is not immediately translated into personal inauthentication. Among others, Kramer reveals the experience of the patients in whom extremely low self-esteem and weak interpersonal abilities, through gradual Prozac intake, were transformed into high levels of confidence, better communicative and working skills. Crucially, the impact of Prozac in the nervous system also affected their self-understanding, and, more, what is intrusive and pathological to her previous character (1997). This does not simply mean retrospective reconfiguration of their understanding to previous individual attitudes, but rather the radical releasing of the hidden potential in their very character. Psychotropic modification is not opposed but rather constitutive of authentic self-realization at this point: it effectively averts the contingent affective impulses, which recurrently prevent the 'I' from self-fulfillment of the

respective potential. Habermas argued that psychopharmacology might alter consciousness to the extent it affects the functions of human organism as objectified natural processes. By contrast, the experience of self-reflection induced through psychoanalytic discourse is based on the act through which the human subject relieves himself from a state in which it becomes an object for itself (Habermas 1972, 247). However, this contrast is not as rigid as it seems: the disguised potential of authentic individual might be actualized through psychotropic substance.

These experiences, therefore, are not merely ‘artificial experiences’: Kraemer argued that emotional authenticity is a *phenomenally felt quality*, meaning that the phenomenological experience of the inner emotional state defines what is authentic, regardless whether it is ‘naturally’ or ‘artificially’ triggered. Seen from the first-person perspective, artificially stimulated emotion is not distinguished from authentic experience, since under the influence of Prozac individuals might feel entirely lucid and sober, while with tricyclics or numerous monoamine oxidase inhibitors, consumers themselves feel drugged and altered (Kraemer 2011, 55-57). In the first case, such kind of behavioral modification does not entail an irreversible slide into enclosed illusive universe as long as emotional experience of individuals is rational, inasmuch the phenomenal feeling and intentional content remain harmonious (Ibid., 58). Hence, self-reflective human subject is not undermined but rather equipped with power to surmount contingent affective factors which prevent individual self-fulfilling.

This argument does not entail dogmatic affiliation with psychotropic manipulation. Such drugs perhaps proven ineffective in transforming behavior and, more, even disrupted the rational individual behavior. Given numerous clinical cases, Prozac intake also detrimentally affected communication with social environment or triggered irrational and incoherent behavior (ibid. 59-61). Perhaps the uniqueness and singular nature of personal character does not mechanically succumb to neuronal stimulation. As argued in the meantime, legal person presents also a more complex conception than biochemical mechanism. Thus far, however, the point was to show that behavioral modification does not immediately discard the higher-order mindfulness which is constitutive to the authentic and responsible behavior in general.

### 2.1.2. Phenomenological Consciousness and Neuronal Circuits

The morphology of behavior is apparently more complex than anatomical structure of the brain. The brain is comprised of  $10^{11}$  neurons and  $10^{14}$  synapses as integral constituents of a highly complex system with emergent properties (Ranice 2010, 203). Each neuron has approximately about 10.000 discontinuous contents, on the order of  $10^{15}$  contact in general, about half-billion per cubic millimeter. Thus, it is not solely difficult to perceive them even with electron microscope but, more, the neuronal universe is not exactly the same even in the case of monozygotic twins (Changeux, Ricouer 2000, 78-79). As will be argued more thoroughly in the meantime, individual behavioral patterns exceed the mechanic outlook of the nervous system. Brain sciences, meanwhile, still did not permeate into biochemical secrets of human behavior and explain the content of individual consciousness. The brain analysis seemingly does not incorporate phenomenological or first-person consciousness into objectifying and objectified discourse of science but, paradoxically, it discloses another page of the irreducible horizon of subjective experience and interpretation. One can say, for instance, that in the process of visual perception, retina converts the light into electric impulses and, then, passing through optic nerves, they are integrated into nervous system. Yet, seen from phenomenological prism, that particular image is included in specific subjective universe of meaning. As Jacques-Alain Miller (2009) puts it, even if one manages to provide evidence about the objectified individual thought, still, the subject has to subjectively integrate this fact into his own subjective-original horizon of meaning. Seen from the phenomenological angle, although consciousness occurs in the brain, there is no conscious perception of the physical brain, namely, the notion of the neuronal in itself is a mental construction (Changeux, Ricouer 2000, 44). Sartre said that everything which takes place in the consciousness can receive an explanation only from the consciousness itself (1976, 48). That is why also psychoanalysis is not entirely devaluated in the aftermath of psychopharmacological developments since, in connecting causal factors and pertinent symptoms of disease, the systematic process of hermeneutical interpretation and radical experience of self-reflection occurs, which cannot be objectified from scientific-technical explanation (Habermas 1971). The issue is merely that, scientifically said, the phenomenological or first-person consciousness is an illusive experience stemming from complex interaction of neuronal circuits but rather the very confrontation with neurosciences' objectifying attitude

which raises the radical subjective experience – namely, a self-reflective act of the first-person ‘I’ who founds the meaning of his own universe. The intended action proceeds from the phenomenological dimension of subjective experience. However, by contrast Kim argues that consciousness as such, even when deemed as an emergent system, entails an unexplainable and phantasmagoric object of discourse (1998). However, even from a rigorous physical angle, the classical conception that the cerebral cortex as a mosaic of particular regions, each of which is responsible for a certain psychological faculty, is fundamentally amended (Changeux, Ricouer 2000, 50). Reductivists might still argue that neuro-enhancing technologies might compensate the loss of responsible agency, hence also contribute to regulating individual behavior. Similarly to Spinoza’s mechanical outlook, where *conatus* raises endlessly until hindered by external matter in motion or, say, *conatus essendi*, which is imminently redoubled as self-affirming will to power (Desmond 2008, 65-66), with physical reductivism might give a raise to unrestrained performance of hyperagency. As Sandel argued, the trouble with neuro-engineering is not the loss of responsible agency, but rather the irreversible process of continuously expanding the possibilities which impose the conception of hyperagency - the unconstrained ambition or the ultimate drive for mastery (2004). Therefore, not just that neuro-enhancing desired behavior is extremely difficult, if not almost impossible, but absolutization of neuro-enhancement technologies cannot principally be conceived as an eventual compensation for authentic and responsible behavior. Some authors have argued that responsibility or the emphatic resonance via communication between representation networks and limbic areas supported by insula (Carr *et al.* 2005). Yet, the idea is that self-projecting first-person consciousness and responsible intentional behavior is broader than the complex set of physical occurrences. This argument will be furthered in the meantime.

## **2.2.Considering Basic Prospects of Neuro-Enhancement**

Various advancements in neurobiology, computational neuroscience, electrophysiology, neuropsychiatry, neuroethology, neuroendocrinology, neuropsychology – to mention some – were translated into undeniable progress in scientifically elucidating not just brain’s physical secrets but, moreover, their relation with first-person conscious behavior. Yet, despite tremendous progress, the connection between the complex neuronal network and the conscious

performative attitude remains barely understood. The extent to which aspects of consciousness are linked to brain specific brain modules, or how the former might rigorously cause the later, is still a highly disputable matter (Searle 2007, 6). Seemingly, the conscious performative attitude emerges as an irreducible reminder in the attempt to decompose the individual neuronal configuration.<sup>2</sup> This is peculiarly palpable in neuro-enhancement, which intending to bridge the physical segments with actual conscious experience, for it remains largely incapable to entirely transform or manipulate personal conscious behavior. This way, three central neuro-enhancement practices are discussed: a) deep-brain stimulation; b) psychosurgery; c) psychopharmacology, as well as neuroimaging as a highly significant factor in the legal-penal domain. Posterior to this, the emergence of mental events in material world will be discussed.

### 2.2.1. Ambivalence of Mental Universe and the Deep-Brain Stimulation (DBS)

The microelectrode stimulation implanted into the deep structure of the brain has been an increasingly used mechanism in the neurobiological psychiatry. Currently, numerous medicinal benefits are available from DBS. Numerous scholars – Pinter *et al.* (1999), Deuschl *et al.* (2002) and so on – have reported, for instance, on the effective thalamic DBS as a treating instrument for the Parkinson disease. DBS in the thalamus region can also terminate post-traumatic or multiple sclerosis tremor which is recalcitrant to random medication. DBS, for instance, is applicable in epileptic crisis treatment through the impeding of the hyperactive neuronal networks, which invoke pertinent seizure (Swaab 2010, 21-22). Overall, numerous mechanism are adopted for inhibition or disruption if the pathological overflow by DBS (Dostrovsky, Lozano 2002). However, in parallel DBS might numerous disorders in thinking and memory, characterological transformations, depressive or stern manic states (Swaab 2010). Some authors also pointed out that DBS is useful in recovering anxiety disorders and depression. Neurostimulation in the prefrontal cortex might modulate hyperactive amygdala and equilibrate cognitive and emotional processing accordingly. Still, internal and external stimulation might adversely affect the neuronal circuits which are outside of the medicinal target (Glannon 2006, 48). Given associated medicinal risks, therefore, such form of intervention shall remain

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<sup>2</sup> Oddly enough, consciousness itself neglects about 99% of the sensory inputs and the persisting question is why the function of awareness appears at all. Most of the cognitivists admit this fact as an enigma (Daly 2004, 56).

permissible solely when neuropsychiatric condition resists pharmacological or similar treatments (Ibid.). Although proven to improve behavior in numerous occasions, it seems that deep stimulation of physical parts of the brain does not enable the intended transformation of the mental universe of the first-person consciousness. Penetrating deeply into the brain, therefore, does not mean penetrating deeply into human consciousness. Among others, DBS seems to indicate a certain gap between brain's physical structure and behavioral performance. I turn to this point in the following section.

### **2.2.2. Behavioral Regulation and Psychosurgery**

Moniz claimed that interception of some cerebral links between the prefrontal lobes and segments of the brain might transform the mental process as intended. Injecting specific amount of alcohol into the subcortical white matter in the prefrontal area is supposed to result into the positive behavioral modification (Moniz 1936, 1378-1380). This neurophysiological intervention was further adopted by Freeman and Watts who practically implemented the so-called 'transorbital lobotomy'. Pressman, among others, even wrote that lobotomy offered to psychiatrists the ultimate instrument to alter human character significantly (Shorter 2005, 164). Although lobotomies relieved a considerable number of psychiatric illnesses, still they were accompanied by various neuro-psychological lesions such as personality alteration, loss of social control, increasing apathic behavior and so on (Glannon 2006, 45). Not only the likelihood of permanent damage in the brain circuits and minor adverse psychological effects was evident but, moreover, patients experienced drastic memory loss or personal attitude which affects the conception of individual selfhood (ibid., 46). In a nutshell, this demonstrates that psychosurgery did not provide medicinal mechanism to transform or regulate human behavior, but rather it carries high risks of personality disorders. Thus, although such intervention influences individual behavior, it does not give sustainable account in regulating conscious performance accordingly. Once again, therefore, conscious subject is not roughly dissolved into brain's physical structure. There remains irreducible reminder of subjective dimension of behavior that such surgeries cannot precisely capture.

### 2.2.3. Consciousness in the Aftermath of Psychopharmacology

Numerous psychopharmacological agents are shown to transform individual affective, behavioral or cognitive disposition. Most commonly, say, benzodiazepines act to calm disquiet, anxiety or depression, which might also assail the external events which disturb conscious life. Morphine might produce tremendous ‘tranquilizing’ effects, while relieving pain in being attached to receptors of substances – peptides – which are produced in brain, enkephalins and endorphins (Changeux, Ricouer 2000, 61-62). Similarly, methylphenidate is a substance which can be used to treat attention deficit hyperactivity disorder; Benzedrine yielded positive therapeutic results in intelligence and behavioral disorder; Amphetamines also might serve as an overall cognitive and behavioral performance enhancer; metamphamphetamine can increase motivation, pleasure or motoric function levels; lysergic acid diethylamide as psychedelic substance might alter the thinking process, sense of time, spiritual experience and so on (Moore 2011). Therefore, subjective disposition of behavior is considerably altered in the aftermath of manipulation through numerous chemical agents. However, this does not entail that psychopharmacological intervention in itself, marks an irreversible situation where the real distinction between subject-object, physical-virtual, original-artificial, real-stimulation, becomes meaningless and obsolete. By contrast, akin to previous remarks, it imposes radical confrontation with the limits of behavioral content and emerging possibilities of enhancing his psychosomatic condition.

Glannon argued that there are various medicinal concerns about the alertness-enhancing drugs as their exact biochemical mechanism and long-run impacts remain unpredictable. The frequent manipulation with human alertness system is tended to generate a detrimental psycho-somatic effect. Among others, the chronic use of these drugs might remodel brain synapses, alter neural circuits, and even result into permanent negative changes in the brain (Glannon 2006, 49-50). Thus, although being medicinally useful in removing affective factors which influence performative attitude, still as most of psychoactive agents they trigger addiction and disrupt the controlled behavior, hence do not provide an all-encompassing and longstanding alternative. Thus extending or enhancing of possibilities entails intensive reduction of individual prospects. So, beneath psychopharmacological enhancement, is constantly harbored the devastating circle of psychological dependence which involves individuals in various contingent bio-psychical

impairments. Moreover, Glannon contends, in parallel to medicinal issues, pharmacologically affecting cognitive and emotional abilities begs the question whether one's identity is intrinsically related to that person or that same self: if the personal cohesive psychological character would be disrupted by neuropharmacological medicaments, then it is entirely unclear *who* would benefit from this psychotropic intervention (Ibid., 51). As indicated, the psychotropic agents do not immediately implicate the characterological inauthenticity but there is such permanent risk on them. Obviously, numerous chemicals might stimulate memory storage, cognitive performance, reasoning or decision-making. Nonetheless, the point here is that its scope is narrower than usually claimed and applicable in fewer cases than randomly suggested. Psychopharmacological agents, therefore, neither entail post-humanitarian discourse providing infinite possibilities to manipulate individual behavior, nor substitute the irreducible role of psychotherapies, which imply an inevitable engagement with the personal self-understanding and their universe of meaning. Accordingly, subjective constitution of behavior is not definitively discarded into mechanical universe of lawfully regulated brain.

#### **2.2.4. The Confusing Nuances of Neuro-Imaging**

The technologies of neuroimaging were widely supposed to enable physicians' transition for the psychiatric suggestive diagnosis to the domain of objective medicinal tests and predictions (Rose, Abi-Rached 2003). Correspondingly, a closer analysis to neuronal activity of the brain was expected to reveal secrets of personal behavior. Clearly, achievements in neuroimaging technologies are not to be underestimated. For instance, Raine's studies regarding violent behavior indicate amygdala hyperactivity and reduced activity in the prefrontal cortex as opposed to the normal subjects (Raine *et al.* 2002). Analogously, although the cerebral palsy has multiple causes, neuroimaging might often provide etiology and timing of the cerebral insult (Grant *et al.*, 1997). Neuroimaging might also figure out the initial signs of amyloid plaques and neurofibrillary tangles which, in turn, mark the characteristics of Alzheimer's disease (Glannon 2006, 43). Brain scans are also used for adolescents who exhibit symptoms of schizophrenia and might provide indication for early pharmacological treatment as well (ibid). Damasio *et al.* demonstrated that the orbitofrontal cortex illness is correlated to impulsive and antisocial behavior

(1999). Granted results of this ilk, Sifferd emphasized the inescapable contribution of neuroimaging in responsibility capacity assessment (Levy 2013, 195).

Apart from these results, the role of neuroimaging remains largely debatable theme. Individual mental dispositions, be they considered pathological, are not rigorously detectable in neuronal basis. In fact, a brain scan might show solely patterns of brain activation, but this signaling does not decrypt what the individual is actually thinking (Ackerman 2006, 11). For example, Freund's penile plethysmograph was used by the Czechoslovakian Government in examining sexual orientation of self-declared homosexual recruits aiming to avoid military service (Cavanhan 2013, 206-207). Nonetheless, the interpretation of images and signals is always problematic due to various blurring lines. Thus, the objectifying outlook of a physician, principally cannot translate the irreducible first-person conscious performance which is constitutive of the personal behavior and character. As Cavanhan put it, someone experiencing pedophilic urge may never develop pedophilic want, if he is not identified with that urge in a manner in which he would be fulfilled (Ibid. 218). Similar inaccuracies might influence legal interpretation of responsibility as well. Perhaps not incidentally, numerous courts worldwide do not accept results from polygraphs as evidence (Cavanhan 2013. 10; Ackerman 2006). Moreover, as Richle pointed out, individual differences in brain activity do not necessarily produce different behavioral outcomes (Ackerman 2006.). Scholars have also raised concerns on how the neuroimaging will unavoidably corrupt privacy rights (Ranice 2010, Rose, Abi-Rached 2013, Levy 2013). Equally important, however, is the issue whether neuroimaging success in itself devaluates the personal responsible behavior. If mental state decrypted as 'neuronal text', bluntly said, there appears nothing of subjective and originally self-constituted behavior. However, in general, neuroimaging technologies remain largely incapable of narrowing the gap between subjective experience of first-person and his underlying neurophysical basis (Ackerman 2006, Ranice 2010, Rose, Abi-Rached 2013, Levy 2013). In short, brain science cannot determine the neuronal substrate of various complexities characterizing human behavior.

### 3. The Science of Consciousness: The Material Emergence of Mental Event

Having addressed the aforementioned issues, now the challenge is to elaborate the way in which one might account for the self-constituted behavior as well as the emergence of mental events. This does not mark the return into any sort of ontological dualism – rigid distinction between *res cogitans* and *res extensa* – but rather the point is arguing that autonomous behavior might also be accommodated within the materialist paradigm of explanation. The challenge is to integrate the actual findings in neuroscience and the unified elucidation of human behavior. Hence, mental and physical are interwoven but, yet, not merged or reducible to each other.

To begin with, studies in developmental psychology have shown that the phenomenon of ‘having body’ exists prior to ‘being body’ and consciously interact with the surrounding environment. Plessner, for instance, similarly argued that ‘excentric position of man’ stems from dynamic relation of having and being body in the world (Habermas 2003, 50). The development of conscious behavior, therefore, is closely related to the embodied conscious individual. Moreover, as Freinberg (2001) extensively argued, various physical perturbations might alter the individual’s relation to himself as well as the attitude toward the objective world, as in the case of various forms of anosognosia, Capgras syndrome, Frégoli syndrome, amnesia or autoscopia and so on. Freinberg also mentioned numerous manners in which the inner sense of selfhood might be disturbed in the aftermath of the brain damage or neuronal disruption, hence indicating that mental status is not easily distinguishable from the physical condition. The idea is, therefore, to scrutinize the conscious behavior in connection to brain condition.

Gazzaniga argued that subjective awareness emerges from the interaction of modular components with specialized functions of the general neuronal network. In case a particular brain region is affected, various disorders in language, thought, attention or perception might result (Gazzaniga 2009, 127). On the other hand, Uttal pointed out the intrinsic difficulties in drawing strict cerebral taxonomy of cognitive processes. He argued at length about the imminent challenges in localizing behavioral or cognitive function in a particular brain region (2001). Subsequently, the related question is not whether conscious performance is not a mere illusive experience stemming from the sporadic neuronal interaction but, more, how can the unified consciousness experience itself from modular structure of the brain? Indeed, the brain itself is

equipped with numerous mechanisms which ensure that different fragments are integrated and form a unified whole (Levy 2007, 198-199). The challenge is precisely to explain how reflective consciousness can be accommodated within the pertinent findings in neuroscience.

Kim argued that the conception of mental causation entails a radical reduction from mental to physical state. Given the scientific outlook of empirical world, Kim holds that the solely physically reducible mental properties might be causally efficacious (2004, 145-146). Still, the main dispute is whether with physical reductionism, the conception of mental causation itself – the subjective event which might influence the physical environment – will further make sense. If mental causation is reduced to physical state, then the conception of mental causation in itself is devaluated, since only lawfully functioning physical state are efficacious. Kim also argued that the content of physical state might be physically reducible as opposed to that of phenomenal states (ibid., 143-145). Arguing this, however, Kim seems to neglect the constitutive function of first-person consciousness in individual behavior, a fact which remains difficult to be narrowed in objective analysis (Changeux, Ricouer 2000, 79-80).

Kim contends that *emergentism* implies that reaching higher degrees of complexity, novel and unpredictable entities appear within material world, respectively, throughout the process of material emergence develops in parallel with gradually forming the hierarchy of more complex novel properties.<sup>3</sup> Analogously, as emergent properties are not reducible to their simpler constituents, the consciousness performance is not reduced to the interconnection of electrochemicals in the neurophysiological process. Numerous scholars maintain that consciousness itself is an emergent phenomenon deriving from the hyper-complex and dynamic interaction of hierarchically organized units of the brain (Feinberg 2001, 124). In fact, emergentism as an inherent phenomenon in biological systems has been variously elaborated (Mahner and Bunge 1997). Against Kim, the point is that the mental causation not simply transcends the lawfully regulated physical order, but rather within the material order itself there are constitutive emergencies which, among others, also enable the occurrence of original mental events.

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<sup>3</sup> Illustratively, the emergent system is water, since the utter transparency or wetness are not qualities applicable to a single water molecule, but to the aggregate matter of water as such (ibid. 136-137).

Numerous scholars have argued that the responsible or the intentional behavior is even possible within the realm of scientific outlook of reality since: it might be independent from naturalism as with ‘uncertainty principle’ in Heisenberg’s quantum physics (Libet 2001, 7); individual freedom has been evolutionally developing like all other features of biosphere and, more, it exerts the evolutionary and creative function in itself (Dennett 2003, 304-305); as in a microscopic scale, the quiescent empty regions of the universe are intrinsically uncertain and frenetically active in exchanging quantities and form of energy and momentum, the uncertainty principle is seemingly a promising foundation for human freedom (MacGregor 2006, 100); consciousness is not a random entity within the natural world, but it should be considered a primordial constituent of nature itself, just like electromagnetism or gravity (Chalmer 2006) and so forth. Crucially, MacGregor even argued that roots of human autonomy are deep-seated within the mesoscopic realm of neurobiological configuration (MacGregor 2006, 103-104).

In a nutshell, this range of argument does not simply presuppose that first-person consciousness is definitively subordinated to the mechanical explanation but, on the contrary, they point to radical efforts to provide the significance of intentional subject acting within material world.<sup>4</sup> Davidson, bluntly said, claims that some segments of matter resists being lawfully interpreted. Accordingly, he argued that there are no strict deterministic laws based on which the mental events might be predicted and explained: the mental events as intentional actions occur within the anomalous structure of the matter itself (1970). Thus, although the consciousness might be thought as part of a physical world or neurobiological phenomenon, this does eradicate the conscious subject who might intentionally act and provide the rationale behind his action.

The conceptual consequences of this elaboration are also manifested in the legal-penal sphere. The individual subject who is conscious for his action is a central notion to legal systems as long as, in order to be liable for criminal responsibility, the agent must act based on knowledge and have a purpose (recall the doctrine of *mens rea*) (Levy 2007, 231). Nevertheless, evidence from neuroscience does not seem to essentially discard the autonomous subject as such and, more, the recently enabled interventions in neuronal impairments might recuperate the pertinent psychocognitive functions (Feinberg 2001). The related complexities of this issue are discussed in the

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<sup>4</sup> Subsequently, there is a permanent risk in reducing the constitutive role of consciousness into a positive object of empirical-scientific explanation. Husserl (1970) turned the attention to the rescue of the transcendental-phenomenological function of consciousness from the objectifying attitude of the natural science.

meantime, but currently the idea is showing that scientific observation of the nervous system does not impose an immediate obstacle to legal responsibility and liability. In what follows, is the text focuses on explaining the prospects of responsible legal person.

#### **4. An Elemental Framework for Legal Responsibility**

In principle, judging whether someone is responsible in a particular given context, first of all, one must evaluate for what is and to whom one can be held responsible (Duff 2007, 23-36). Meanwhile, legal responsibility is generally conceived in terms of the alleged action and the concept of social answerability as such: one can be answerable in the virtue of a certain normative basis and the description of the role that one satisfies. That said, answerability is constituted in relation to a person or judicial authority which holds the right to call someone into account. While someone can be answerable only if responsible, says Duff, the responsible subject itself implies the sufficient capacities to answer and account for his actions. Therefore, responsible agent is capable of responding to the reasons that bear on her actions, and of answering her actions in light of those reasons (Ibid). Albeit various approaches, Honoré approached responsibility as intrinsically related to the notion of causation (Hart, Honoré 1985). Nevertheless, following Dawkins' logic, one who argues that causation is originally a neuronal event and physically pre-determined, the conception of legal responsibility is diminished accordingly. In an attempt to overcome this challenge, first, I address first the notion of responsible legal person and, thereafter, its relation with neuro-enhancement in general.

##### **4.1. The Notion of Person and the Question of Legal Responsibility**

The term *person* is historically employed to identify the public character of the individual as self-manifested in coping with other subjects. Therefore, social membership is an essential component for the legal conception of personhood, also implying that physical and psychological integrity of an individual in relation to the other people (Groarke 2010). The notion of legal person is perhaps a fundamental unit of legal responsibility. Aiming to surmount approaches which reduce the performative attitude of responsible legal person in a mere neuronal predisposition, I propose the extended analysis on legal person based on three interwoven

components: a) neuronal-synaptic; b) narrative and c) transcendental segments of personal behavior. This elaboration is unquestionably manifested in the prospects of legal-penal sphere as well.

#### **4.1.1. Synaptic Basis of Behavior**

A great number of scholars claim that the whole range of human behavior involves a complex interaction of neuronal cells and synaptic links (Changeux 1997, LeDoux 2002). Perhaps examination of brain's cerebral structure has increasingly paved the path for numerous claims which tackle personal behavior as a mere expression of deeper happenings in synapses and neurotransmitters of the nervous system (ibid.). Subsequently, the increasing revelation of synaptic secrets of the brain led to the paradigm of 'cerebral subject' (Ehrenberg 2004). The conception of selfhood, therefore, is gradually dissolved into crude material substance (blood, bone, brain...) without whatsoever metaphysical essence of selfhood (Metzinger 2004). That is to say, the 'metaphysics of subject' capitulated in the aftermath of the 'physics of brain'.

Apparently, the synaptic analysis of the conscious behavior has degenerated various reductive physical readings. However, as LeDoux (2003) argued, the point is not simply to argue that the whole personality is pre-determined by synaptic disposition. Instead, synapses are the elemental brain's mechanism to retrieve personality as constituted in the blended psychological, social and other factors. In fact, the brain itself continuously alters the cerebral structure based on personal thoughts and actions (Rose, Abi-Rached 2013). Crucially, some neuronal events dictate psychological predisposition: estrogen level might affect the brain mechanisms responsible for short-term memory; chronic hypersecretion of stress hormone from adrenal cortex may result in hippocampus degeneration and foster symptoms associated with dementia; hyperparathyroidism engenders higher levels of blood calcium and parathyroid hormone might exacerbate symptoms of major depressive disorders (Glannon 2009). Considering that other factors besides synaptic ones, the dimension of narrative person is intrinsically related to performative attitude: the autobiographical content - including personal experience, psychological characteristics, social behavior etc. – obviously express more than the neurochemical function. A singular and unique set of memories, experiences, personal prospects might originally influence individual's performative attitude. Psychotherapy might affect brain structure similar to

psychopharmacology, meaning that the mind itself is not a product of a linear causation from the brain (ibid. 327). Additionally, as Glannon argued, neuroimaging showing activity swings in the related brain regions cannot entirely capture the content and the meaning of the *I*'s experience: autobiographical past, the present conscious awareness, anticipation of the future constitutes the experience of the subject persisting through time (ibid. 324-325). Thus, personal behavior includes, but is not reducible to, the neuronal-synaptic segment.

#### 4.1.2. Narrative Scope of Personhood

Among others, Schechtman argued that individuals understand themselves and each other essentially in the narrative discourse. The narrative which individuals tell about themselves is perhaps constitutive of their identity. Essentially, establishing a personal narrative discourse implies that individuals are able to shape their behavior based on the values they intend their narrative to reflect. Losing personal self-control also results from disruption in personal narratives or imposed narratives which are alien to personal discourse (Levy 2007). However, the narrative dimension of personhood is not narrowed to individual histories, but also the unique set of attitudes and behavioral prospects the individual might take in a particular context. As Harré (1998) argued, the conception of personhood should be also viewed from the angle in which a person perceives the world and the position from which acts: a singular sense of personal identity is constitutively related to the standpoint from which they perceive their own bodies and the world. The narrative scope of personhood, therefore, does not solely include personal histories but, more, also the specific tendencies and the prospects of individual self-construction.

Notably, Mead (1934) argues that the emergence of 'I' is not an isolated phenomenon but rather occurs in linguistically mediated social interactions. He also views the human mind broader than organic neurophysiologic predisposition, while indicating the dynamic interactive process which primarily constitutes the human experience. Individuals develop understanding and evaluation of their behavior in confluence with the shared social meaning (1913, 1934). Apart from the subjective dimension of the narrative segment, the conception of narrative personhood also entails affirmation of socially prescribed functions. As mutual recognition is constitutive to

social actors, individualization and socialization processes are intrinsically bounded (Habermas 1992). Narrative dimension of personhood, therefore, does not refer solely to individual histories but also their prospect actions in social environment. Thus, the narrative personhood is not opposed to the rational behavior but rather includes certain irreducible rational behavior in attempt to preserve their narrative discourse.

#### **4.1.3. Transcendental Power of Consciousness**

Besides the neuronal-synaptic and narrative potencies, there seems to be certain transcendental power in the phenomenon of being conscious as such. Albeit numerous understandings and criticisms, in a given context, it points to the thinking subject who can orient and adjust his behavior through a responsible action and a rational justification. Roughly said, in the Kantian heritage, the transcendental ego enables synthesizing experiences according to categories of understanding. Similarly, for instance, Kolak contends that the entire range of dissociative phenomena, be even pathologies such as schizophrenia, might be explained through transcendental ego's relation to which objects are individuated and identified in the space-time perspective from the standpoint of the first-person, denoted by synchronic basis of the 'I' (Lombard 2008, 440). Transcendental power of consciousness herein does not entail returning to metaphysical distinction between transcendental and empirical ego as inherited from the Kantian discourse. It points to immanent self-transcending and reconstructive potential of the consciousness itself, which shall take reflective attitude to be self-sustained in the surrounding environment. Given integrative approach in brain science, MacGregor even argued that conscious person is a fundamental point of existential placement in reality (2006, 103-104). Reflective individual perhaps is not a mere receiver of external stimuli but capable of responding in a reconstructive manner. Thus, there is something original in being conscious as such, irrespective of its underlying neuronal structure.

Indicatively, developmental psychology generally showed that the individual self-formative process is marked by the increasing autonomy in judgment (Habermas 1979, 74). In the social sphere, Baldwin argued that in parallel with responding to social demands, an individual becomes the law into himself, exerts a private judgment, elicits the virtue of independence and

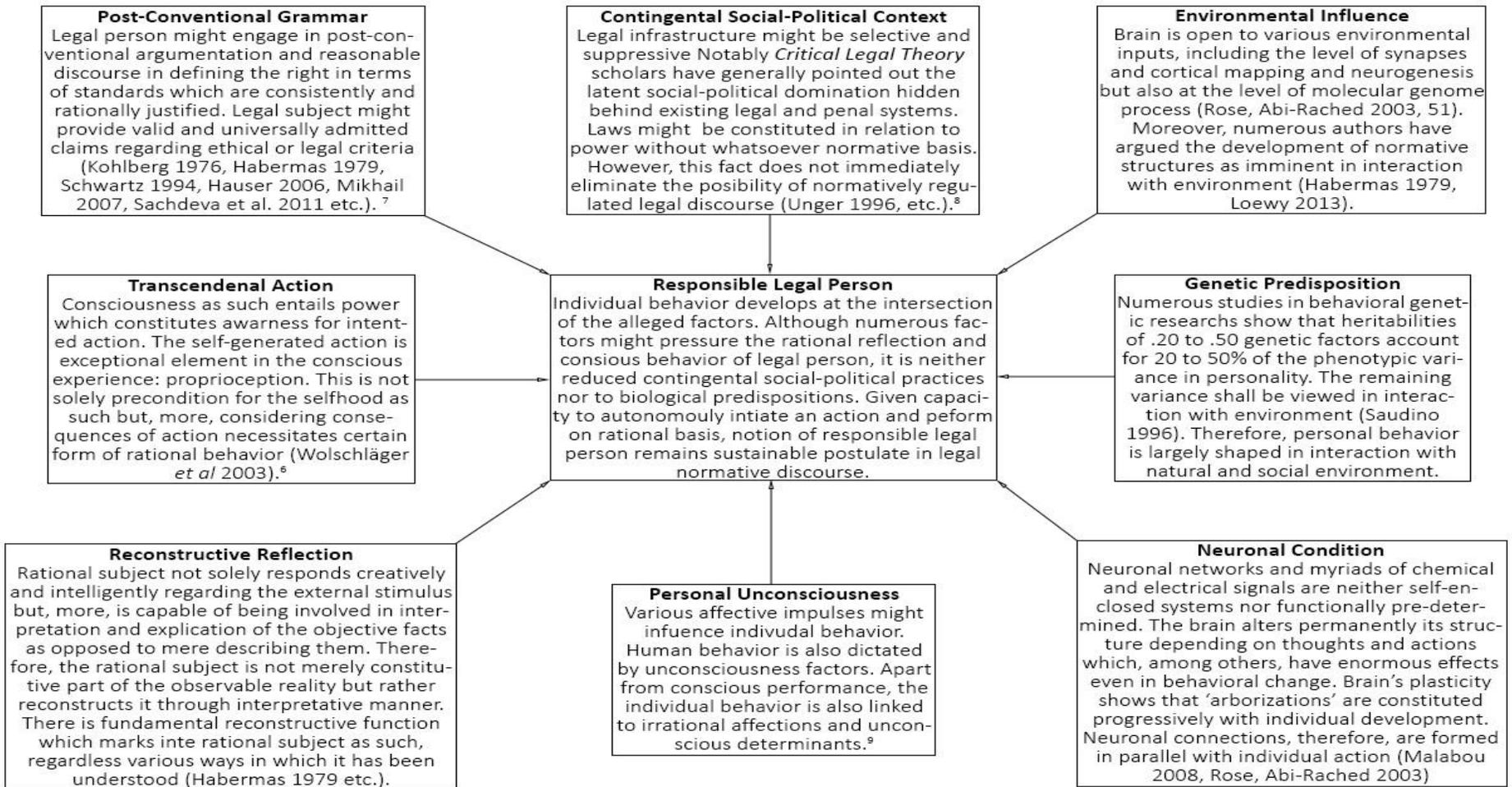
settles down his conception of truth. The person is seen as a reflective and active subject (Holland, Lanchiotte 2007). Given our purpose, transcendental power implies that conscious behavior is not reducible to the contingent or sporadic happenings in its environment, but rather it begins the action attempting to affirm the original self-interpretation.<sup>5</sup>

#### **4.2. Behavioral Patterns and the Notion of Legal Person: A Schematic Representation**

The aforementioned conceptions indicate that legal person is constituted in multifactorial combination and threefold behavioral potencies: neuronal-synaptic, narrative-empirical and transcendental-phenomenological. This distinction, of course, is drawn for analytical purpose because, in reality, they are continuously at a dynamic interplay in shaping human behavior. This seems an essential endeavor to surmount the reductive conception of cerebral subject but, at the same time, to argue that legal person might still be engaged in normative discourse. In order to provide general patterns that might constitute the human behavior as such, I propose an extended explanation regarding the pertinent issue:

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<sup>5</sup> American neo-pragmatists employed the conception ‘de-transcendentalization’ in an attempt to overcoming metaphysical discourse. However, as Karl-Otto Apel and Gregg argued, ‘de-transcendentalization’ leads to a situation where noncontingent presuppositions become obsolete and entirely unsustainable. Meanwhile, noncontingent transcendental-pragmatic conditions of thought – as elements of language-based communication about anything admitting of thematization – are distinguished from the contingency of the finite condition of the human reason. Alternatively, they purports the postulate of counterfactual anticipation of an infinite ideal community as the transcendental subject of definitive consensus about truth and normative correctness (1993, 186). Regardless various understandings, conscious or linguistic transcendental subject, it aims self-affirmation in some noncontingent and justifiable presuppositions.



**Figure 1.** A schematic representation on behavioral patterns of legal person.

<sup>6</sup> Neuroscience has already accumulated sufficient evidence about the anatomical structures which are involved in generating action and in the elemental awareness of self-generated action (Ibid. 709).

<sup>7</sup> Notwithstanding that some scholars perceive them as inscribed in the human nature similar to Chomsky's program in linguistics, and some others tackle them as gradually developing in communicative action akin to Habermas' discourse, the idea is that legal person is capable of operating rationally within legal-normative discourse.

<sup>8</sup> In a nutshell, Unger aims incorporating legal analysis into various institutional domains which might accommodate elements from utterly democratic project (Unger 1996, 163).

<sup>9</sup> Albeit numerous criticisms, Freud's central assumption that much of mental activity is unconsciously driven, including cognitive, affective or motivational processes seems still sustainable. Considerable number of scientific researches and investigations point out that criticizing this point of psychoanalytic discourse is not tenable (Westen 1999).

In a nutshell, this table shows that responsible and conscious legal person is constituted in a dynamic relationship between, on the one hand, normative elements which entail rationally justified legal standards (left) and, on the other hand, numerous contingent social or unreflective personal (center), affective or biological inclinations (right). Given the power of post-conventional grammar as well as the reflective consciousness, it seems that contingent social context is not ‘always-already’ taken for granted but rather it is subject to critical reason. Moreover, it seems factors such as personal unconsciousness (subject inhibits aggressive drives of the unconsciousness and directs them inward) (Salecl 1993), neuronal condition, genetic predisposition or environmental influence do not impede the responsible behavior. Given transcendental potency, the legal subject is capable of constituting normative framework based on his self-interpretation. This way, rather than returning to ‘Cartesian Theater’, as Chandler argued, the various increasing attempts in daily self-regulation and tension between possible selves raise the dynamic subjectivity of *habitus* and produce deliberation (Chandler 2013). Developmental psychology shows that individuals become increasingly autonomous in a reasonable judgment, as well as in controlling the nature and society from their strategic viewpoint (Habermas 1979, 74). Subsequently, legal behavior is neither reduced to neuronal predisposition nor to sporadically given juridical framework. Morano argued that legal responsibility does not entail ratification of the existing laws as self-evident, but rather the comprehensive standards of judgment (187-188). Therefore, the duty to legally respond is largely connected to the legitimate structure of court system. It is noteworthy that some authors also argued that numerous asymmetric power relations narrow down the perspectives of responsible legal person.<sup>10</sup> However, this does not eliminate the fact that, in principle, legal person is capable of reconstructive action and intelligible performance.

Normatively speaking, as Ricoeur put it, intelligible communication is constitutively related to mutual, or shared, systems of comprehension. This model of comprehension is, of course, not immune to doubt. Misunderstanding perhaps is a daily aspect of conversation. Still, it is precisely

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<sup>10</sup> Numerous authors suggest that in some contexts individuals cannot be held responsible for their acts because they are socially constructed or a ‘product of system’ to behave in that manner. According to Cooper, ascribing non-distributive responsibility to a system is rational when a) members are forced to perform undesirable acts; b) performance of the act is partly explained by imposed group rules; c) characteristics of these system’s rules are below standards one might rationally expect the group to meet up; d) it is not necessarily that members of the group, in performing the action, fall below the standards that one might reasonably expect individuals to meet (1998, 90-91). Apart from the eventual complexities, this text provides a normative analysis under the cases that a legitimately regulated social system might hold individuals responsible for their actions.

the function of conversation that serves to correct possible misunderstandings, and to seek the *Einverständnis* of which Gadamer speaks (Changeux, Ricouer 2000, 68). Accordingly, legal structures are open to rational interpretation, justifiably standardized and reconstructed from a normative prism.

This fact, nevertheless, does not entail that responsible legal person is freestanding, or abstractly postulated, in relation to the given empirical situation. The legal responsibility is peculiarly diminished in cases where the individual awareness or conscious action is objectively narrowed down. Obviously, a delinquently acting defendant suffering from frontal lobe brain dysfunction might not be taken as culpable as the one without it: at this point, neuroscience might indicate the causal impact of brain dysfunction in a criminal action (Redding 2006, 118). However, prior to discussing diminished responsibility cases, as well as the possible role of neuro-enhancement, one should propound the fundamental elements constituting the conception of responsible legal person as such.

#### **4.2.1. Three Fundamental and Constitutive Elements of Responsible Legal Person**

*Control requirement* is an integral part of criminal liability, hence responsibility, as far as being held responsible is possible to a degree that one might exert control over the given situation (Duff 2007, 58). Principally speaking, the degree of legal responsibility is proportional to the potential of effective agency. Numerous scholars currently suggest that neuroscience reveals that control requirement and responsible agency is abandoned in the light of current findings in neuroscience. However, apart from confirmed severe pathological cases, still it remains highly difficult to provide a rigorous scientific interpretation on the internally irresistible motifs which govern the personal behavior or even trigger criminal action (Redding 2006, 100).<sup>11</sup> In order to have more precise outlook on what constitutes the responsible legal behavior, I present three interrelated components:

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<sup>11</sup> A concise and relevant digression: criminologists generally explain a criminal act either by focusing on external factors (economical position, family dysfunctions, objective pressures etc.) or in psychological basis (aggression, manic-depression, psychiatric disorders etc.). Thus, usually a crime is ‘de-humanized’ as conceived in a complex interplay of either social or unconscious psychic mechanism, or both. However, as Salecl showed, the criminal act might take the form of a radical mode of subjectivization, as a means by which the subject resolves an inner tension, inhabitations or traumas (1993).

#### **4.2.1.1. Intentional Performance**

Legal person must, first of all, exert control over his action and, more, willingly cause or freely initiate the action. Unquestionably, the individual might unwillingly experience various sets of motifs, preferences or have various neuronal predispositions. Nevertheless, as a subject who is self-projected into the world and creatively responds and mediate the internal-external pressures, the conception of responsible legal person is still sustainable, regardless neuronal-synaptic predisposition. The notion of self-determination (autonomous subject), hence free will, is an irreplaceable basis for legal responsibility (Newsome 2009). There are numerous cases where the intentional performance is diminished on biological bases as, for instance, in the case of Parkinson disease, where the dopaminergic neurons degeneration affect the capability of personal action, or, in pedophilia cases which were associated with meningoima pressuring the right of orbitofrontal cortex, hence trigger criminal behavior which were obviously related to brain abnormalities (Glannon 2011). Similarly, compulsive behavior due to chronic addiction and various impulse-control disorders stemming from disabled inhibitory forces in the prefrontal cortex, nay poor behavior control of psychopaths, might directly affect the intentional performance. At this point, the different forms of neuro-enhancement might restore the normal or near-normal behavioral functions (ibid.). In similar cases, where intentional performance is limited and disrupted, the responsible action is diminished. The question of responsible action does not have an ‘all-or-nothing’ answer. Nevertheless, the point is that principally the intentional performance might be postulated as the internal condition of responsible legal behavior as such.

#### **4.2.1.2. Cognitive Competence**

The responsible legal person is equipped with the cognitive capabilities to evaluate the consequences of his action in a given context and to adjust the behavior based on his normative conceptions. Among others, Piaget argued that the process of cognitive development results generally from reconstructive experiences in different competence levels. In short, Piaget concedes that confrontation with external world invokes the construction of internal universe as well. In parallel with the manipulation of objective world, individuals also gradually develop the regulated system of socially recognized rules (Piaget 1950). Correspondingly, the cognitive

competence of the responsible legal person includes not solely the sense of judging the consequences of specific action but, more, the capability to act according to the alleged normative framework. In this sense, cognitive competence does not refer solely to the subject who has well-developed understanding for the external world but, also, acts reasonably based on socially recognized legal rules. Attention deficit hyperactivity disorders, dyslexia, down syndrome, autism or dyscalculia, are among disabilities which disrupt the process of cognitive development. Apart from pathological cases, as developmental psychology shows, the increasing cognitive competence is an intrinsic development of personal characteristics and legal responsibility. As such, the conception of responsible legal person is immanently related to the cognitive competence.

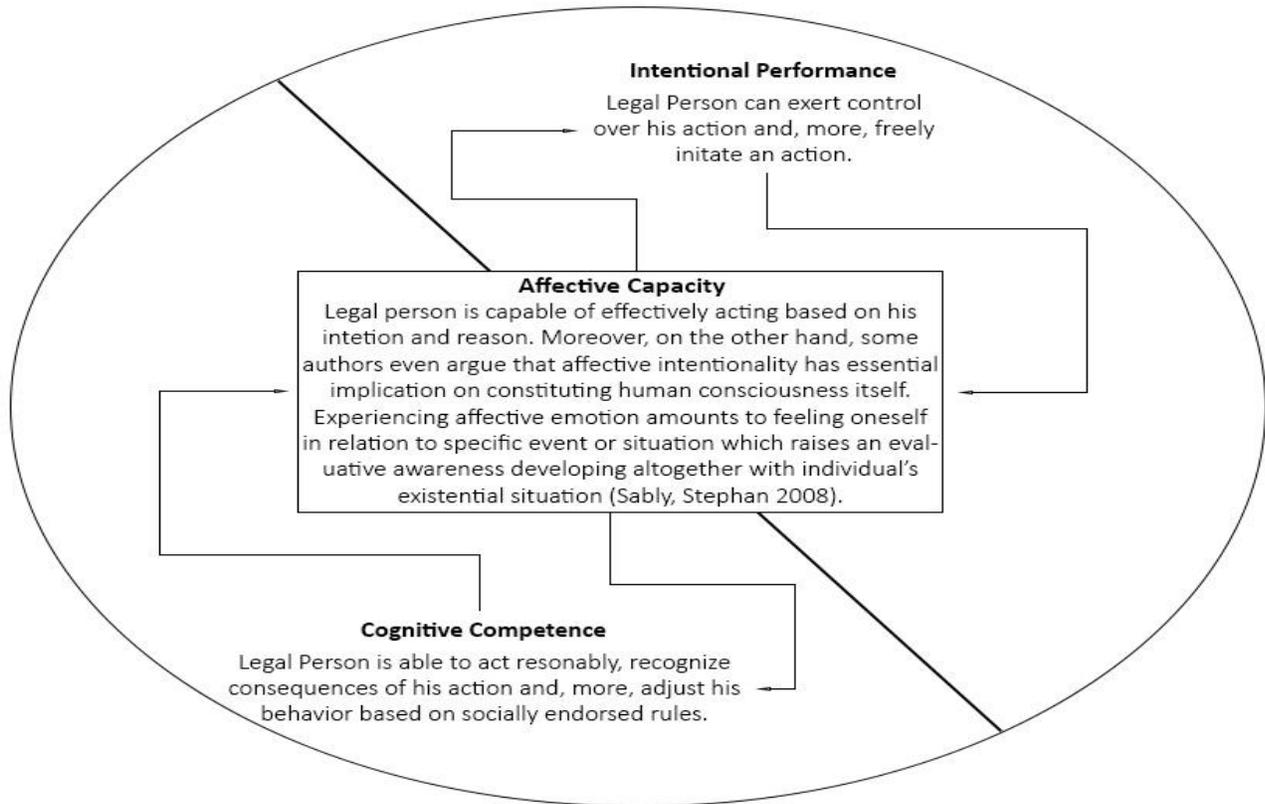
#### **4.2.1.3. Affective Capacity**

The responsible legal person is the subject who is supposed to act upon reason and be able to implement the pertinent action. Evidence suggests that although patients with impairments in the ventromedial prefrontal cortex appear with lessened emotional response to moral transgression, still they maintain the identical judgment when they cope with ethical dilemmas as such (Hauser 2013). Further arguments show that patients with ventromedial impairment are tended into inappropriate decision-making regardless of the fact that their rational decision-making abilities are intact (Damasio *et al.* 1994). Analogously, some scholars conducted an experiment which showed that some nervous impairment might make cognitively intelligent individuals behave in unintelligent manner regarding decision-making and interpersonal relations (Bar-On *et al.* 2005, 224). As such, personal performance also includes the ability to affectively respond to a reasonable attitude. In similar cases, one might perceive the gap between cognitive function and intentional performance. Importantly, psychopaths or sociopaths do not exhibit signs of mental impairment of underdeveloped intelligence. Although understanding the delinquent action, they engage in antisocial and criminal action without empathy. It is noteworthy that psychopaths/sociopaths are held responsible for wide range violent crimes worldwide and or relatively minor crimes. Therefore, psychopaths have sufficient understanding capabilities but, among others, they lack motivation to responding in the light of these reasons. Similar to psychopaths, the same problem appears evident with individuals with dysfunctional prefrontal cortices in the brain (Glannon 1997). Herein there is a certain gap between intentional

performance and cognitive competence. However, the lack of affective is not immediately translated into annihilation of legal responsibility. Psychopaths who are capable of understanding their action can be particularly held responsible for their action. Meanwhile, as with psychopaths, where the physical impairment impedes their normal functioning, they cannot be held fully responsible for their behavior, hence fall into the categories of diminished responsibility (ibid.). Therefore, affective capacity is constitutive to the notion of responsible legal person.

#### 4.2.2. Responsible Legal Person and the Eventual Impact of Neuro-Enhancement

In graphical manner, the aforementioned elaboration, on constituting element of the responsible legal person, might be presented as follows:



**Figure 2.** Figurative Description of Responsible Legal Person

Succinctly said, numerous chronic neurodegenerative inclinations such as in Alzheimer disease which, among others, are manifested in absent-mindedness, severe forgetting, speech impairments, loss of self-awareness or various cognitive deficits might prevent the subject from competent cognitive performance. Moreover, other chronic neurodegenerative predispositions such as with idiopathic or hypokinetic syndrome might heavily affect motor system which, among others, in parallel with movement-related problems, might also be associated with reflective and behavioral problems, which adversely influence affective capacity as well as intentional performance. As such, neuro-enhancement application on factors which disrupt intentional performance, cognitive competence or affective capacity, in itself, does not entail characterological alternation or the loss of personal sense of authorship or transform entirely the conception of responsible legal person, hence principally cannot be forbidden. In principle, the notion of responsible legal person and neuro-enhancement are not strictly opposed but, at least given a set of cases, might complementary function. However, it is noteworthy that the role of neuro-enhancement is exaggerated compared to what numerous scholars proclaim. Brain is a complex mechanism comprised of various neuronal interactions and behavior is not mechanically reduced to the underlying neuronal structure. For instance, Ritalin or Prozac, increase attention or goal-directed activities while reducing fatigue, appetite or sleep (Ackerman 2006, 63). Therefore, its negative side-effects are seemingly always undeniable. Similarly, amphetamine works upon the prefrontal cortex of the brain, however, it is scientifically vague whether it enhances the process of learning or that of performance. Example: *beta blockers* are often used by musicians to perform but not learn better. They might be used by people who have partial paralysis or might be unable to speak normally after shock. Nevertheless, its results are not apparent unless combined with physical or speech therapies (ibid. 74). As such, although applicable and useful mechanism, neuro-enhancement in itself does not provide unconditional ways to manipulate with behavior, and, neither diminishes the notion of responsible legal person.

As in the case with psychopaths, neuro-enhancement might play a role in improving affective capacity (Glannon 1997). Similarly, depression tends to remove motivation to act reasonably and it triggers irrational inaction. The point is that cognitive or evaluative aspects of motivation remain when dispositional affective elements are removed (Goldman 2007). As widely acclaimed nowadays, neuro-enhancement technologies might exert positive influence in this direction.

The concern whether neuro-enhancement, which eliminates the self-reflective subject as such, hence diminish the role of responsible legal person, is always present. Studies, nonetheless, show that patients themselves are highly suspicious of intentionally changing personal identity through surgeries (Lipsman *et al.* 2009). Therefore, in principle, neuro-enhancement itself – though always bearing a high risk in intervention – does not eliminate the autonomous action, self-reflective behavior; hence does not devalue the notion of responsible legal person.

## 5. On Therapeutic Justice

The communitarian life is essentially based on an associative set of rights and obligations which stipulate the role and the duty of each member (Dworkin, 190-202, Bennet 2008). Bennet argued that legal person is ‘always-already’ engaged in an intrinsically valuable relationship: membership in a social-political community requires a constructive participation in valuable projects in which failure to respond in peculiar demands results in the right to be punished (2008, 125). As such, the fundamental postulate of the criminal-penal system is the responsible legal person who in case of breaking the law, is entirely legitimate to be punished (*ibid.*, 15-16). On the other hand, Adler argues, the proposed penalties and punishment practices are sustainable solely on the basis of a legitimate state (1992). Accordingly, the principle of retribution is not eradicated from legal-penal systems as easily as Dawkins’ suggests, for whom the attention should be definitively turned to prevention and treatment. Yet, as argued in the meantime, as mechanisms to protect social valuable project, retribution, restoration, treatment and prevention might each exert a role in contributing to well-functioning of legitimately grounded rights and duties. This conception does not entail the denial of findings in brain science but rather the point is to integrate them into a broader normative outlook, as presented in the table below.

### 5.1.Aspects of Penal Measures: Considering Eventual Effects

Penal systems, of course, are not the end in themselves: punishment perhaps seeks to achieve something beyond itself. In the last instance, penal systems are designed and serve as a mechanism of social reparation and reintegration into the valuable communitarian project (Bennet 2008). Albeit numerous interpretations, penal retribution and coercion are supposed to

convey the practical understanding of social normative barriers to a certain action or, at least, establishing a sense that such barriers exist (Hampton 1984, 230-231). Thus, bluntly said, as legal behavior is much more complex than neuronal predisposition, the principle of retribution too cannot be cancelled from penal systems, as implied in Dawkins' discourse. However, in the following, I provide an account on how different aspects of penal systems might be related to recent findings in neuroscience:

**The character of Legal Person**

**Aspects of Penal Measures**

<p><i>The Notion of Responsible Person equipped with intentional, cognitive and affective capacities.</i></p>	<p><b>Retribution</b> Punishment is justified on the basis of the committed action. The punishment is given to the offender to a deserved degree. The retribution of the offerder is generally perceived as an end in itself for the alleged delinquence (Adler 1992).</p>	<p><b>Rehabilitation</b> Punishment is seen as mechanism of reformation or rehabilitation of the culprit not to commit the offence again. The main purpose is to positively alter the attitude of the offender in the aftermath of the penal measure (Adler 1992, McAnany 2007).</p>	<p><b>Restorative</b> The restorative punishment is intends reparation and re-integration while providing perquisites for restoration of the victim as well as correction of the aggressor through offering amends, determination to reform or similar practices from the side of the offender (McAnany 2007, Bennet 2008).</p>	<p><b>Expressive and educative practice</b> The punishment is designed to express public denunciation of certain action as criminal one (LexisNexis 2004). Therefore, it also points to education of what is permissible behavior. Similarly, Moral Education Theories argue that punishment is supposed to teach offender a moral lesson on his wrongdoing (Adler 1992).</p>
<p><b>Neuropsychiatric and Related Effects</b></p>				
<p><i>The Notion of Legal Person with confirmed mental impairments of similar leisons.</i></p>	<p>In case the subject of retribution has suffers from psychosomatic impariments which disrupt his responsible behavior, retribution in itself will provide ineffective measure in correcting deliquen behavior. For instance, psychosomaticabnormalities might cause a behavior which is alien to the individuals' typical character. (Levy 2007) Accordingly, the delinquent should subjugate to neuropsychiatric or related competent instituion which reduce offending behavior (Childs, Brinded 2002).</p>	<p>Numerous studies have demonstrated the close relation between mental disorders and deliquent behavior. As such, rehabilitating the offender involves various specalized neuropsychiatric services. Perhaps it is widely shown that numerous psychiatric services are increasingly at disposal which alleviate the process of deliquent's rehabilitation. Subsequently, they are proven effective in reducing offending behavior ; (Craig et al. 2013).</p>	<p>In case the offender shows no predisposition to amend criminal behavior, still socially responsible mental health hospitals, psychiatric treatment and various models of behavioral modification might be applicable and effectivly mitigate delinquents (Crow 2001).</p>	<p>The learning or educative process implied in practice of denunciation as well as the transmission of public message might be entirely ineffective in case of mentally impaired individuals. Perhaps they present exceptional case in the pertinent process. However, empirical evidence widely shows that Mental Health Treatment Courts are able in reducing criminal recidivism among persons with mental impairments during and after court process (Wales et al. 2010).</p>

**Figure 3. The Aspects of Penal Measures**

Taking stance on which model of punishment is superior compared to others is obviously beyond the scope of this text (see: Adler 1992). As indicated, each of them might be effective and, moreover, neuro-enhancement practices might be combined with penal systems. Therefore, multiple penal aspects might serve a single and coherent purpose in the protection or affirmation of political, social and normative values.

Wexler and Winick, among others, purported the paradigm of *therapeutic jurisprudence* while emphasizing the paramount function of therapeutic implications in the domain of legal decision-making. Central to therapeutic jurisprudence is the evaluation of the eventual impact of the legal system in the psychological disposition of legal person as well as therapeutic implications concerning legal roles and the juridical order (Wexer 1990). The principle of retribution has no intrinsic value in itself, but rather it might also be evaluated from the restorative and therapeutic perspective. As such, embracing benefits from neuroscience is without alternative to the legal-penal systems. A legal person suffering from mental disorder who commits a criminal act fall under the category of diminished responsibility and might be addressed to related psychiatric institutions. Moreover, in given set of cases, Mental Health Treatment Courts or related institutions show a higher reduction in criminal predisposition in the aftermath of 6-12 months of treatment (Cosden *et al.* 2003). Other studies indicate that Mental Health Treatment Courts might be effective in reducing recidivism and improve treatment retention (Wales 2007). Hence, opposed to Dawkins, the idea is that the retribution principle cannot be contrasted to the mechanism of prevention, treatment or removal of criminal action from the public sphere. Instead, one can argue for increasing interrelation between these segments even in aftermath of various developments in neuroscience.

## **5.2. Penal System and Mental Health**

Since Lombroso's criminal atavist discourse, it was widely acclaimed that criminal behavior or predisposition can be seen from multiple physical abnormalities. The treatment of criminaloids, be it remedial or penal, should rather be focused on preventing or changing the role of causes which affect it (Lombroso 1911). Needless to remind, unless the paradigm of autonomous subject is normatively sustained, the neurobiological interpretation of crime is extremely dubious. Similarly, Dawkins argued that the focus should be turned into treatment and

prevention practices (2006). Obviously, if corrective process implied in the penal measures is beforehand unpromising due to given psychosomatic impairments, the medicinal practice of treatment or rehabilitation might be an applicable alternative.

Empirical evidence widely shows that Mental Health Treatment Courts were proven effective in reducing criminal recidivism among persons with mental impairments during and after court process (Wales *et al.* 2010). Perhaps effectiveness of these institutions is tightly bounded to the special legal regimens which enable the affected individuals to internalize legitimate legal norms (*ibid.*). Irrespective of various mentioned impairments, the developed idea in trajectory, say from Lombroso to Dawkins, that penal system shall focus solely on medicinal prevention of crime risks degenerating into a judgmental criminalization of behavior. For instance, some argue that combination of brain scanning and genetic testing might provide a notification that File no Z789 shows a genetic pattern of predisposition toward violence, which might turn into murder in the meantime (Ackerman 2006, 12-13). However, this kind of argumentation, rather than providing a scientific approach in revealing crimes in advance, it risks entailing criminalization of behavior. Individuals cannot be subjugated to medicinal treatment of whatsoever form of penal coercion for the futurologically presumed crime. Perhaps this sort of criminalization of behavior might lead to drastic misuse of power. Similarly, as Duster put it, when a given country raises military draft, physical health is of paramount importance for the military. Usually, armies employed physicians' which provide larger number of recruits, regardless of their eventual illnesses (2003, 71-72). Another example is the Soviet Union, which despite evidence of epidemic flu and factories had to work, physicians might be favor of third-party rather than patient (*ibid.*). Similar manipulation with third-parties might take the form of political resistance and displace penal authorities into illegitimate basis.

As modern discourse generally favors the autonomous self-conception of individuals, modern medicinal ethics is also increasingly based on patient-centered approach. Foucault and his adherents would obviously disagree with this claim. Still, this is beyond the scope of this elaboration. Health Care systems are obliged to provide required information, diagnosis and recommend the treatment to individuals, while also explaining eventual (dis)advantages of each option. Thus, the principle of autonomy and the right for self-determination remains an elementary segment of medicinal ethics (Schopp 1993). There are, of course, pathological cases

where the patient itself is incapable of taking a stance on the pertinent issue, then the challenge generally falls to Hospital Ethics Committees to take decision (Loewy 2013). However, in a nutshell, the central challenge of therapeutic jurisprudence remains establishing justified legal rules and special procedures which effectively enable therapeutic effects that do not violate the autonomy or personal liberty (Schopp 1993).

The point, therefore, is not to evaluate the possible investigative role of psychiatric-forensic in the penal system (which is increasingly being served with findings in neuroscience). However, in parallel, penal systems themselves shall be accommodated within justifiably grounded in order to be legitimate. Meanwhile, penal systems' scope is broadened and not undermined by such institutions. As the point is not punishment itself, they might facilitate the process of re-socialization and treating legal persons with diminished responsibility. Although, as said, the challenge of prevention mechanism is more complex, given that individuals with cognitive or behavioral deficits entail diminishing the responsibility of the legal person, as well as because of the various cerebral abnormalities, disrupt consciousness' control functions. Altered consciousness is characterized by high levels of confusion or disorientation, anterograde amnesia, especially if limbic structures are affected. Still, as Ashley argued, developments in neuroscience have also provides numerous neuro-enhancement methods in treating, rehabilitation and regulation of conscious performance (Ashley 2005).

Overall, this elaboration points to the fact that the conception of autonomous subject, say responsible legal person, cannot be eradicated from legal-penal system. The point is not to return to the metaphysical of speculative conception of autonomous subject but rather arguing that within physical world itself and following the wide range of findings in neuroscience, the responsible and consciousness subject is not torn apart. As a matter of fact, when deterministic neuroscience explanations about individual behavior are offered to volunteers, they tend to increase their unethical cheating behaviors precisely on the assumption that their capacity to act responsibly is undermined (Ranice 2010). Ironically, retroactively, this is proof of individual freedom somehow. They remain tended to what Sartre called the mechanism of self-deception, implying the attempt avoid utterly responsible action of individual subject (1943). Having addressed numerous neurobiological nuances, this work has shown that the autonomous subject is not an 'all-or-nothing' ontological fact. Between them, however, the role of neuro-

enhancement technologies remains undeniable in aiming to affirm possibilities of regulated and responsible legal behavior. Finally, accumulated findings from neuroscience might be accommodated within legal-penal systems as useful tool which, apart from investigative process and so on, can be used in cogently prescribing the extent of responsibility in criminal action. Given advancements in neuroscience, therefore, one might predict an increasing cooperation between medicinal, neuropsychiatric and penal authorities in general.

## 6. Conclusion

This elaboration perhaps might look too speculative for an empirical-minded neuroscientist, groundlessly normative for strict scholars of jurisprudence, and too technical for a philosopher. Nonetheless, it is exactly this initial impression that paradoxically forms the crux of this work. Advancements in neuroscience, among others, have questioned entirely the conception of autonomous subject, hence responsible legal behavior. Correspondingly, numerous scholars (Dawkins, Greene, Cohen, Spasolsky, Chasmore and so on), while relying on recent findings from neuroscience, though each in his own manner, contend that mechanic outlook of the nervous system has definitively discarded the notion of responsible legal person, hence aiming radical revision of the essential values of legal and criminal-penal systems. I have rather argued in more balanced approach which tackles them in integrative manner. In this attempt, of course, neuro-enhancement has irreplaceable role to play. However, while evaluating findings in neuroscience in multidisciplinary manner, it seems that this is somehow an oversimplifying account. Given space limits, I will address the central claims of this text below:

- The notion of autonomous or conscious subject did not definitively fall in the light of findings in brain science. In order to provide an account on mental events, this elaboration largely relies on the paradigm of *emergentism*, arguing that consciousness itself is not reducible to its simpler neurobiological constituents. Moreover, it draws on Heisenberg's quantum physics; evolutionary developing freedom; primordial constituent like electromagnetism and gravity, as generally elaborated above, provide a basis to perceive consciousness as more than its neuronal-synaptic background. Emergent and anomalic character of the mater enables the emergence of mental event. Therefore, in principle, the conception of free and responsible subject – autonomous one – remains sustainable even in the aftermath of recent developments in neuroscience. The responsible legal person has been criticized in various grounds given the mechanic outlook of the nervous system. Some authors even reduced the conception of individual subject to a 'cerebral' subject. Contrary to this, it has been argued that, even scientifically speaking, the plasticity of brain provides an account to consider the prospects of human action broader than neuro-synaptic configuration. Moreover, I have

proposed, to extend the notion of cerebral subject with, narrative as well as transcendental potencies as a precondition to avoid physical reductivism. Correspondingly, the broader explanation of possible patterns affecting human behavior is presented extensively.

- Neuro-enhancement technologies cannot be opposed to self-reflective subject. Moreover, they are highly useful in recuperating behavior that is disrupted through various nervous impairments. However, it was indicated that neuro-enhancement does not provide an unconditional mechanism in shaping individuals' behavior. Considering severe side effects – crucially those altering autonomous performance – often largely outweigh the benefits of neuro-enhancement. Following the molecular revolution up to the referred findings in neuroscience, some scholars suggested that the designation of an individual with particular identities is finally possible (*Buchanan et al.* 2001, 85). Analogously, Baudrillard contends that the genetic code – and why not the neuronal configuration as well – currently became a mere command of keyboard on which might be exerted infinitesimal variations, hence convert molecular structure (and neuronal-synaptic predisposition into a mere *code* (1990, 159). Yet, although relatedly some authors even used the term *post-humanism* to indicate infinite possibilities to transform human behavior, this text pointed out numerous limitations in current brain science that hinder progress in this direction.
- As this text is motivated to restore the notion of responsible legal person, I argued that there are, at least, three constitutive elements which are fundamental for a legal person to be held responsible: a) intentional performance – subject who is able to freely initiate an action; b) cognitive competence – the subject who is capable of understanding the consequences of his action as well as being able to act based on socially endorsed rules; c) affective capacity which entails the capacity to respond to reasons as well as implement them as an active agent. Normatively speaking, they are seemingly irreducible characteristics which define the scope of responsible legal person.

- This article opposed claims *a la* Dawkins which discard the retribution principle and look forward to various practices of treatment, prevention or deterrence. It points to various ways in which they cannot be perceived as opposite but rather in interwoven manner. As indicated, there are various ways in which neuro-enhancement technologies might contribute to the pertinent concerns of legal-penal systems: covering the trajectory from from psychiatric-forensic investigations to eventual behavioral modification of mentally impaired delinquents. Albeit numerous nuances, it turns out that while the notion of responsible legal person is demolished from legal-penal systems, they can be grounded on robust grounds. Accordingly, neuroscience in itself does not entail radical revision of constitutive elements of legal-penal systems.

Of course, this article is much richer than these hypotheses. However, in a nutshell, they spell out the fact that freely acting individual, hence responsible legal person cannot be abandoned in the light of neuroscience developments. Considering always neuronal-synaptic nuances, this text maintains that responsible legal person is not an ‘all-or-nothing’ fact. Numerous cases with brain impairments fall into the category of legally diminished responsibility. Moreover, it propounds discussion over the (im)possibilities of neuro-enhancement to improve behavior in pertinent cases. Finally, the effects of neuro-enhancement are exaggerated in Dawkins and other likeminded scholars, which stand seemingly in discordance with recent scientific findings in the field. Accordingly, it turns out that the notion of responsible legal person still remains intact conception and without a viable alternative in legal-penal systems.

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