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# Rhetoric of pain, approached under the complexity paradigm

## *Retorica del dolor, abordada bajo el paradigma de complejidad*

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Forty one years after receiving its first scientific definition, the pain phenomenon was re-defined in 2020 as "an unpleasant sensory and emotional experience associated or similar to that associated with actual or potential harm"<sup>(1)</sup>. It is a disquisition that could be considered controversial.

It would appear to be a definition with merely deterministic intentions. In the eyes of this essayist, this could be different. There could be an interpretation full of complex concepts, each and everyone committed to the understanding of pain, a meta-concept that we, at some point in the history of medicine and humanity, hope to grasp in its entirety. To reach this understanding, we must seek more complex explanations that allow us to analyze this phenomenon, both from each and every one of the elements that make it up, as well as from the phenomenon itself as a whole. With this objective in mind, it is worthwhile to be clear about the notions of simplicity and complexity and to understand that both result from our appreciation of reality and the subsequent fiction we create of the world through our perception. It is through these two lenses that the multiple descriptions of pain, and their validity, can be scrutinized.

Complexity, as defined by Morin<sup>(2)</sup>, is not novel. Perhaps it even exceeds human experience. If we observe the life of any individual, it is not too hard to notice that within each entity there is a ductile and versatile identity -one could almost say that there is more than one- that manifests itself throughout its life, which the entity can even examine through introspection. One could also argue that the introns of our existence, both on a real and metaphorical level, manifest in intricate ways both in our own composition and that of our own society. The scientific community, however, has chosen to

understand this complexity of the universe in parts, like the gears of a perfect machine; a deterministic view of everything. This is not a new approach: before science and evidence, the preferred tools for observing and interpreting the universe were God and mysticism. But even after taking off the mask of myth, the interest in seeing the world under a self-deterministic attitude has continued. It is with this guideline in mind that simplicity was born as a paradigm of study, with the aim of understanding the complexity of the whole and the one by dismembering them into cleanly delimited laws and principles.

Through disjunction -the process of separating that which is linked- and reduction -the process of uniting diverse elements- attempts have been made to understand phenomena of diverse order. Pain, for example, has been examined from a biological viewpoint detached from culture, with the aim of reducing reality to much more simplistic visions. It has also been analyzed by other disciplines, usually directly related to medicine, and its phenomenology has been studied almost exclusively by the human sciences and those that inspect the mind. But it is in the nature of its parts that pain exists as a whole. It is a labyrinthine unity, even if its parts are defined and treated in different terms from each other.

Such has been the desire for simplification that scientific circles focused on understanding pain have centred their efforts on finding simple answers that they presuppose hidden beyond the messiness, the intricate mechanisms of pain. In the light of post-LaPlace spirituality, they are in search of a universal law that explains the biological phenomena of pain in the hopes of achieving perfect and eternal concepts. This is the mission of the scholars of the algos who have set sail in search of a unique taxonomy, one that will allow them

to reduce the experience of pain to a series of valid symbols. However, reality does not work that way. For instance, physics, which seeks an explanatory theory of everything, has only found under its magnifying glass more and more layers of complexity such as quarks, indivisible bricks of reality, with confines that are difficult to delimit. In this way, the obsession with discarding complexity determines the impossible task of simplicity, which seeks simple answers in places where perhaps there are none.

Determinism has always struggled to find a natural order, to discard everything that cannot be qualified as order. There is an accepted idea of the universe as dominated by the principle of entropy and from which all development and organization followed. In fact, some see in this principle the opportunity to make a clear distinction between what we should consider a physical organization and a living one. The former, it is said, tend almost exclusively toward degradation, while the latter are inclined toward development and its possibilities. But these two orders, and the supposedly different tendencies that concern them, are not isolated from each other. Degradation, disorder, also concern life; all life dies, and its parts cease to be living. As in Bernard's whirlpools (3), the universe is nothing but what results from the interactions of order and disorder: clear patterns and orders are born out of turbulent and chaotic processes, and vice versa. Is it really possible to reconcile simplistic conceptions of pain in the face of this scenario, as an isolated and punctual sensory response to specific noxae? Perhaps not. And from another perspective, if the body were the universe, pain would be the entropy that would end up forming the patterns of life. We could understand pain as an evolutionary tool, one that allows the living cosmos to develop the mechanisms necessary to exist in the absence of pain itself.

Pain, it could be said, is a compositional complexity, a paradigm in constant fluctuation between states of order and disorder, of reorganization. It is a creative drive within the human, and at the same

time it's created by the society in which these same beings live and which shapes them. It unfolds in open systems with a naturalness that cannot be understood simplistically, or from a classical and isolated perspective. In conversation with Heraclitus' concept, "to live of death, to die of life" (4), pain seems to be the cause and effect of the order and disorder in which biology and the human mind are immersed. It is a phenomenon that is so much more than just an alert of something going wrong: it is a process that prevents death by demanding the reorganization, the overhaul, of the processes that generate it. These are conceptions that must necessarily lead us away from simplistic rationalism, from the mechanical philosophy that reigns in part of human history.

We could think of this vision as the one perceived in the conclusions of the Aspect experiment (5). These suggest that the explanation of certain occurrences is the product of mechanics, of temporal and spatial phenomena, so strange that to understand them we would practically have to imagine an explanation for them. They may obey concepts or laws of the universe that we do not know, or they may simply be processes so complex that our current understanding of the world is not sufficient. This same framework also fits the understanding of the physiology of pain. An example is the causal factors linked to the so-called chronic phantom limb pain. This pain demands explanations that almost go against what we know of the physical, the tissues, the functional and the dynamic. With an enactive posture in which dialogic is applied - which I will discuss later - this panorama should allow us to arrive at a correct vision of pain, provided that it is done using a paradigm of complexity.

Biology, and therefore medicine, teaches us that within the generality of living beings, humans are singular. That each individual is autonomous and manager of their consciousness. We are a unit constructed of cells, organs; in short, chimeras of small bricks. And although the universe is created by the back-and-forth

between chance and disorder, we live in a world that is also organized by processes that are self-determined by the intentions, by the egocentric position, of whatever will guide this particular system. Systems that can be set in motion for pain, for example, or in response to it. Pain is actually always framed within culture, which is a system in and of itself. And in that sense, the subject's experience of pain is important, because how we interpret and express the pain of an injury is determined not only by our physiological responses and our genetics, but also by the culture that has raised us, as well as the experiences of each person and the tools and language that each person has. Each being, additionally, can possess their own ideas and perceptions of pain, whether these are an inherited socially, or unique to the individual.

Pain has been understood as part of disorder. But its vast complexity, the presence of contradictions in its definition, the relationship between empirical and theoretical knowledge, and the fact we cannot simply fit it within an absolute order or definition, have often made its assimilation difficult in the eyes of modern scientists. Fortunately, this also gives way to the possibility that, in the face of these incomplete visions and the search for primordial truths, there can be a solidary and confluent effort of different sciences and disciplines, which could allow us to appreciate and learn more about all facets of the phenomenon. It is the convergence of these lenses that could allow us to get a little closer to the primordial reality of which words and definitions are but similes and symbols. Each researcher, each scientist, is a different pair of eyes that can formulate his own interpretation of the world under a doctrine of enaction (6). And, finally, we are all trans-human beings (7), shaped by the culture that raises us and which is always in search of constant improvement both socially and biologically.

Being aware of its multi-dimensionality, that there is no way to understand pain in a simple and obvious way, forces us to reconcile and unify various dimensions of it

as a comprehensive explanation. We must accept as true that we will never possess an absolute knowledge of something, and that different explanations can be more complete together than in isolation.

It is necessary, then, to mention of a method of knowing the world that appears infallible: rationality. We could understand it as a dialogue between the mind, which seeks to construct logical paths that allow it to understand, traverse and interact with the world, and the desire to acquire knowledge without limiting its breadth. This knowledge must be enriched by everything the world has to offer. In practice, however, this ideal is very far from the narrowness of the definitions provided by medical authorities, and their rigidity often works in detriment of any desire for new research. In the scale of rationality, the extreme can definitely be erroneous, and it's not always easy to know where in that scale any given definition might be. It is fallible, then, but no less valuable: rationality can be reined in with self-criticism of any conception and definition, through incessant communication with the empirical world. This would allow us to accept novel and valuable visions and ideas, and not fall into a delirium of absolute coherence.

At this point, it is important to attack the dilemma that concerns us directly, and not to look for borderline definitions: pain, however complex its definition may be, is a specific, unique, and arguably central object of study. And if we want to reach it, it is necessary to apply certain macro-concepts, specified by Morin (2).

In first place is dialogic. Elements that are antagonistic should not be seen as opposites but as complements. Pain and analgesia could be seen as natural enemies that are suppressed the moment the other disappears, but in their opposition, they also make possible new reactions in the body, new types of order and complexity.

Secondly, there is the recursive principle, which allows us to conceive pain as the product or response to a stimulus, and at the same time as the main instigator

of the process that will eliminate it. Pain, for example, can be produced by inflammation and its interactions with the nervous system, but at the same time, it is the trigger of a greater reactivity, of allodynia and of physical processes whose specific task would be to suppress precisely that pain. It could be said that pain generates its own solution, and this does away a linear idea of cause and effect: it is a self-constitutive and self-organizing phenomenon.

Thirdly, there is the holographic concept. It proposes understanding of the totality of the object of study from each of its parts regardless of their size; the nature of the whole can be understood from each fragment. With this vision, each element that makes up the system associated with pain possesses total information of the general system. The algos, the pain, can be decomposed into each of its parts without these parts ceasing to have complete information about it. If we want to understand pain, we can do so from the experience of each nerve cell, conduction fiber, and analytical network of our central nervous system. The experience of pain by a single human being, moreover, contains information relevant to all experiences of pain by our species. This would suggest a paradox, under a Pascal (the programming language) point of view, of being unable to conceive the whole without first seeing its parts. Morin suggests that the knowledge we access from the parts, which we should not disregard when contemplating the whole they form, converges and feeds our knowledge of the whole system and its emerging qualities, and vice versa. The affirmations and knowledge resulting from the use of these three macro-concepts flow from Morin's doctrine and fit perfectly with a desire for the exploration of pain.

This essay is not aimed at criticizing the contemporary definition of pain. If anything, it seeks to scrutinize and expand this exciting topic. We have frankly exposed the weaknesses exhibited by the current view of pain, with the intention of promoting the convergence of more points of view to enhance it. This text is an

invitation to leave our comfort zone, our incomplete rationalism, in the hope that diverse scientific disciplines can shed new light on the investigation of this mechanism that is pain. Maslow's law of the hammer, expressed by him in his text, says "it is tempting to think that, if the only tool you have is a hammer, you can treat anything as if it were a nail", and it is a warning against the use of any given strategy to interpret dissimilar problems: it may simply result in the same solution for all of them (8). This text simply expresses the desire to generate new and complex meta-concepts that go beyond the superficial symbolism of a simple definition and can describe open systems conceived by "generalist" technoscientists, as is Ludwig Bertalanffy's advice (9). They must be people with a cardinal desire to clarify the enigmas, even the soul, of pain and its singularities, always in search of a paradigm that gives a complex answer to this phenomenon that is part of the human species. It is only if we arrive at a more complete, extended, and complex understanding of pain that we will be able to lay the foundations for the struggles and discussions that the future holds for us.

Complexity, as Morin conceives it, is based on the dialogue between practice and experience, between research and the reality of pain. That which is considered irrational, seen from the point of view of reason, may not end up being so, since "reason is evolutionary and it is still evolving" (10). True rationality is not intolerant of mysticism, just as it cannot be intolerant of mystery, innovation, or even false rationality, not if we want to reach the next stage of evolution in the regenerative cycle that has marked the progress of our civilization. There is a long way to go, one that takes us in of the prehistory of the human spirit, and complexity is the key that can lead us to a mind and a society of ideas, with solidarity and without barbarism. A world where we have not arrived at a place of knowledge where there is nothing more to do, but one where we are creators of a

time of meta-systems, accompanied by a new paradigm of pain.

Regarding the relevance of the definition given to the rich and complex reality of pain, it is clear that, according to the teachings of the French master, it is still incomplete. It is necessary for the symbols included in this definition to be able to represent the complexity of the explained object, its individual and collective reality. After all, if we want to keep its experience in the light of true rationality, we can neither strip pain of its real truth, nor memorize it as one.

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