

INVOLUNTARY RESPONSES AND THEIR LEGAL CONSEQUENCES IN CRIMINAL LAW

RESPOSTAS INVOLUNTÁRIAS E SUAS CONSEQUÊNCIAS JURÍDICAS NO DIREITO PENAL

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Palavras-chave: Responsabilidade Penal. Neurodireito. Ações Reflexas. Culpabilidade. Negligência Inconsciente.

Abstract

Criminal culpability represents the foundational criterion in the evaluative process of attributing a criminal offense to an individual. Within the framework of criminal law, not all humans conduct warrants legal scrutiny or penal response, even in instances involving the breach of legally protected norms. It is not sufficient to establish a mere violation of an objective legal duty, a subjective link must also be

Resumo

A culpabilidade penal representa o critério fundamental no processo de avaliação para atribuição de uma infração penal a um indivíduo. No âmbito do direito penal, nem toda conduta humana justifica a análise jurídica ou a imposição de uma resposta penal, mesmo em casos de violação de normas legalmente protegidas. Não é suficiente constatar apenas a transgressão de um dever jurídico objetivo; é necessário também haver um vínculo subjetivo entre o agente e o ato praticado. Esse vínculo pressupõe a capacidade de tomada consciente de decisões e de controle voluntário. Assim, o objetivo principal deste estudo é apresentar contribuições da neurociência que esclarecem os mecanismos automáticos e inatos que fundamentam certos comportamentos humanos, especialmente as ações reflexas. Essas ações involuntárias, por sua própria natureza, carecem do componente volitivo necessário e, portanto, não se enquadram no âmbito da responsabilização penal.

present between the agent and the act committed. This link is predicated upon the capacity for conscious decision-making and voluntary control. Accordingly, the primary objective of this study is to introduce insights from neuroscience that elucidate automatic and innate mechanisms underlying certain human behaviors, particularly reflex actions. These involuntary actions, by their very nature, lack the necessary volitional component and, therefore, fall outside the scope of criminal liability.

Keywords: Criminal Liability. Neurolaw. Reflex Actions. Culpability. Unconscious Negligence.

Introduction

The primary functions of criminal law are to safeguard and uphold fundamental legal rights within society, to contribute to the structuring of social order through the protection of individual rights, and to prevent the commission of criminal offenses. A constitutive element of any criminal offense is the presence of a criminally relevant action, which serves as the foundation upon which all further elements necessary for imputing liability to a perpetrator are built.

Within the framework of societal functional elements, a criminally relevant action - even when analysed from a teleological perspective - pertains to the harm or endangerment of essential legal interests that both the criminal and constitutional legal orders are designed to protect. In response to such violations, the state is thereby empowered to exercise its *jus puniendi*. Despite the consensus that action or omission constitutes the point of origin for criminal attribution, and notwithstanding its extensive treatment in legal doctrine, the concept of action continues to raise definitional and delimitation challenges.

On one hand, there is general agreement that human actions encompass voluntary and conscious behaviours, actions subject to the control of the will. On the other hand, there exists acknowledgment of behaviours that are involuntary or reflexive in nature, thereby calling into question their relevance for the purposes of criminal liability.

Within the framework of criminal law grounded in the principle of *actus reus*, intentional conduct presents no conceptual ambiguity: the agent exercises clear voluntary and conscious control over their actions. However, the same cannot be unequivocally affirmed regarding non-intentional conduct, as certain behaviours do not even entail conscious dimensions susceptible to volitional control.

In the wake of the so-called neuroscientific revolution, the significant scientific advances stemming from the in-depth study of the human brain have become an invaluable source of insight across numerous disciplines concerned with human behaviour. As a normative system fundamentally concerned with predicting and regulating such behaviour, legal science must not remain indifferent to these developments—particularly when evaluating the presence or absence of criminal culpability.

Emerging both from the need to define and delimit the concept of culpability, as well as from the broader inquiry into what constitutes a criminally relevant act, there is an increasing imperative that criminal attribution be grounded in objective criteria and normative value judgments. This may necessitate a minimum familiarity with neuroscientific knowledge to elucidate the cerebral mechanisms underpinning

free will and the decision-making process, elements that are central to the attribution of individual criminal responsibility.

Neuroscience discoveries - particularly Libet research - have demonstrated the lack of control of the will in some human behaviors. Considering emerging scientific evidence, it becomes increasingly problematic for criminal law to impose liability on conduct where the construction of guilt lacks a foundational element of self-determination.

The main Libet studies were developed in 1983 and aimed to discover whether the brain impulses that prepare the process of taking a certain action arise at a time before the moment in which the individual considers having made the final decision. The results obtained from these investigations undermine the concept of the existence of absolute free will, given that the human brain prepares itself, in a prior and unconscious way, for the subsequent execution of certain behaviors.

Can behaviour that was not the result of autonomous, volitional choice truly be subject to censure? This question challenges the traditional premises upon which criminal responsibility is built.

Acknowledging the inherent complexity in defining a legally relevant action as the initial threshold of criminal imputation and recognizing the necessity for criminal law to engage in a meaningful interdisciplinary dialogue with neuroscience, this study, employing a historical-critical analytical method, aims to explore the nature of reflexive actions.

Such actions, characterized by their involuntary nature and lack of control via the sensory-motor system, raise significant doubts regarding their inclusion within the scope of legally and criminally relevant actions. The inquiry thus seeks to contribute to a more precise and scientifically grounded understanding of human behaviour in the context of criminal liability.

Criminally relevant action

Historical evolution of the concept of normative action

In modern legal history, recognizing the critical significance of the concept of action within the framework of criminal law, various doctrinal schools have contributed to shaping a more refined and normatively coherent definition of action. Among these, the classical, neoclassical, finalist, and post-finalist schools stand out

for their distinct theoretical contributions.

A central point of contention has long been the doctrinal divide between theories that attribute a determinist character to human conduct in the context of criminal action, and those that place greater emphasis on voluntarism and moral autonomy. This debate intensified notably in the aftermath of the 19th century, a period during which concepts such as free will, individual freedom, autonomy, and the moral agency of the human person came to be recognized as foundational principles of the democratic constitutional state governed by the rule of law. The tension between deterministic understandings of human behaviour and the legal system's normative commitment to personal responsibility continues to fuel critical reflections on the prerequisites for criminal liability.

The so-called Classical School, which emerged in the first half of the 19th century, was the first major school to investigate the concept of action in depth. According to Figueiredo Dias (2011, p. 239-240), this school had a support base in the modern and naturalist positivist schools, and it was with them that a new conception of criminal law of the fact was outlined, inspired by Germanic idealist philosophy, defending an ethical-social vision of this legal area.

The Classical School espoused a naturalistic conception of action, positing that an action becomes criminally relevant when it involves a voluntary bodily movement that causes an objective alteration in the external world. This perspective grounded criminal liability in the existence of a causal link between the agent's bodily movement and the resulting effect, a connection referred to as *causal action*.

While this conceptual innovation marked a significant step in the development of criminal dogmatics, it nonetheless presented notable limitations. Chief among these was its inability to provide a clear and dichotomous distinction between fundamental normative categories, particularly the differentiation between intent and negligence, as well as between action and omission. The causal theory, by reducing human conduct to a mechanistic link between cause and effect, failed to adequately account for the normative dimensions of human agency.

In response to these shortcomings, the early 20th century witnessed the emergence of the Neoclassical School, prominently advanced by scholars such as von Liszt and Beling. This school sought to refine the understanding of criminally relevant action by incorporating more sophisticated distinctions and normative elements into the analytical structure of criminal liability.

The Neoclassical School advanced a *social concept of action*, emphasizing the significance of the broader social context in shaping human conduct. It argued that human behaviour operates not only within legal parameters but also within

a wider extra-legal normative framework. Accordingly, the existence of an action requires not merely the mechanical performance of conduct, but rather a voluntary manifestation of will that expresses a denial or disregard of social values in the external world. For this school, an action is understood as any human behaviour that is both voluntary and socially relevant, irrespective of whether the agent's intent aligns precisely with the legal categorization of that act.

In the mid-20th century, particularly between the 1930s and 1960s, the Finalist School emerged as a pivotal development in criminal law theory. It proposed a model of criminal responsibility centered on the notion of free and responsible agency, grounding imputation in the purposive, teleological nature of human action. According to this school, individuals act in accordance with normative expectations directed at them, aiming to achieve specific ends or objectives. Thus, only those actions guided by a finalistic intention, that is, goal-directed conduct, could be meaningfully subjected to normative prohibitions within the scope of criminal law" (PALMA, 2023, p. 19).

The Finalist School, grounded in an ontic-phenomenological perspective, conceptualized action as an inherent structure of reality, independent of the subjective or psychological traits of the agent. Instead, the focus was placed on the ethical and social approachability of the conduct. According to this theory, individuals orient their behaviour toward the attainment of specific objectives - called *final actions* - wherein action is understood as purposeful behaviour aimed at producing change in the external world.

One of the most influential exponents of the Finalist School was Welzel, who contended that an action presupposes the agent's mental anticipation of a desired objective. The agent must then consciously select the means deemed necessary to achieve that objective and, ultimately, initiate the causal processes required to bring about the intended outcome. Thus, the act of willing and implementing a purpose becomes central to the notion of criminally relevant conduct.

In the latter half of the 20th century, a further evolution of criminal law theory emerged in Germany: the Post-Finalist and Functionalist School. This school introduced a paradigm shift by conceptualizing law not as an end but as a *function*, *means*, and *form*, a specialized instrument designed to serve a plurality of social and normative ends. Functionalism emphasizes the role of legal norms in structuring behaviour according to broader systemic and societal objectives, moving beyond the rigid teleology of Finalism toward a more pragmatic and policy-oriented understanding of criminal responsibility.

With the theoretical contributions of Roxin, the so-called personal concept

of action emerged, according to which action is conceived as a manifestation of the individual will, intimately linked to the subject's values, motivations, and personal objectives. This conceptualization reflects an effort to construct a general theory of action rooted in the externalization of the agent's personal identity, thus dispensing with metaphysical assumptions such as the existence of a free will, which are not susceptible to empirical verification. From this perspective, legal doctrine sought to objectify the model by developing parameters such as the "reasonable person" or the "average man", to introduce normative criteria for assessing conduct.

In contrast, Jakobs, as the leading exponent of systemic functionalism in criminal law, developed in the 1980s the so-called general negative concept of action. Within this framework, the primary function of criminal law lies in the protection of normative expectations and the stabilization of the legal order. Accordingly, Jakobs incorporates the notion of avoidability into the concept of action, whereby any conduct that the agent could have avoided, based on their cognitive and volitional capacities, is considered an action in the juridical sense.

Thus, under Jakobs's theoretical model, all avoidably unlawful behaviours fall within the scope of legally relevant action, since the actor possessed the possibility of self-regulation and norm-conforming behaviour but chose to deviate therefrom. A criminally imputable action, therefore, presupposes the production of a result that was objectively avoidable, and it is precisely this presupposition that underpins the negative general theory of action advanced by Jakobs.

Normative action in actuality

From a formal and material standpoint, crime may be defined as a voluntary, typical, unlawful, and culpable human conduct that either harms or endangers a legally protected interest deemed worthy of criminal protection. The essence of this conceptualization lies in the recognition of the legal good as the normative axis of criminal protection, thereby justifying the intervention of criminal norms as a necessary safeguard.

As a preliminary consideration, in order to delineate the scope of conduct relevant to criminal law within the current system of criminal liability attribution, it becomes necessary to recall that, for a human act to attain relevance under criminal law, it must cumulatively satisfy the following requirements: (a) typicality: the conduct, whether active (commission) or passive (omission), must be subsumed under a statutory criminal provision, that is, it must correspond to a type of offence previously defined by law (*nullum crimen sine lege*). (b) unlawfulness: the conduct

must be objectively illicit, meaning it contravenes the legal order and is not justified by any legal cause of justification (e.g., self-defence). (c) culpability: the perpetrator must be personally reproachable for the conduct, which presupposes discernment, freedom of decision, and the capacity to understand the unlawfulness of their actions.

Over the course of its historical development, the science of criminal law has consistently endeavoured to elaborate a uniform normative concept of action, capable of serving as a theoretical foundation for the criteria of imputability and of distinguishing conduct that falls within the realm of criminally relevant action from that which lies outside its scope.

According to Johner and Schöfer Albrecht (2020), the construction of a doctrinally uniform concept of action must fulfil three fundamental functions within the general theory of crime: (a) the classificatory function, through which the concept must serve as a general category capable of encompassing all the various modalities of criminal conduct, whether by action or omission, intentional or not, under a single theoretical framework; (b) the definitional function, which requires the concept of action to provide a material and structural basis upon which the subsequent elements of the offence - typicality, unlawfulness, and culpability - may be normatively anchored and systematically articulated; (c) the delimiting function, which aims to exclude *ab initio* all behaviours that, by their nature or context, do not fall within the scope of criminal law, thereby establishing a threshold of legal relevance between punishable and non-punishable conduct.

In line with this analytical framework, Taipa de Carvalho (2022, pp. 260-261) upholds a social-normative concept of action, which he contends must simultaneously perform a dual function: one negative (exclusionary) and the other positive (integrative).

Regarding the negative function, the concept of action must operate as a criterion of exclusion, rejecting from the outset all conduct that is not susceptible to criminal juridical evaluation. In this context, actions devoid of volitional control, such as reflex movements, are expressly excluded, as they lack social disapproval and do not correspond to conduct imputable to the will of the agent. As Taipa de Carvalho (2022) notes, actions that escape human self-determination do not attract negative social valuation, and therefore, do not constitute criminally relevant behaviour.

Conversely, the positive function requires that the concept of action serve as a common denominator applicable to intentional and negligent offences, as well as to commissive and omissive modalities, thereby ensuring systematic coherence within the general part of criminal law.

The criminally relevant action constitutes the minimum requirement for the characterization of conduct as a crime. It is through the voluntary act that criminal behaviour manifests the foundational element of culpable imputation. In this sense, the agent's will operates as a constitutive presupposition for the attribution of criminal responsibility.

Accordingly, in line not only with the principle of human dignity but also with the structure of the theory of culpability, which operates through mechanisms of exclusion, the legislator expressly removes from the sphere of imputability all conduct that is involuntary or innate in nature. The legal system thereby recognizes that, in the absence of volitional direction, criminal reproach is unwarranted, and consequently, the act in question cannot ground criminal liability. Put differently: where there is no voluntary action, there can be no juridically relevant censure.

As previously noted, the concept of action functions as a threshold element for the imputation of criminal responsibility, particularly within the realm of culpability. In this regard, Cavaleiro Ferreira (2010) underscores the centrality of the volitional component across the various theoretical formulations of crime, asserting that culpability simultaneously constitutes the prerequisite, the foundation, and the measure of all criminal responsibility.

This doctrinal orientation finds normative reinforcement in the fundamental principle of *nulla poena sine culpa*, which establishes that no sanction may be imposed in the absence of guilt, and that the extent of punishment must never exceed the degree of culpability. It is for this reason that the concept of guilt has long occupied a central place in legal scholarship, being understood, in a subjective sense, as inexperience, negligence, or inattentiveness, and, in an objective sense, as a breach of the normative order.

As Marques da Silva (2020) elucidates, the concept of culpability (guilt) assumes a normative character, reflecting a valuation and censure judgment directed at the agent for having committed an unlawful act without being motivated to act in accordance with the norm, in a situation where such motivation was both expected and required. This absence of normative motivation reveals an internal volitional orientation of the agent that is in disconformity with the legal order.

Culpability, therefore, functions as a mechanism of juridical reproach, grounded in the presupposition of the agent's freedom. In broader terms (*lato sensu*), it is understood as a judgment of personal blameworthiness, whereby the legal system reproves the agent for having made the voluntary decision to engage in conduct contrary to law, in circumstances in which it was possible and expected for the agent to have acted lawfully. Thus, criminal censure is only legitimate when directed at

an individual who possesses the minimum cognitive and volitional capacity to comprehend the unlawfulness of their conduct and to freely and consciously determine their will in accordance with the law.

In line with this understanding, criminal dogmatics affirms that for conduct to be criminally imputable, it must be culpable - that is, worthy of reproach. Culpability thereby constitutes an essential element of criminal liability, as it encapsulates a personal and ethical judgment of disapproval, premised on the notion that the agent could have and should have acted differently, in accordance with the normative demands of the legal system.

Cunha Ferreira (2023) emphasizes that the function of assessing criminally relevant conduct is fulfilled prior to the examination of typicality, insofar as it prece-des and underpins the systematic analysis of the constitutive elements of the offence, namely typical, unlawful, and culpable human conduct, as traditionally recognized in legal doctrine.

Given the theoretical and practical relevance of the matter and drawing on the contributions of various doctrinal schools in shaping the concept of criminally relevant action, this inquiry aims to explore the psychophysiological dynamics involved in reflex movements and the agent's capacity to exercise control over such actions. The objective is to delineate the limits of imputability concerning actions relevant to criminal law, with particular attention to distinguishing controlled and voluntary behaviour - which may be the subject of criminal reproach - from merely reflexive or involuntary actions, which, by their nature, escape the domain of juridical censure.

Reflexive actions and criminal liability

The intersection of neuroscience and law, commonly referred to as neurolaw, has emerged as a valuable discipline aimed at enhancing the fairness and rationality of legal proceedings. By integrating neuroscientific insights into the legal process, neurolaw contributes to a more evidence-based and objective administration of justice.

According to Dash, Padhi & Das (2020), this field enables legal practitioners to introduce neurobiological evidence in court, providing context for a defendant's cognitive functions and behavioral patterns relevant to the legal matter in question. Furthermore, it supports the work of expert witnesses, allowing them to ground their assessments and testimony in scientifically validated neurological data, thereby promoting more equitable and informed judicial outcomes.

As previously noted, material criminal law does not impose liability solely based on the violation or endangerment of an objective legal duty. Rather, it also requires the establishment of a subjective nexus between the agent's volitional capacity and the commission of the unlawful act.

In this regard, rightly underscores that, for the purposes of criminal liability, "the act, as a constitutive element of the offence, must always be performed with the agent's will, being the product or result of their volitional determination." This affirmation reinforces the centrality of the will as an indispensable condition for personal criminal imputability (MARQUES DA SILVA, 2020, p. 47)

Considering the foregoing and acknowledging the doctrinal relevance of the will in the structure of criminal imputation, it becomes imperative, particularly in light of advances in the field of neurosciences, to examine the scope of neurodeterminism, and to address fundamental questions that clarify which human actions are, in fact, subject to voluntary control. Moreover, this inquiry seeks to assess the contributions of neuroscience to the understanding of negligent behaviour, especially in the identification of the cognitive and volitional mechanisms underlying human decision-making processes, with a view to refining the criteria for criminal liability attribution in cases involving non-intentional conduct.

In casu, the doctrinal controversy centers on the distinction between actions that reflect a genuine exercise of free will and those that result from neurodeterministic processes, in which the agent's conduct is devoid of cognitive control and, consequently, lacks a volitional nexus essential to criminal imputability.

On one side of this debate, there exist behaviours that, although not strictly voluntary, are nonetheless considered criminally relevant, due to their objective conformity with a legal type and the possibility of normative reproach. On the other hand, there are acts which, by their very nature, escape volitional control and are thus excluded from the domain of criminal law, such as natural reflex movements and conducts resulting from severe mental disorders, where the lack of imputability was not strategically induced by the agent as a means of circumventing responsibility.

This dichotomy makes it evident that criminal-legal science must necessarily engage in interdisciplinary dialogue, particularly with the natural sciences, in order to develop robust criteria for determining what constitutes a punishable act and for clearly delineating involuntary or reflexive behaviours, which ought to be excluded from the scope of criminal liability.

The prevailing paradigm within the natural sciences postulates the existence of a causal relationship between physiological mechanisms and cognitive processes. It is thus widely acknowledged that mental activity is intrinsically linked to psy-

chophysiological functioning, encompassing fundamental cognitive operations such as planning, perception, attention, reasoning, and both short- and long-term memory.

During the 18th and 19th centuries, coinciding with significant developments in the cognitive sciences, scholars began to undertake systematic efforts to map brain activity, with the objective of identifying the specific cerebral functions responsible for the genesis of mental processes. These early inquiries aimed to correlate information processing mechanisms with distinct neuroanatomical regions, many of which, it was observed, operate autonomously, that is, independently of conscious awareness (BENJAFIELD, 2007).

As neuroscience evolved through successive decades of empirical research, the field progressively consolidated the understanding that, although the human being is indeed capable of rational and conscious cognitive performance, a substantial portion of brain activity occurs through unconscious and involuntary processes. This recognition has profound implications for legal theory, particularly in the delimitation of voluntary conduct and the assessment of criminal imputability.

To elucidate the neurological operations that underlie unconscious and involuntary processes as distinct from those governed by conscious and voluntary mechanisms, it is essential to analyze the fundamental principles of the human sensory system.

According to Stein and Stoodley (2006), sensory stimuli are perpetually received, processed, and interpreted by individuals through their sensory organs. However, due to the influence of various cognitive facts - such as perception, memory, and selective attention - the sensory system selectively responds only to certain categories of stimuli characterized by specific attributes. This selective responsiveness is conditioned by the degree of salience or relevance attributed to stimuli, accordingly, some stimuli are accentuated and processed while others are disregarded.

Furthermore, the authors contend that when stimuli exhibit a repetitive nature, a phenomenon termed *adaptation* ensues within cognitive science. Adaptation manifests as a diminution in the intensity of neural response to such stimuli, reflecting their characterization as constant or unchanging; consequently, neuronal cells reduce their active responsiveness as they habituate to the received stimulus.

From the foregoing, it is evident that the magnitude of the neural response to stimuli is contingent upon intrinsic characteristics of the stimuli themselves, giving rise primarily to involuntary, instinctive, and reflexive reactions. These reactions operate independently of the conscious will, thereby delineating the boundary between automatic neurological responses and those requiring deliberate volition.

It is pertinent to underscore that voluntary actions are responses emanating directly from the human will, with the encephalon (situated within the cranial cavity) serving as the principal organ responsible for their processing. As Sokolov (1994) observed, the encephalon, constituting the portion of the central nervous system enclosed by the skull, regulates a broad spectrum of bodily functions, ranging from involuntary physiological processes to sophisticated cognitive operations. Conversely, reflex actions constitute rapid, innate, and involuntary reactions to external stimuli, primarily serving to protect or adapt the organism to its environment. Such reflexive responses are mediated through the reflex arc mechanism.

The anatomical substrate responsible for the execution of reflex actions is the spinal cord. Crucially, these reflexive impulses are not transmitted to the encephalon; hence, the individual remains unaware of such automatic responses (BENJAFIELD, 2007).

According to Kang et al (2022), the prevailing model of executive functions, which has dominated the field for over two decades, proposes that seemingly distinct forms of inhibitory control, such as suppressing a dominant response or filtering out irrelevant thoughts and distractions, are in fact expressions of a single underlying executive function.

A further critical distinction exists between reflex actions and instinctive actions, which must not be conflated. Reflex actions, by their inherent constancy and automaticity, are beyond the control of the agent and, as such, cannot be deemed manifestations of human behaviour within a legal framework. Instinctive actions, however, while rooted in innate, intuitive reactions, possess intentionality and may be regulated and refined by the will, often shaped through experiential learning. A quintessential example is the conditioning involved in pain tolerance training, wherein instinctive responses are consciously modulated.

Reflex actions originate in the spinal cord, which constitutes the enlarged segment of the central nervous system. Empirical investigations by Stein and Stoodley (2006) have demonstrated that responses mediated by the spinal cord are reflexive, automatic, and innate in nature, and thus cannot be classified as conscious or voluntary actions.

Mather (2009) elucidates the processing of such information as follows: nerve impulses travel via sensory neurons to the grey matter of the spinal cord, where synaptic connections convert the incoming stimulus into an immediate motor command, eliciting a reflex action without involving cerebral processing. In other words, the response to the stimulus is generated autonomously by the spinal cord, and the corresponding neural message bypasses the brain entirely. This phenomenon, known

as a spinal reflex or medullary reflex, occurs rapidly and automatically, obviating any need for conscious intervention.

In reflexive actions, the agent lacks the capacity to voluntarily direct bodily movements, as the resulting behaviour is involuntary. Accordingly, reflexive actions are also referred to as innate or hereditary actions, reflecting their universal presence among humans. These actions manifest as instantaneous reactions, such as withdrawing one's hand from a hot surface, where the signal is transmitted through the spinal cord, permitting a swift protective response.

It is thus evident that reflexive actions do not constitute legally relevant conduct within criminal law, given the absence of volitional control or autonomous agency. The agent merely issues a rudimentary response via the peripheral nervous system, preceding any cerebral processing of the stimulus. Consequently, such actions fall outside the ambit of criminal responsibility, as the requisite element of voluntary action is lacking.

Conduct that is not freely and consciously adopted cannot be subject to legal reproach. If human behaviour is neurodetermined by an individual's psychophysiological constitution, such behaviour lacks the requisite autonomy to be deemed criminally culpable.

In support of this position, it is posited that society does not attach legal relevance - or negative moral valuation - to actions beyond the control of human volition. As Taipa de Carvalho (2022, p. 261) aptly observes, just as society does not censure acts committed by animals or damage inflicted by natural phenomena, it merely regrets their potentially harmful social consequences and seeks to mitigate or prevent their recurrence.

Given that reflexive actions constitute innate and involuntary conduct, the legal treatment of actions or omissions performed unconsciously has engendered significant doctrinal debate. This is particularly salient in relation to the imputation of liability for unconscious behaviour, where the central question arises as to whether such conduct may be deemed involuntary and thus exempt from criminal relevance. This issue is notably pertinent within the context of the legal regime addressing unconscious negligence.

The voluntariness of a typical criminal act encompasses two distinct modalities: intent and negligence. Marques da Silva (2020) clarifies that these modalities differ based on the nature of voluntariness involved: direct voluntariness characterizes intentional actions, whereas indirect voluntariness pertains to negligent actions. This distinction is crucial for the proper legal assessment of the agent's mental state and consequent responsibility.

Traditionally, within the scope of subjective imputation for unlawful and negligent conduct, criminal doctrine has primarily focused on the regime of intent, with negligent crimes receiving comparatively limited analysis. However, contemporary criminal liability theory acknowledges not only the centrality of intent but also the significant role of negligence. Thus, any unlawful act must be either a typical intentional act or a typical negligent act, which together constitute the subjective elements of the criminal type.

The legal framework generally recognizes that only intentional actions are punishable as a rule, while negligent actions are subject to sanction only in specifically prescribed circumstances. This principle is enshrined in Article 13 of the Portuguese Criminal Code, which states that “only actions committed intentionally or, in cases specifically provided for by law, with negligence are punishable.” Complementing this, Article 15 of the same Code delineates the two forms of negligence: paragraph (a) defines conscious negligence as occurring when the agent “foresees the possibility of the occurrence of an act constituting a criminal offense but proceeds without conforming to this realization”; paragraph (b) defines unconscious negligence where the agent “does not even foresee the possibility of the act’s occurrence.”

According to Taipa de Carvalho (2022), negligent liability is composed of two essential elements: (1) the violation of an objective duty of care, termed the devaluation of the act; and (2) the occurrence of a typical harmful result, termed the devaluation of the result. Consequently, for a negligent offense to be constituted, a causal nexus of adequacy must exist between the agent’s conduct and the harmful outcome produced.

The action that violates the objective duty of care pertains to the legal obligation incumbent upon individuals to act with due caution and attention in all their conduct, to avoid causing harm to third parties. This objective duty is grounded in minimum standards of behaviour expected of a reasonable person placed in analogous circumstances.

The assessment of the objective duty to act with due care is principally based on two criteria. The first criterion relates to the standards of conduct expected of the agent, which is evaluated by reference to how a reasonable person would behave under similar conditions, considering factors such as the agent’s experience, knowledge, and the contextual circumstances surrounding the conduct. The second criterion involves the establishment of a causal nexus between the breach of the duty of care and the resulting harm, necessitating proof that the violation of this duty was an effective cause of the damage suffered by the victim.

With respect to the devaluation of the result, this concerns the appraisal

of the severity of the harm caused by the agent's conduct, alongside the agent's subjective intention and the personal and societal impact of the resultant damage.

Reiterating the foregoing, criminal liability does not arise merely from the violation of an objective legal duty or from placing another in a dangerous situation. It also requires the demonstration of a subjective nexus between the agent and the conduct that is, the element of will or voluntariness.

In consonance with this principle, Marques da Silva (2020, p. 126) affirms that, analogous to intentional crimes, "the essential core of negligent crimes is also a voluntary human action," stemming from the voluntary breach of standards of care imposed upon the agent by human experience or legal norms designed to safeguard protected legal interests.

To prevent the commission of unlawful actions, the legal system imposes upon individuals the obligation to exercise due attention in their conduct, thereby avoiding lapses of care which, even if unintentional, may infringe upon legally protected interests.

Against this backdrop, the distinction between reflexive actions and unconscious negligence assumes fundamental importance within criminal law, as it informs the manner in which liability for unlawful and negligent conduct is ascribed. A clear understanding of these concepts is indispensable for elucidating issues of culpability, which lie at the core of the just application of criminal sanctions.

Case law has also consistently supported the notion that reflex actions constitute acts beyond the control of the will and, therefore, are irrelevant from a criminal law standpoint. These encompass actions or omissions carried out in situations where the agent lacks volitional control, such as spasm, automatic behavior, natural events, somnambulism, and hypnosis (provided that the agent did not voluntarily place themselves in such a condition with the intent of committing a criminal act). In such cases, criminal liability is not excluded (Judgment of the Lisbon Court of Appeal, Case No. 34/21.1PHAMD.L1-9, dated February 2, 2023; Judgment of the Porto Court of Appeal, Case No. 586/16.8PHMTS.P, dated February 7, 2018).

In cases of unconscious negligence, although the agent did not actually foresee the possibility of the unlawful act's occurrence, such foreseeability was objectively accessible, meaning the agent had the capacity and legal duty to anticipate the risk. This form of negligence involves an action or omission that could have been averted had the agent exercised the requisite duty of care expected of a reasonable person in similar circumstances. Reflexive actions, by contrast, are inherently involuntary and innate; thus, the agent lacks any capacity to represent or foresee the act, and no different conduct can be legally required.

Finally, it must be emphasized that the adjudication of divergent situations concerning criminal liability necessitates a careful application of the criteria of predictability (the capacity to anticipate or conjecture the consequences of one's conduct) and avoidability (the capacity to alter or prevent the harmful outcome).

In this regard, it is contended that criminal liability for unlawful and negligent conduct arises only when the harmful event is both foreseeable and avoidable, given the specific circumstances and stimuli that lead to the concrete occurrence of the act.

These criteria - foreseeability and avoidability - are essential legal constructs in the characterization of a criminal offense. As previously argued, their application presupposes the existence of free will now of decision-making, a volitional capacity that is not biologically predetermined but rather subject to the autonomous control of the agent.

Conclusion

Criminal liability, as a fundamental principle, requires that the agent act voluntarily and with the requisite intent to commit the offense.

Due to its inherent complexity, the precise delineation of the scope of voluntariness in human actions or omissions has historically been, and will undoubtedly continue to be, the subject of extensive doctrinal debate and evolving legal interpretation.

The exclusion of culpable imputation in cases involving reflexive, automatic, and innate responses to stimuli finds support in the natural sciences. In such states, no conduct relevant from a criminal law perspective can be attributed to the agent, as these responses lack volitional control and do not stem from free will or autonomous decision-making.

The recent neuroscientific revolution has substantially enhanced our understanding of the mechanisms underlying unlawful and culpable conduct. Consequently, contemporary discourse on criminal action must adapt to novel methodologies for assessing potential unlawful and culpable behavior, thereby confronting new conceptual and practical challenges.

To elucidate the voluntary or involuntary nature of human behaviour, the criminal sciences - including criminal law - have increasingly acknowledged the invaluable contributions of neuroscience. By deepening the comprehension of the neural substrates involved in decision-making processes, the development and application of legal standards are poised to achieve greater precision and efficacy in attributing

criminal liability.

In terms of free will, avoidability corresponds to the threshold of delimitation of the voluntariness of human behavior.

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Conflicts of interest

The author declares that he have no conflicts of interest with respect to the research, authorship, and/or publication of this article.