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Short Communication

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Variety and Variability in the diagnosis of Parkinson's disease. A Look from the Relational Cybernetics

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Abstract

The diagnosis of Parkinson's disease is one of the current challenges in the medical field of neurology. For this reason, there is a need to look for new models that, based on transdisciplinary conceptions, contribute to its early diagnosis to greatly improve the quality of life of those who suffer from it. This work intends to be a proposal to build a diagnosis on the following conceptual triad: co-autonomy, centralization and variety not required, which radically change the position of the clinical observer, on a general cybernetic basis and a systemic relational vision.

Keywords: Parkinson's, Diagnosis, Variety, Variability, Co-Autonomy, Centralisation and Variety Not Required

Introduction

The Central Nervous System (CNS) regions in charge of coordinating activity, muscle tone, and movements are affected by Parkinson's disease (PD). It is regarded as the second most prevalent neurodegenerative disease and is a chronic, progressive, and irreversible neurodegenerative disorder. For a long time, PD was thought to be a sporadic, non-genetic condition; however, the majority of cases are now recognized as being idiopathic. But in recent years, the notion of viewing PD as a sporadic disorder has undergone a significant change [1]. The main risk factor for developing PD is now thought to be genetic factors, possibly in conjunction with environmental factors. For decades, studies have focused on describing psychomotor deficits because the condition was initially thought to be only a movement disorder. However, the current understanding of the condition as a neurodegenerative disease has led to the inclusion of significant neuropsychological implications involving functions in many cortical and subcortical areas that determine a syndromic motor-non-motor cortex with critical neurocognitive and behavioral aspects, as well as a great deal of interindividual variability [2,3].

Although the diagnosis of PD is based on clinical manifestations, in practice it is not so simple because the risk factors are not well known, the signs and symptoms involved in this motor-non-motor syndromic courtship appear in multiple diseases, and there are no biological markers available to confirm the clinical suspicion. Since its conception, the diagnostic criteria for PD have been variability-oriented. This means that both signs and symptoms are declared once they manifest themselves, which implies a visible, present pathological process. From our relational systemic vision, the limitations of this approach lie in the fact that variability is an expression of states of variety or state numbers presented by a living system, understood as configurations of variables that, depending on the state, can be classified as PD.

In recent years, great attention has been paid to the presence of symptoms that appear in a significant percentage of patients and that precede the development of motor symptoms by several years. These include the presence of hyposmia, behavioral disturbances during REM sleep, depression, and constipation. Based on the above, and to seek an early diagnostic solution before the variety of states related to motor symptoms become evident, it is necessary to construct a systemic vision concerning what we will call the patient in general and the PD patient in particular. At this point, we must insist that, if a distinction involves the configurator who operates it, the descriptive process rests on the fact that this operation affects what is observed in such a way as to preclude all predictive beliefs. Thus, we can claim that this operation, as a diagnostic operation, can only be understood based on how we generate distinctions [4]. Most subsequent descriptions and explanations do not go beyond this simple and linear cognitive consideration. Patients and the environment are "aprioristically" conceived

as units independent of each other. The clinician and his or her statements uniquely predict the referent; it is the objective observer who only needs to see to describe the world [5]. These ideas form the classical paradigm in science, whose basis is based on the following assumptions:

1. The symptoms and signs point to an independent and autonomous external "reality."
2. The clinician has access to that reality; it is given to him or her. Through interactions with that reality, the clinician can explain it, albeit by slightly distorting it.
3. The clinician's categories and descriptive-explanatory statements are a part of that external reality and have nothing to do with the observer.

A new model with a systemic organization about everything above entails deforming the semiotic field to avoid the tautologies that link and replicate observation sequences 1, 2, and 3. To do this, we must switch from a first-order perspective (an observer outside the observed system) to second-order descriptions (an observer inside the observed system); this can be summed up as follows: "The clinician relates to the patient in his entorno, at the same time observing his entorno specified by the patient in his entorno which is part of the clinician's entorno." The maintenance of the vital phenomenon has to do with the emerging relations of the organism-entorno unit, a unit in which the latter produces the conditions of its existence and makes it habitable, which we have called ecopoiesis. Entorno and environment must be distinguished as different (entorno is a Spanish word meaning that which surrounds and remains). It has no English translation; however, it can be understood as that which shapes the organism in its environment. The environment is constituted by all the parameters that an observer distinguishes without considering the organism. The entorno is everything specified by the organism and is expressed by the behaviors that emerge from the organism-entorno relationship [6].

Based on the above rationale, the criteria for a new PD diagnostic process should be designed on the following conceptual triad: co-autonomy, centralization, and non-required variety [7-9].

Co-Autonomy

Any construction is unavoidably a co-construction when it comes to the reformulation of facts, the realm of human communication, and particularly the relational paradigm's semiotic field. Therefore, in the context of meaning and the setting in which it occurs, co-autonomy is the same as autonomy. Co-autonomy is always implied when a process is marked as autonomous. We will always understand any "self" to be at least "co-autonomous" in its circumstance or environment, and the original idea of "self" (autonomy) does not acquire meaning within this paradigm (Oikos). As a result, autonomy by itself does not acquire meaning in the original, limiting, and straightforward sense.

Centralization

In the context of a relational system, we will comprehend through centralization the difference in connectivity that occurs in network structures. This is because, within these, more distinctions are produced and as a result, more information is generated, allowing us to comprehend that in that sector, pertinent decisions are made. As a result, we can make distinctions between subsystems that concentrate more connections without necessarily assuming that these structures also concentrate the flows that can be distributed or controlled, among other things. These types of behaviors aid in determining how to move within the configuration (hierarchical or heterarchical). Centralism and centralities can occasionally be understood as polycentric rather than always being centric [10]. Everything living, from ecosystems to cellular tissues, can be polycentric, acentric, or even polycentric acentric under certain conditions. Very high levels of an organization can feed on polycentric acentric feedback to produce centrism or return to polycentric function, possibly analogous to what we refer to as heterarchy in human organizations.

Variety Not Required (VNR)

In the context of PD, NRV is the end result of those interactions that lead to dissociation, loss of complexity, and subsequent loss of organization, endangering the living unit's relational viability. Changes made at the cellular structural level up to the patient's social support system can be used to describe NRV. Accordingly, PD produces a high level of NRV, which is reflected in the high variability of clinical outcomes. As we mentioned above, these clinical outcomes are the result of unnecessary control, which only serves to increase the uncertainty of diagnosis and treatment.

Cohesion, communication, conduction and coordination model in EP

The model of cohesion, communication, conduction, and coordination (CO4), as a transdisciplinary structure, implies the development and focus of a new relationship that requires and merits the development of a new conceptual framework that transcends the objects and frameworks that each discipline, individually (multidisciplinary), should study. The design of the diagnosis, which promotes transdisciplinary, implies that the boundaries of the disciplines are implausible, making it impossible or very challenging to identify the disciplines that make it up. The CO4 criteria are explained as follows:

Cohesion

Regardless of the scale of observation, we will define cohesion for a relational unit as the systemic expression of its co autonomy.

Conduction

By definition, conduction is a structure that arranges connective flow to produce information. This structure includes both hierarchical configurations and types.

Communication; is the potential for legibility within a shared or common field of differences that determines a process action.

Coordination

We will define as the meta-process of regulation that results from the collaboration of networks that are complementary to one another and work well together.

The processes that make up a relational unit are connected through the regulation of differences, which are amplified or diminished depending on the required variety.

We could state that in the case of PD, all these "plastic changes" - relational CNS" provide NRV to the "biological system"-environment relationship, which brings with it the complex biological, cognitive, learning, and memory compromises that accompany PD, whose causes are complex biological, cognitive, learning, and memory deficits. Neuroplasticity is the capacity of the CNS to maintain its adaptive condition to a wide range of stimuli.

Loss of cohesion brought on by a decreased systemic expression of co-autonomy, which is essential for the healthy operation of the neural network surrounding the CNS. Cognitive decline, affective disorders (such as depression and anxiety), and psychosis are among the neuropsychiatric disorders.

Modifications to the neural network's connective flow for the generation of information, along with a loss of heterarchical functioning in a particular region of the neuronal. As the subnetworks start to assume hierarchy and lose co-autonomy, conduction suffers as a result. Orthostatic hypotension, sweating issues, sphincter dysfunction, and constipation (urinary urgency or incontinence). Sexually inappropriate (difficulty in initiating or maintaining an erection, as well as delay or inhibition of ejaculation in men, while in women inhibition of orgasm is the most common problem).

Loss of communication by the neural networks that configure and emerge in PD.

Loss of coordination with the loss of co autonomy of the neural network, which implies loss of control due to a decrease or amplification of the connective tissue differences within the neuronal network of the CNS [11, 12].

Conclusion

A fragmented conception of the patient, the assumption of a universal observer, and an invariant narrative have all led to the diagnosis of PD, which has been reduced to explanatory concepts like genetic make-up and environmental influences as determinants. The process of early diagnosis must be focused on the states of variety and their transitions as processes that constitute the evolution of PD if we accept that the organism's adaptation is a condition rather than an outcome. The clinical and early pre-motor stages can be in line with one another in this manner. Additionally, this proposal enables us to comprehend that symptoms are an expression of variability configurations that are expressed as such and that directly combating them yields promising but insufficient results. This is due to the fact that the symptoms we are dealing with are variations in the expressions of states of variety (or "expos").

In conclusion, this study suggests that the diagnostic process be tailored to early CO4 states that are responsive to variety compromises with coautonomy compromised, centralization compromised, and variety not required, as well as late states with a motor compromise that are better explained by low systemic cohesion due to decreased coautonomy, hierarchization of driving due to loss of control, poor communication, and coordination.

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Conflict of Interest

No conflict of interest.

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