

A Complexity-Based Diagnostic on the Democratic Unity
Roundtable MUD: Problems and Alternatives (2008-2016)

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**A COMPLEXITY-BASED DIAGNOSTIC ON THE
DEMOCRATIC UNITY ROUNDTABLE –MUD:
PROBLEMS AND ALTERNATIVES**

***Abstract.** This exploratory paper studies the Venezuelan political movement Democratic Unity Roundtable MUD (Mesa de la Unidad Democrática), created to oppose the socialist government ruling in the country. The critique is done from a complexity science standpoint. Some key concepts of complex systems are used to explicate the functioning and organization of the MUD. This with the aim of generating a comprehensive diagnostic of the problems it faces, and providing new insights into detrimental behaviors and practices the party currently holds. The complexity approach to its problems help understand better the sociopolitical context that frames the party and, ultimately, propose solutions to the cohesion problems it presents.*

***Keywords:** Democratic Unity Roundtable, complexity, Venezuela, Chavismo, Mesa de la Unidad Democrática, self-organization.*

Introduction

In the last years, Venezuela faced a series of difficulties related to a disorganized administration of the country; since 1999 when Hugo Chavez Frías became president, he produced radical changes in the way the economy was managed, corruption attacked, oil

distributed and factors of production organized (International Crisis Group, 2007). After the decease of Hugo Chavez in 2013, Nicolas Maduro, who had occupied various places working with the former president, achieved the presidency after national elections. Even though the opposition questioned how Nicolás Maduro arrived to the presidency and the legitimacy of the result, the attempts to not accept his election were not fructiferous (CNN en Español, 2013)

Although many problems were already visible by the time Hugo Chavez died, he still had numerous adepts, which led to the empowering of Nicolás Maduro, one of his strongest coalition members. After his arrival, for instance, the GDP decreased in parallel to the augment of the scarcity of basic consumption products, the fiscal deficit, insecurity, homicides, the international debt, to name just a few (Dinero, 2013). Due to this situation, which became more visible since the last period of Hugo Chavez (1999-2013), leaders of the various opposition movements and parties reunited to create what they thought was going to be a solid body to compete with the former government tendency, to confront the regime and give the country the hope of a change of government and government structure.

The unification of the opposition was necessary because initially the votes that went to them were dispersed and scattered among several number of opposition candidates that ran for various places. Therefore, it was convenient to create a unified body that made it easier to conquer political places such as sits in the National Assembly in order to be able to achieve a visible and tangible change. It was under this premise that the Democratic Unity Roundtable (Mesa de la Unidad Democrática, MUD) appeared in the political scene in 2008 (Valenzuela, 2014)

The MUD is composed by a rich diversity of ideologies and tendencies, being the most prominent social democrats, Marxists, unionists, pluralists, ecologists and Christians, represented in twenty-six opposition parties whose unifying principle is to be against the Chavez regime; that still prevails in the country. Since its foundation the party has achieved a series of goals related to the interest of changing the governmental structure of Venezuela. Although they have not been able to overthrow the current government, they have managed to compete with it. As stated by Ramon Eduardo Tello in a report for the comprehensive partnership of public policies (Tello, 2015) the MUD reached agreements for regional elections in 2008, attaining the victory in several governorates of State and

Municipal Mayors, and in 2009 elections the MUD won several seats in the National Assembly thanks to the party attaining 52% of the votes. It is important to note that this percentage did not represent the parliamentary majority, allowing the Unified Socialist Party of Venezuela to remain in control of the assembly (Constitución política de Venezuela, 1999). In 2015 new Parliamentary elections took place. These showed an increased percentage of votes against the government; the MUD, for instance, was able to reach a majority of 109 seats, a historical victory for the MUD (BBC Mundo, 2015)

As the statistics of above reflect, the MUD achieved actual progress in its purpose of gaining more power, which led to the assumption that there was an acceptable degree of cohesion among the parties and movements that conform the MUD (Mesa de la Unidad Democrática, N.D). However, this assumption became slowly blurred when internal problems and setbacks such as the lack of cohesion and influence differences became public, bringing questions about the actual unity of the party. Following this, the claim of this paper is that the diversity of the components of the MUD and their lack of common traits represent some of the difficulties the party face when trying to thrive and achieve its goal of opposing the government of Nicolás Maduro and the downsets of the dominant socialist ideology in Venezuela.

A complex systems framework provides useful concepts and tools of evaluation for the problems of the MUD, as well as possible solutions to the lack of internal cohesion of the party. This is going to be done by identifying and examining the organizational and structural problems of the Democratic Unity RoundTable in the period 2008-2016. Therefore, the first section of the paper describes the MUD in terms of a complex system by means of selecting key concepts in complexity theory that are present in the behaviour and composition of the movement. The second section describes some internal and external difficulties the MUD has faced over the years that have affected the cohesion of the political party. This helps to do a diagnostic of why, despite being a complex system, the Democratic Unity Roundtable presents many limitations when solving problems of organization that other complex systems would solve in a more harmonic way. The third section provides a set of solutions and suggestion to the problems previously identified and, lastly, the paper closes with some concluding remarks and future work.

1. The Complexity of the Democratic Unity RoundTable

This section begins with a brief introductory information about complexity in order to provide the basic elements that can help a clear understanding of the MUD as a complex system. This will be followed by a deeper explanation of subjects around complex systems (complexity, behaviours, etc.), given that the sciences of complexity are the theoretical framework of this paper.

There is not a unified definition for what complexity and complex systems are (Raia, Et al. 2010). However, this paper uses the definition of complexity as a scientific problem proposed by Carlos Maldonado (Maldonado, 2009) whereby complexity as a framework emerges due to the existence of systems, behaviors and phenomena that exhibit complex characteristics and behaviors. Thus, when speaking of complexity, one can refer to complexity as a science, complex systems and/or problems that exhibit a high degree of complexity. Consequently, they require specific lenses to study them. Among these properties we can include a tendency to self-organize (Camazine, Et al. 2001), to produce emergent phenomena (Holland, 1999), to be unpredictable and to exhibit unpredictable behaviors (Lorenz, 1962), to show sudden transformations (Maldonado, 2005), and to be shaped as multiplex networks (Battiston, Nicosia, & Latora, 2014). As a science, complexity encompasses chaos theory¹, non-classical logics², non-equilibrium thermodynamics³, catastrophe theory⁴, network science⁵ and artificial life⁶, which provide tools and mechanisms for approaching the study of complex systems (Gomez & Maldonado, 2010) In this paper, however, the focus will be transversal and will be more on

¹ Chaos Theory: “The study of non-linear dynamic systems”. (Levy, 1994)

² Non-classical logics: An alternative and an extension of classical logics. (Sofronie-Stokkermans, 2012)

³ Non-equilibrium thermodynamics: “Is a special case of the second law of thermodynamics that is used to explain the existence of self-replicating dissipative structures”. (Pierce, 2002)

⁴ Catastrophe theory: It studies and classifies phenomena characterized by sudden shifts in behavior arising from small changes in circumstances. (Aubin, 2004)

⁵ Network Science: Is a maturing field intended to study the relations between the parts of a particular system. (Center For Network Science (CNS, N.D)

⁶ Artificial Life: Is the study of man-made systems that exhibit behaviors characteristic of natural living systems (Langton, N.D)

the characteristics that make the later scientific approaches possible rather than in a specific one of them. Because many biological models are the starting point of the theorization of complexity, we can say that models in complexity are biology-based (Mezza-Garcia, 2013).

In contrast, the models that have characterized science until now have been more physically based, since the focus has been on prediction, control, cause-effect, and, in general terms, linearity, as stated by (Maldonado, 2013) based on the arguments of (Kuhn, 1968) for how the establishment of a science as 'normal'. Despite its young age, complexity science has produced new advances and methods for studying everyday things as well as more sophisticated problems (Phelan, 2001). Some of this regarding applications to global complex problems such as food scarcity (Lagi, Bertrand, & Bar-Yam, 2011) and traffic control in smart cities (Gershenson, 2005).

When it comes to complex systems, systems prevailed by nonlinearity, it is not easy to trace a direct correlation between the behaviors of previous states of a system and its future states nor to refer to proportional correlation between causes and effects (Mackay, 2008). Especially when this has open interactions with its environment. In fact, the interactions with the environment also play a crucial role in complexifying complex systems because they are always exchanging energy, matter and information between them (Bodenschatz, 2009). This only makes it harder, as it adds more randomness, uncertainty and unpredictability into the system. Problem regarding complex systems become difficult to study and to understand because of the interconnected nature of the elements of complex systems and their unpredictability. Which is why the focus, in many cases, is on indirect effects (New England Complex Systems Institute, N.D). Nevertheless, the interdependence of the parts and the system as a whole do play a very important role because affecting a specific part may or may not end up by having consequences in the complete structure (Bar - Yam, N.D).

Despite that, as mentioned above, there is not an agreement on what complexity is, there are characteristics common to all complex systems. Although the distinction must be made between complex and complex adaptive systems (Chan, 2001). Complex systems are systems with stable complexity and are usually physical systems such as tornadoes and hurricanes, whereas increasingly complex systems, usually referred to as CAS –complex adaptive systems- are systems whose complexity increments over time (see: (Chan, 2001)).

From a conceptual, organizational and behavioral point of view, the MUD is a complex system. Since it is an organization of humans and presents the characteristics of complex systems, one would expect that it used complexity in its favor, that as (Axelrod & Cohen, 2001) mentions, it would have been capable of harnessing it. Nevertheless, the story of the MUD has been marked by states of stagnation whenever there should have been an opportunity for an adaptation that it cannot be properly characterized as a complex adaptive system. The main reason for this relies in the nonlinearity of the underlying interactions within the MUD. The origin of this term comes from mathematics, where a system is considered linear if “one can add any two solutions and obtain another, and multiply any solution by any factor and obtain another. Otherwise, it is nonlinear” (Mackay, 2008, pp. 1). Furthermore, in terms of complex systems, non-linearity could be best understood as some form of perturbation of the linear approximations of a particular structure (Olver, 2015). Thus, from a structural point of view, nonlinearity is visible in how the MUD organizes itself, since its hierarchical and linear structure is always attached to unpredictable changes, that means that despite the regulation and laws that rule this party, it will never be completely able to control and shape everything that happens at its interior. The latter has already been visible in several occasions when members of the MUD like Henrique Capriles and Maria Corina Machado have manifested public differences between them and other members of the party, leading to destabilize the party for long periods of time (TeleSur, 2015). In other words, non-linearity tends to make of complex systems unpredictable systems, regardless of whether their underlying laws are known. Unpredictability in complex systems can be explained through the principles of Chaos theory, which, at the same time, is connected to their sensitivity to initial conditions, whereby a small variation in them can produce significant changes in the future (Mitchel, 2009). This tendency, however, does not mean that the system is all the time producing large transformations. Complex systems do present states of equilibrium, but this equilibrium is dynamic. That is why it is always changing. The latter is called the edge of chaos, which is a zone in-between rigidity and turbulence states, where balance exists and produces emergent order (Waldrop, 1992); always potentially being about to burst⁷.

⁷Burst: Is defined as a short period of accelerated and profound activity continued by a long period where any

Chaos Theory was funded by Edward Lorenz, the father of what is now known as the 'butterfly effect'. In his paper "Deterministic non-periodic flow" (Lorenz, 1962) described the mathematics of weather prediction and how patterns tend to form in the atmosphere over time (Lorenz, 1962). As other complex systems, the MUD is very internally intertwined. Which is why small perturbations in and around it have generated results bigger than expected. It can be said that the MUD is a universe composed by a large number of components with strong interactions between them, where small changes in the initial conditions produce disproportioned outcomes. For instance, in 2014 some of the leaders of the main political parties of the MUD called the citizenship to protest against the government of Nicolás Maduro, which ended up in 43 deaths and dozens of people hurt (Lafuente, 2015) (El Espectador, 2014). Additionally with the later imprisonment of Leopoldo Lopez, one of the opposition leaders, who was accused of being "the intellectual responsible of the violence lived in Venezuela during the riots" (Lobo, 2015, pp.1). This example is of great importance as an illustration of the chaotic dynamics latent in complex systems, as it was not possible to foresee that these regular protests against the Maduro government were going to become riots and then get out of control to the point of causing deaths.

In the MUD, for instance, nonlinearity is clearly evident in how the organizational rules of the party, which are stated in (Mesa de la Unidad Democratica, 2011) do not produce the results the members of the party and the citizenship expect (Vargas, 2015). This document describes a series of statements created to organize the functioning of the MUD, such as their mission of statement, how the party should make decisions and how should it organize itself. It mentions how the mission of statement is to work together, accompanied by as many citizens, organizations and sectors as possible with the aim of achieving a pacific, progressive and free country, promoting values like respect and tolerance, and paying special attention to the ones that need it the most (Mesa de la Unidad Democratica, 2011). At the same time the MUD established a decision making process

relevant action occurs. (Barábasi, 2010)

based on a consensus structure where the majority would be achieved by obtaining 75% of the votes (Lugo, 2015). Finally, this political party has set several rules and regulations on how they should organize itself, creating a hierarchical mechanism where members are elected in a voting process. (Lugo, 2015)

Complex adaptive systems are extremely adaptive (Chan, 2001), as their name says. This adaptation comes from learning, which is nothing but an ability to “adapt their behavior in an unlimited way based on their experience” (Chiva & Camisón, 2002, pp. 183). The latter comes from an interplay between the internal dynamics of the system and its interaction with the environment (Chan, 2001). As I mentioned above, complex adaptive systems modify their behavior following the constraints of the environments (Chiva & Camisón, 2002). Sometimes these constraints represent possibilities for them to adapt. Or, from an evolutionary point of view, to survive. Since its creation, the MUD has faced several shocks that have resulted in the weakening of the party more than they have signified for it to adapt. The causes range from a wide range of internal and external factors, affecting not only the cohesion of the different political parties that integrate it, but also the possibility of attaining a change of government in Venezuela. For instance, Nicolás Maduro’s government has shackled the process of development of the political party by imprisoning some of its top members, banning candidates from running for public places and imposing restraints to political campaigns of the opposition (Scharfberg, 2015). Although these could have meant for the MUD to become stronger, as it seems according to the several electoral victories it has achieved, this has not been the case. I claim that the latter is mostly related to the difficult situation lived in Venezuela and the hopelessness of its citizens, rather than a good consequence of a party that is thriving, which means that citizens that oppose the government of Maduro tend to vote for any alternative that is not an iteration of the government. Another reason for the not exceptionality of the MUD is that it has not visibly adapted and continues to have the same regulations and structures of previous years, which leads me to think that the MUD has been acting more as a system trying to subsist in the political Venezuelan spectrum instead of being one that proposes and, indeed, prospers.

Side by side with adaptation comes emergency. Emergence in the context of complex systems is the phenomenon that arises from local interactions among the

components of a system giving rise to unexpected behaviors usually generating new features to the system (Holland, 1996). These features can go from behaviors to structural patterns or anything in between. Patterns are recurrent elements. That is, despite the instability and randomness that such systems may have; it is also possible to show that actions in many cases are repeated systematically (Goldstein, 2011) (Fuchs, N.D). These regularities occur without the need of an outside or external direction; when conditions are given and the element of the system, especially at the lowest levels, have the right rules of interactions for patterns to emerge and self-sustain (Morehead, 2011). Nonetheless, emergence continues to be closely linked with volatility. Bar-Yam proposes some examples as means of explanation to study this characteristic of complex systems. The author describes a forest full of hills, trees and animals which are in constant interaction. In the scientific domain, the focus has normally been on the details that compose the forest as the problem of study. However, in order to understand the behavior of the forest as a system it is important to have a large-scale perspective on it -a local one and a generalized view of the interactions (Bar-Yam, 2002). This is the role played by emergence in a complex system: it represents the appearance of properties at a higher level coming from the bottom-up. Using the example of Bar-Yam as a metaphor, this work centers its attention not only on the specific objects that conform the forest around the problem of the MUD, but also on some of the involved relevant elements. Which is why some of the examples discussed in this paper refer to the parties that conform the MUD and the environment where they exist.

An important factor that keeps emergencies in place when it comes to complex systems, that which provides the system with a dynamic equilibrium (Prigogine & Stengers, 1984), is how well integrated are the parts that compose it. Despite that each part is independent from the rest, they form networks at various scales with other parts, giving rise to an interdependent behavior of the whole system (Coen & Schnackenberg, 2012). The independence of each part, we can argue, provides each one of them with certain degree of autonomy, which, in turn, is closely related to how the system manages itself. That is, its ability to be self-directed, self-controlled, self-configured, to self-diagnose their self-properties that can be found extensively in (Iordache, 2011). The autonomous behavior of the elements that compose a complex system can be seen in how the parts that

compose the MUD behave. For instance, each political party has its own leadership, members, positions, ideology and some form of structure. Nevertheless, because these parties interact among them, their autonomy should lead them to use their self-determination in favor of the coordination of the behavior of the MUD. At least this would be the ideal scenario in the context of the performance of a complex system. This should be done by means of local exchanges of information. Yet, as we will see with further examples, this is not always the case.

Following the previous critique, in the language of complexity, and on behalf of an idyllic notion of integration, the MUD should behave as a superorganism. In complexity science there are several cases where local interactions among individual components coordinate their actions to the point that they are considered a single entity in some instances. This is the case of a flock of birds flying in unison or some fireflies firing at the same time⁸. At least this is what would be expected from a complex system in the form of a political party that was aware of its complexity. The MUD, I claim, does not act as such. Although the combination of autonomy of the parts in the context of strong behavioral interdependence could mean a flexible and robust system at the same time⁹, but the MUD continues to act as if it were a more traditionally hierarchical political party. We can see the excessive autonomy, and, by definition, lack of integration in the constant pursuit of particular interests that the different political party members have. This was particularly visible in case mentioned before, when one of the most important coalition leaders decided to propose different measures in order to solve a number of riots and human right violations that were happening in the country (Puerta, 2013).

One reason for why the MUD does not act as a superorganism despite that it could have all the elements in place, I state, dues to its emphasis in continuing reinforcing a hierarchical and top-down structure of power and organization, which has led to many conflicts among the main leaders of the political parties. The latter have not done many efforts in coordinating their actions within the party, but have rather focused on coopting and attaining more power via the MUD (Difunde la verdad, 2013). It would probably produce better results if the accent was situated on promoting a horizontal structure instead

⁸ For a deeper understanding on flocking and swarming, see (Camazine, Et al. 2001).

⁹ Something similar to what Taleb called an *Antifragile* system (Taleb, 2014)

of a hierarchical one –which is what they reinforce. In other words, if they acknowledged how naturally hard it is to attain consensus between twenty-six different political parties and, displacing who is more influential than the others, they used their common ground on their behalf.

The lack of cohesion resulting from internal power struggles in the MUD has led some of the leaders to exacerbate the independent and autonomous nature of his or her political party at the expense of the unity and cohesion that an opposition force should have. On one side this situation is understandable, given that the extremely big and diverse structure of the MUD. On the other side, this is still not sufficient reason to continue placing all the expectations on a top-down and hierarchical structure trying to organize a networked and horizontal world of political complexity. In other words, when it comes to the organization of the MUD it is important to highlight that this party is structured according to a hierarchical mechanism based on a consensus platform (Lugo, 2015). The latter represents one of the main sources of organization of the party which, in my opinion, has an not-solid and not well-established organizational structure, on the contrary, it is possible to say that it has a lack of organization because, for example, important and strategic decisions are made by the leaders of the different parties in meeting that are supposed to take place periodically, putting aside the rest of the members and pursuing only their main political interest, no matter what the rest of the party thinks. At the same time, it is important to highlight that this meeting have just take place once this year (2016), what lets me to think that the disorder and the chaos lived inside the MUD could have increased (La Voz, 2016).

On the other hand, the study of complex systems in the sciences of complexity, from natural ecosystems to animal and human societies, has taught that systems with high degree of complexity and composed by large numbers of elements act at their best when adapting their ways to achieve organization. After all, they are experts in (self) organizing “without the benefit of any central controller, into a collective whole that creates patterns, uses information, and, in some cases, evolves and learns” (Mitchell, 2009, pp. 4). This premise explains one of the most relevant characteristic of complex systems; their ability to generate self- organize patterns. Self-organization is the process where a system organize itself without the need of a central controller; helped by its own logic and the information

obtained by its members, these systems are stimulated by their own causes and motives, which means that they create themselves (Fuchs, 2006). When a complex system self-organizes, it gives rise to the formation of patterns that

“Arise through symmetry breaking in a system when there are multiple inequivalent static or dynamic attractors. In general, in such systems, forces from more than one other element affect a particular element of a system and this gives rise to frustration as elements respond to aggregate forces that are not the same as each force separately. Frustration contributes to the existence of multiple attractors and therefore of pattern formation”. (Bar-Yam, 2003, pp. 388)

Resorting to the language of previous definitions in this section, organized patterns emerge from self-organized processes in a complex system. As (Bar-Yam, 2002) states, there is a difference between patterns that emerge from natural¹⁰ interactions from those that tend to be artificially defined. That is, when a pattern is artificially formed, each part will be imposed a specific task –such as the work assigned to all different members that integrate the MUD. However, when the pattern naturally emerges out from local interactions among the elements of a complex system, the distributions of tasks appears by itself. We can see how self-organizing behaviors give rise to organized patterns in various types of complex systems that work efficiently in performing the tasks they evolved for and help the system to adapt. For instance, the human brain (the complex system) is composed by brain cells called neurons (elements) that interact (the local exchange of information). These neurons group depending on the signal (the external input), create a series of patterns of connections (called synapses) between groups of them, generating emerging patterns, which can be “perception, thought, feelings, consciousness, and the other important large-scale brain activities” (Mitchell, 2009, pp.6). Although the brain is just one of many examples of complex systems, the grouping of neurons when they fire helps illustrate one of the advantages the MUD could have if letting the party self-organize in the same way a brain self-organizes instead of predefining a specific structure in each of its levels. This is so because the notion of local communication is not restricted to an understanding of proximity in a physical sense; neurons do not need be near each other to communicate locally –in the same way two individuals in opposite parts of the world can interact locally, and directly, by means of the internet. This has relevant implications for the MUD since it

¹⁰ Natural in this context is not limited to a biological systems framework. Instead I use it as a synonym of tendency.

exemplifies that the parties that compose it do not necessarily need to interact close to each other nor agree at a global level in order to produce harmonic patterns in the form of, let's say, decisions; as we know with the brain, depending on the signals received, neurons group. Thus, in the search of more optimal arrays of organization, the MUD could probably get rid of its hierarchical structure and should have simply waited to see which were the party grouping configurations that emerged.

Given sufficient time, the group patterns formed by the underlining interactions within the MUD, I conjecture, could generate robust patterns that in a non-disruptive and cohesive way could have handled in a more efficient way, events like the problems that surrounded the protests of 2014, which I argued were the detonating of the high range of differences this political party faces.

In this section I summarized some of the characteristics and examples of the MUD as a complex system. Likewise, I displayed how its artificially defined hierarchical nature obstruct its evolution, adaptation and, ultimately, progress with the intention of opening the door for a later discussion on the possible benefits it could have if it harnessed its own complexity.

2. A Diagnostic on the Organizational Mechanisms within the MUD

The previous section focused on the description of the MUD in terms of complex systems and I concluded that part of its problems relate to how its complexity is managed with traditional power mechanisms typical from strictly hierarchical and less diverse political parties. In this section, I will deepen into the internal political organizational arrangement of the latter that have presented problems in the past years. It is my aim to stress that internal organization of the MUD is in part responsible for some of the problems it has and currently is experiencing as a political party, blocking its possibility to evolve in ways that would allow to achieve its goals. I categorize problems into five types, according of their nature; internal and external. Among the internal problems, I focused on the excessive autonomy of the parties that conform the MUD, on how this leads the party to lack cohesion, and on its artificial hierarchical structure. On the other side, in the external problems I include challenges imposed by the socialist Government of Venezuela to the

party as a whole and to its members in particular. These are summarized in the table that follows. (TABLE I)

Categories of MUD Problems

Nature of the Problem	Problem
Internal	Hierarchical Topology
	Lack of cohesion
	Excessive autonomy of the parts
External	Challenges imposed by the government to the party
	Challenges imposed by the government to the members of the MUD

Source: The author

In addition to these problems, it is important to describe the achievements that the MUD has had so far regarding seats attained and elections won. (TABLE II)

Electoral development of the MUD

Type of election	Year	Results
Parliamentary Elections	2010	GPP 98 seats , MUD 65 seats y PPT 2 seats
	2015	MUD 109 seats, PSUV 55 seats
Regional Elections	2010	GPP 1 governorship, 7 town halls, MUD 1 town hall , 4 municipalities
	2012	GPP 20 Town Halls MUD 3 Town Halls
Presidential Elections	2013	Nicolás Maduro 50.61% , Henrique Capriles 49,12%
Municipalities Elections	2013	MUD 81 municipalities GPP 256 municipalities

Source: The author with information of (Asamblea Nacional, 2010) (Consejo Nacional Electoral, 2010) (Consejo Nacional Electoral, 2012) (Consejo Nacional Electoral , 2013) (Consejo Nacional Electoral, 2014) (CNE, 2015)

As it can be seen with the previous table, the MUD, indeed, managed to reach a solid number of supporters and has managed to move the masses, at least this is what the results show. Nevertheless, it still presents some problems that I will mention in the following points.

- **The hierarchical Topology of the MUD as a Hindrance to Achieve Equality among its Members**

Many of the problems that the MUD faces today come from the fact that it was not intended to be a political party. Initially it was intended to create a unifying organization that would shelter most of the political parties of the opposition, allowing the members to maintain certain autonomy. However, this idea was bowled out by the National Electoral Commission, which specified that a type of coalition like the proposed one was unconstitutional. This, in consideration of the arguments of the National Electoral Commission, and acknowledging that some kind of unification was necessary to fully compete against the government, the political parties decided to reunite in one, giving way to the creation of the MUD (Moreno, 2013). This sort of forced process of creation that shades the history of creation of the party, has led it to a large number of problems that blocked what otherwise could have been an effective performance.

Once the previous decision was established and the MUD was consolidated as a party for practical purposes, it was agreed that the decision-making was going to be done by consensus. Yet, this did not mean that a 100% of approval was (is) necessary when making a decision; consensus was rather understood as the majority of 75% votes in favor or against a particular matter (Lugo, 2015). In addition to this measure, other agreements took place. For instance, when it came to electoral matters they were going to present candidates at all levels, but for other events -such as demonstrations, statements, proposals etc.- decisions were going to be made at general meetings with strategic members. When it came to the specific design of program proposals, such as general topics like education and health, the MUD agreed this decision was going to be held via Technical Tables¹¹, which are small commissions whose action capacity I put into question, due to the lack of solidity

¹¹ Mesas técnicas

of its activities and the lack of information there is on them. Besides the Technical tables, there are other type of discussion tables that debate more detailed subjects, shaped into the Committees on: public policy, decentralization, human rights, participation and mobilization (Lugo, 2015). In articulation with these, there are also small delegations that act at state and municipal levels, focused on solving local problematic (Lugo, 2015). Despite that the organizational structure of the MUD seems well established enough to lead to optimal outcomes of decision-making¹², some decisions are not taken within the confinements of the already defined structure. Instead, they are made in the aisles and private spaces without the knowledge or approval of the whole political party; and outside of the framework of well-defined organizational regulations (Lugo, 2015). As I stated at the beginning of this section, this should not cause surprise considering that there were political motivations behind the establishment of the MUD as a political party after the Electoral Council denied their unification in another way. Which leads to the question of whether the structure of the MUD is a smokescreen for more informal power dynamics in the Venezuelan opposition, probably between the members of the more influential 8 or 10 political parties.

Even though, the party was formally created on the basis of periodic meetings (La Voz, 2016), there are several aspects that make this a hard task. Firstly, the ideological diversity that compose it, whereby it is expected to reach agreements between political ideologies that cover almost all the spectrum from right to left, crossing by Christians and environmentalists. Secondly, the number among which these ideologies are distributed is too high; 26. And thirdly, the scope of each party is different. Some of them, such as Acción Democrática, Primero Justicia, Un Nuevo Tiempo and Voluntad Popular operate nation-widely. However, there are others whose influence is more limited; Alianza Bravo Pueblo and Vente Venezuela. I strategically mention these because they are the most widely known. Nevertheless, most of the other parties are not very popular. Fourthly, they all have different approaches to solve problems; That is, the mechanisms, proposals and suggestions given to solve a particular issue tend to be diverse and disperse leading ,once again, to a struggle (Cruz, 2015) (Lugo, 2015). Other differences that are easily perceived and that increase the gap that segregate the components of the MUD are the financial

¹² Or, at least, sub-optimal, given that we are dealing with a complex system.

capabilities, the voter turnout and the ability to mobilize resources outside of the party. Lastly, the personal leadership skills and the ability to influence the masses, which play an important role in the scope every political party has (Lewit & Brito, 2016) (Lugo, 2015). These are all skills that are not equally distributed at the interior of the political party and that interfere with the aim of achieving a fructiferous organization that can reduce the differences that exist at the interior of the party, helping it to achieve its goals.

- **The Lack of Cohesion as a Setback for its Internal Organization**

I placed the lack of cohesion within internal problems because it deals with problems related to resignations of officials and differences between the parts that compose the MUD. We can also include the excessive autonomy of the parts as an expression of lack of internal cohesion, but I will dedicate more space to explain that category later. One of the biggest problems this party presents and that fragments it greatly is how throughout the years some members of the MUD removed their backing due to several of discontents, which produced an environment of general dissatisfaction and indisposition. For example, in 2015 a young political movement called JAVU¹³ (Venezuela United Active Youth) left the MUD by stating that they had a moral obligation to separate from it because, unity could only be effective if accompanied by a joint purpose. This was said in response after the head of the JAVU movement made clear that its interest was not the same as the MUD, thus, they could not continue to be united to an organization whose points opposed to their objectives (Vargas, 2015), showing them, that JAVU's claims and needs were never taken into consideration for the MUD.

The MUD also experienced the resignation of singular members, like the deputy Coordinator of the party, Ronald González, who left the party by claiming that “the organization should not only serve as a polling station, but as a table of unity with social circles, in order to keep adding the most popular sectors which are demanding changes in Carabobo for example” (Murga, 2014, pp.1). Additionally, Hernán Núñez, a deputy of de National Assembly who resigned the Democratic Unity Roundtable in 2013, stated that the

¹³ Juventud Unida Venezolana Unida

MUD is corrupted, criticizing how the coalition of the MUD is only guided by only a few parties, and that democracy inside it lives only in the titles (Difunde la verdad, 2013).

The previous examples show a panorama of the MUD we can call real and more down-to-earth than the usual idea that can be perceived from outsiders. My aim is to establish a classification of the main shortcomings of the MUD so that the opposition can grow stronger in a more coherent way that allows it to resiliently last in time. The following section presents the list of some of the high-ranked officials who have quit the MUD. Even though not all of them resigned because of discontents or problems they directly had with the organization, we have strong reasons to believe that at least 60% of them, or more did.

Officials who Renounced from the MUD

Name	Position	Date
William Ospina	Deputy of the national Assembly	September 2012
Ricardo Sanchez	Deputy of the national Assembly	October 2010
Carlos Vargas	Deputy of the national Assembly	October 2010
Ciro León	Deputy of the national Assembly	October 2010
Andrés Álvarez	Deputy of the national Assembly	October 2010
Ray Rojas	President of the FCU-UCV	October 2010
Henán Núñez	Deputy and ex candidate for governor of the Estate of Sucre	February 2013
Enzo Scarano	Ex-Mayor of the municipality of San Diego	July 2014
Ramón Guillermo Avelledo	Ex- Executive secretary	July 2014

Ramon Guillermo Medina	Associate Executive Secretary	July 2014
Orlando González	Regional Leader of PJ	November 2015

Source: (Globovision, 2014)

- **The Excessive Autonomy of the Parts as a Consequence of the Diversity of its Members**

As I have already mentioned, the MUD is composed by a large number of parties and movements, a situation that has made very difficult to attain an order of the party. Thanks to the way the MUD was consolidated, it is almost natural to expect that an atmosphere of autonomy continues to prevail since its creation. And that what previously was an advantage has become a hindrance. This situation is generally manifested by the way the parties that conform the MUD act, each one of them pulling in their own direction and trying to impose their own rules and ways of making decisions -as single members instead of a coalition.

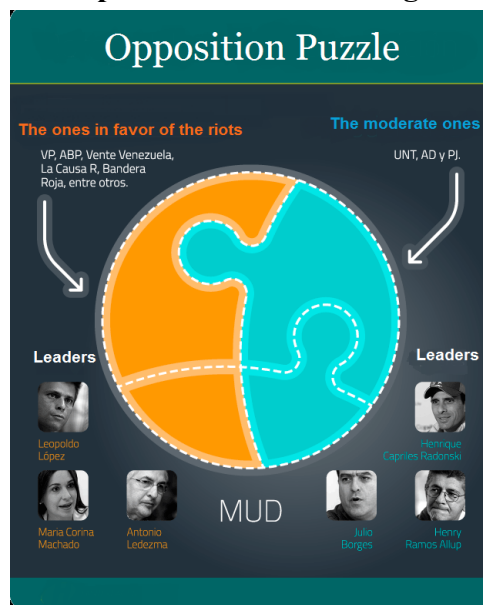
One of the most important events, as illustrated before, that shows the bifurcation of actions and decisions in the political party occurred in the protests that took place in Venezuela in 2014. These manifestations started as a simple way to display discontent against Nicolás Maduro, but they rapidly escalated and turned violent (BBC Mundo, 2014), similarly to what had occurred in previous years during the Arab Spring. I claim that inspired by these revolutions the young Venezuelans saw in organizing by means of the internet to reunite in public squares as a collective via to achieve a change. This out of control and chaotic environment forced the opposition, particularly the MUD, to act. Yet, it was clear how there was a division in the way to proceed.

The disorder generated by the riots and protests led to the reaction of the main MUD leaders, Enrique Capriles, Leopoldo Lopez, María Corina Machado and Antonio Ledezma (Hinterlaces, 2014). The purposes of these political leaders were the same: to highlight the

government’s action and the difficulties lived in Venezuela at that time¹⁴, but they disagreed in the how. When they had to come to public light to speak as members of the party, they did not perform as a unified body but rather acted autonomously, producing a divergence of opinions inside part of the MUD (Hinterlaces, 2014).

Initially the displays of discontent were called by Enrique Capriles, who argued that it was necessary to show the government the disgruntlement Venezuelans were facing in a peaceful and organized way. But when the course of this –at first just pacific protests– started to shift to more violent actions, the leader decided to call them off, saying that violence was not a valid mechanism to show discontent (Semprum, 2014). Meanwhile, in another sector of the MUD the other three leaders, Maria Corina Machado, Antonio Ledesma y Leopoldo Lopez, were convinced that the best way to solve the political problems in Venezuela was to continue with the manifestations of public discontent, independently of the violent turn. In other words, they wanted the demonstrators to continue battling (Semprum, 2014). This division is illustrated in the figure 1 below.

The distribution of opinions in the MUD regarding “La Salida”



Source: (Hinterlaces, 2014)

¹⁴ Now worse..

The bifurcation mentioned above represents clearly why the MUD has not been able to consolidate itself as a cohesive political party, despite the sits it attains. It is possible to assume that it is extremely hard, if not impossible, to achieve a sound degree of cohesion among the high number of members, political tendencies and opinions within the party. However, the study of other complex systems, many of them with more complexity than the MUD, shows that it is possible by means of self-organized and local and far from hierarchical interactions to attain unified behaviors in a complex system, regardless of the diversity of its components. With this in mind, I highlight, again, the importance of seeing and understanding the MUD as a complex system. But, most importantly, that the MUD recognizes itself as such. Once that is achieved, the party might carry on its natural flow, where its complexity allows it to thrive if letting its complex systems dynamics adapt without hierarchical imposition. In other words, the MUD must eliminate the hierarchical mechanisms that hold its organization run against its complexity. A starting point could be to let self-organization patterns to emerge without previously fixing a hierarchical structure.

- **External Problems of the MUD that Make the Situation Even Worse...**

The external problems are those that are not directly generated by the members of the MUD, but by the environment, that surrounds it. Although we can divide them between trammels imposed by the national government intended to obstruct the actions of the MUD and the activities of their particular members and leaders.

Mass media is an extremely important tool in the consummation of the politics, as it represents a channel of communication to citizens and transmission of information. Since the beginning, and way before the creation of the MUD, the government of Hugo Chavez censored mass media, in a strong attempt to attack opposing forces. For instance, he decided not to renew the permissions to remain on air of RCTV, one of the biggest and most traditional TV channels in Venezuela (Infobae, 2015). To date almost all TV channels belong to the government, and the alternative for those that wanted to survive and not be closed was to remain impartial, such as Venevisión. But the international televised media also suffered consequences of state censorship. In 2014 the Colombian TV channel NTN 24 was put out of air during the transmission of the riots of February of that year (El Tiempo,

2014). The decision was to remove the channel even though it was only possible to watch it in Venezuela, affiliated to a pay TV plan (El Tiempo, 2014).

During the birth of the MUD the situation was even more problematic, since the state gained even more power through the years, facilitating more censorship actions. According to a research made by the Institute of Press and Society of Venezuela, where they studied the perception of 225 Venezuelan journalists:

“The results obtained in this research indicate that most of the direct censorship orders are issued by state institutions. Respondents perceived that the executive power – of which dependent national, regional and local governments- is in charge of a direct action of censorship (34%). Then the percentages of censors point the judiciary power (17%), the legislative power (14 %), the moral power (7%), and the electoral power (6%)” (Chirinos, 2014, pp.1)

Mass media has been highly manipulated in Venezuela, restricting the possibilities of the MUD in a several number of fields. Yet, this is not the only external problem the MUD is facing. It is also important to mention the atrocity suffered by printed media in 2013, when due to the Venezuelan inflation it was no longer possible to import paper to print media exemplars (El Venezolano, 2016). However, paradoxically the press media in favor of the national government was still able to produce printed exemplars (El Venezolano, 2016). The reason behind this was simple: The government was the owner of the Alfredo Manerio complex, a place created with the intention of printing magazines and book with the Estate stamp. Financed by the state, this complex rapidly started importing press paper, becoming almost the only provider in Venezuela, which meant that they could decide who they wanted to sell these supplies to (Infobae, 2014)

The censorship of the mass media was only one of the actions taken by the government to minimize the capacity of the opposition group, although one of its clearer anti opposition moves was disabling opposition group leaders. This strategy, started with the imprisonment of Leopoldo Lopez, an opposition leader accused of promoting the violence in Venezuela (Lobo, 2015) who was initially incapacitated to occupy political charges by Hugo Chavez, and put in captivity by Nicolas Maduro. Lopez has being in jail for more than two years so far (Vinogradoff, 2015). Similarly to the situation with López, the metropolitan mayor of Caracas, Antonio Ledezma, was also captured and accused of being part of a conspiracy group that was planning to overturn Maduro’s government

(Martiz, 2015). Ledezma was forcibly removed from his office by the National Guard and kept in jail for two months. After suffering health problems in prison he obtained a permission of domiciliary arrest (Donaire, 2015).

In the same way Daniel Ceballos, the Mayor of the Estate of San Cristobal, was stripped of his position as mayor and imprisoned, and he was also disqualified by the Comptroller to run as a candidate for public places (Martiz, 2015). Ceballos was condemned for not attending to a measure imposed by the Supreme Court, that forced the local authority to put an end to the barricades and protest lived in the country at the beginning of the year 2014 (El Tiempo, 2015). The disability of this Mayor produced a political vacuum that forced the government to call back to elections. When calling to elections the opposition candidate was Patricia de Ceballos, the wife of the Mayor, who won by an overwhelming majority -74% of the votes- (El Universal, 2015), helping the opposition to keep its sovereignty over the San Cristobal estate, showing that part of the country was completely against the socialist Venezuelan government and that they were going to support the MUD even in the face had a lack of political trajectory, as with the wife of Ceballos. A similar situation was lived by Enzo Scrano, who used to be the Mayor of the municipality of San Diego. Scrano was also blamed of disrespecting the law by not attending to the call of the Supreme Court of stopping the riots in San Diego (El Universal, 2015). Since Scarano's governmental period was still running when he was imprisoned, his wife, Rosa de Scarano decided to run for the post of Mayor. Paralleling the results of San Cristobal, the wife of the opposition leader also won, this time with 87% of the votes in favor (El Universal, 2014). Finally, it is important to mention María Corina Machado, deputy of the National Assembly, who was disabled by the General Comptroller for 12 months and without any explanation (El Universal, 2015). María Corina is now an international advocate against the government of Maduro, acting as coordinator of the political party Vente Venezuela.

The later examples show some of the trammels the MUD has faced through the years, trammels that actuate of the party and their trunked possibilities of achieving a change of government for Venezuela. Despite all the difficulties experienced due to the way the MUD is constituted, this section aimed to show how there are other factors that block its natural flow the MUD should evolve to. The study of complex systems has shown that

unpredictability, complexity and nonlinearity can give way for a complex adaptive system to, nevertheless, adapt and become resilient. It is reasonable to think that if the MUD manages to internally organize better and adapt in the face of external inputs, it could be possible for it to evolve in more efficient ways (Chiva & Camisón, 2002).

3. Exploratory Suggestions to the Problems of the Democratic Unity Roundtable, MUD

This section starts from the difficulties previously mentioned in the paper to propose possible solutions that can guarantee the consolidation of a coherent path for the opposition in Venezuela, beyond existing simply as parties that oppose the current government by unifying in a single entity that does not act coherently.

A first unfolding could be to disintegrate the MUD, going back to when they were twenty-six different political parties. Although it is possible that in this scenario some new could emerge and others cease to exist, the general idea remains. In that way, each of the parties and movements would compete individually against the current government –and each other- by postulating their own candidates, recruiting members, gathering votes and popularity based on their particularities. In this way, the possibility for specific members to be listened and taken into account in the decision-making process based on their own separated ideologies could be higher. Thus, it could eliminate one of the biggest issues the MUD has, which is to not hear every opinion inside it. However, the problem with this alternative is that segregating the parties will also produce a segregation of votes, which means that the main objective of soundly competing against the socialist government that rules in Venezuela will hardly be completed. The main reason being that it will be extremely challenging for the opposition to defeat Nicolas Maduro's political party, the United Socialist Party of Venezuela.

A second alternative would be for the MUD to change its current structure for a single and strictly hierarchical political party that also comes with a philosophical turn in the way in which the MUD is organized and perceives itself. That is, if it does not fully contemplate the possibility to resign to hierarchy, then it will be necessary to create the structure of the party from de beginning, proposing a robust structure based on a clearly structured hierarchy, as any other traditional political party. At this point it would be

counterproductive to state clearly which could be the ideal structure other than it being a solid one. Because, at the moment the MUD lies somewhere in between a not very well established hierarchy and a weak horizontally distributed topology. Additionally I claim that no alternative structure will produce better results unless it comes after a deep self-examination accompanied by the members of the MUD resigning to the idea of continuing to represent their parties rather than the MUD. Furthermore, it would be needed to step away from maintaining control of every part of the MUD via superficial actions such as a few periodic meetings that do not provide sufficient information about the whole system – which is something top-down hierarchical political parties renounce for the sake of centralized control. Yet, this solution would hardly be taken into account due to its inefficiency.

Another possible solution would be to eradicate de different political parties that integrate the MUD with the aim of eliminating the greater influence that well-established parties have over smaller ones. As it was mentioned before, when the MUD was created it was not intended to be a party but a coalition, which is why the members never separated from the ideologies of their own parties. This would entail to leave aside the specifics of each political party, such as the religious or environmentalist point of view for practical purposes, for the sake of solidifying the opposition. In turn, it would imply operating strictly on common grounds. Yet, this does not seem very feasible, as I do not see the leaders of the parties willing to renounce to their own micropowers¹⁵.

An additional proposal is to divide the MUD into two new political parts on the basis of general political tendencies. That is, republicans and democrats¹⁶. This with the aim of eradicating the differences between the political parties that currently integrate the MUD. The proposal with try to group the parties into sets of similar ideologies so that it becomes easier to group them. At the same time the decision making process will be more efficient and simpler incrementing, hopefully, the satisfaction of its members and probably the cohesion at the interior of the parties as well as decreasing the excessive autonomy of the parts, since they would cooperate with similar members. Nevertheless, this solution seems somehow archaic and resembles the political polarization of Venezuela during the

¹⁵ As we saw during and after the riots of 2014.

¹⁶ These two political tendencies were coined in this solution for practical purposes. The Split of the two current ideologies, however, is not limited to these shapes.

eighties that led to the consolidation of Chávez, and then Maduro, in power. Clearly, we have to consider the possibility for the parties not wanting to group according to their ideologies but by the power they have, which would exclude smaller parties from decision-making.

An additional proposal would be to reduce number of political parties that integrate the MUD without reducing the number of members. According to the information provided in the previous chapters, twenty-six different political parties compose the MUD and the biggest amount of power is hold by eight. Thus, eight seems to be a viable alternative for new parties, although the critique can arise of smaller parties not being identified with the bigger ones. Therefore, the door would be open for, let us say, ten other new ones. Independently of how they decide to re-organize, the idea would be to find the reflection of the remaining eighteen political parties in the main eight or for them to, likewise, group in larger sets that better represent their philosophies and expectations.

The last solution would be for the MUD to embrace its complexity. The party would need to start dwindling its hierarchical structure from the inside, relying more on complexity-based organizational processes. That is, on self-organized dynamics. In this way issues that arise from differences in opinions, fragmentations and members who abdicate would be easily overcome, since the communication process would focus on local interactions. This means that it will not be necessary to have central controls for decision-making to organize the system, reducing the gap between the members of the political party and those at the top. Decisions, instead, would be reach through agreements emerging from local communication networks and would escalate following an emergent heterarchical network of nodes and hubs in a natural flow rather than a previously imposed artificial hierarchical structure. This solution can be seen as one of the most integral and viable one that can bring efficient results for the party. In general terms, the MUD would initially need to strengthen local communication networks, giving rise to the formation of hubs that would exchange information with other hubs, creating then and efficient process that can guarantee that all members of the party would, in principle, have direct action capacities thanks to self-organized interaction networks. Despite this being a feasible alternative, it is necessary to mention that the current political, economic and social situation in Venezuela is so dramatic that a strong single hierarchical political party that replaces the MUD and its

twenty-six subdivisions could be the best alternative, considering how desperate citizens are for a change. In an extreme scenario such as this, self-organization could tend to produce violent outcomes, for which a strong centralized hierarchy that reunites the different ideologies within the MUD could be the most practical one. Nevertheless, from an information processing and complex systems perspective, a self-organized solution would be the one with more transformative power in the long term, since it would act towards changing via positive and negative feedbacks those internal problems of the MUD and, mainly, also the sociopolitical environment in which it exists. In other words, a hierarchy would have more chances to reunite votes and win elections, but a self-organized solution would bottom-up synthesize solutions for the problems accentuated in Venezuela with the arrival of Nicolás Maduro.

4. Conclusions and Future Work

This paper presented a general diagnostic on the current problems that the Democratic Unity Roundtable faces. Some of them were framed under the umbrella of lack of cohesion, others within the excessive autonomy of the political parties that conform the MUD, others related to the setbacks imposed by the government of Nicolás Maduro. The combination of these problems worsened the organizational situation of a party that was born in the midst of a governance crisis, resulting in increased power polarization among the members. The complex systems approach allowed elucidating the origin of many of the problems of the MUD, most of them related to its own lack of acknowledgment as a complex system. Likewise, it also led me to believe that everything is not lost. Not only in terms of it being able to mutate into a structure that harmonically battles the socialist tyrannical government that rules in Venezuela, but also that manages to become a coherent and well-structured body with transformative capacities on the country. I proposed some alternatives that could help the MUD go in this direction. The lost, however, was not meant to be extensive nor the close ones. It is possible that one of them ends up being implemented. Yet, it is also plausible that a different scenario that I did not contemplate here occurs. As the study of complex systems has taught us, when it comes to systems as complex as the MUD embed in a chaotic environment as the current political, social and economic situation of

Venezuela, unpredictability seems to be the rule. The idea is to find ways that can allow better bottom-up communication channels within the MUD. A solution by means of self-organized dynamics could produce almost optimal results, since we know this is a sound produce of organized patterns in other complex systems. However, due to the emergent nature of its features, it might also be the hardest one to take into practice. It my aim following this work to seek for ways in which self-organization in the MUD can be made possible. That is, to find mechanisms for constructively destroying the current organizational, structural and power configurations that has led the MUD to behave in suboptimal ways. This, with the intention of finally overcoming the unfortunate situation of today and reaching a new state of equity, fruitfulness and harmony in what once was a blossoming country.

Bibliography:

- Asamblea Nacional. (2010). *Diputados*. Retrieved in March, 01 of 2015, from CNE: <http://www.asambleanacional.gob.ve/diputado#1>
- Aubin, D. (2004). *Forms of Explanations in the Catastrophe Theory of René Thom: Topology, Morphogenesis, and Structuralism in Growing Explanations: Historical Perspective on the Sciences of Complexity*. Durham: Duke University Press.
- Axelrod, R., & Cohen, M. D. (2001). *Harnessing Complexity*. New York: Basic Books.
- Bar - Yam, Y. (N.D). *Introducing Complex Systems*. Available form Cite Seerx : <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.372.1791&rep=rep1&type=pdf>
- Barábasi, A.-L. (2010). *Bursts: The Hidden Patterns Behind Everything We Do*. New York : Penguin group.
- Bar-Yam, Y. (2002). *General Features of Complex Systems* . Cambridge : New England Complex Systems Institute .
- Bar-Yam, Y. (2003). Unifying Principles in Complex Systmes. From M. C. Roco, & B. W.S, *Converging Technologies for Improving Human Performance: Nanotechnology, Biotechnology, Information Technology and Cognitive Science* (pág. 388). Academic Publishers.
- Battiston, F., Nicosia, V., & Latora, V. (2013). *Structural measures for multiplex networks*. APS Pysics.
- BBC Mundo . (february,19 of 2014). Seis preguntas para entender las protestas en Venezuela. *BBC Mundo* , pág. 1.
- BBC Mundo . (july, 07 of 2015). Oposición en Venezuela obtiene histórica victoria en las elecciones parlamentarias. *BBC*, pág. 1.
- Bodenschatz, E. (2009). Complex Systems . *Max Planck Gesellschaft*, p. 3-6.
- Brito, G., & Lewit, A. (2015). *INFORME RADIOGRAFÍA DE LA MUD: ANÁLISIS SOBRE LA OPOSICIÓN VENEZOLANA* . Caracas: Celag
- Camazine, S., Deneubourg, J.-L., Franks, N. R., Sneyd, J., Theraulaz, G., & Bonabeau, E. (2001). *Self-Organization in Biological Systems*. New Jersey: Princeton University press.
- Center For Network Science. (N.D). *Center For Network Science (CNS)*. Available from What is Network Science?: <https://cns.ceu.edu/node/25884>
- Chan, S. (2001). Complex Adaptive Systems. *Massachusetts Institute of Tecnology*, P.1-3.

- Chirinos, M. (2014). Estudio 2014: Censura y autocensura en medios y periodistas de Venezuela . *Instituto de Prensa y Sociedad de Venezuela* . Available form: <http://ipysvenezuela.org/especiales/estudio-censura-y-autocensura-2015-periodismo-en-arenas-movedizas/>
- Chiva, R., & Camisón, C. (2002). *Aprendizaje organizativo y sistemas complejos con capacidad de adaptación: implicaciones en la gestión del diseño de producto*. Castellón de la Palma: Universitat Jaume I.
- Cilliers, P. (1998). *Complexity and Postmodernism*. London : Routledge .
- CNE. (2015). *Elecciones a La Asamblea Nacional 2015*. Available form: http://www.cne.gov.ve/web/normativa_electoral/elecciones/2015/asamblea/index_principal.php
- CNN en Español . (April, 14 of 2013). Maduro gana la elección en Venezuela, informó el Consejo Electoral. *CNN Mexico* , pág. 1. Available from: <http://cnnespanol.cnn.com/2013/04/14/nicolas-maduro-gana-la-eleccion-presidencial-en-venezuela/>
- Coen, C., & Schnackenberg, A. (2012). Complex Systems Methods for Studying Multiteam Systems. From S. J. Zaccaro, M. A. Marks, DeChurch, & Leslie, *Multiteam Systems: An Organization Form for Dynamic and Complex Environments* (Chapter 16). New York : Organization and Management Series .
- Consejo Nacional Electoral . (2013). *Consejo nacional Electoral (Poder electoral)*. Retrieved in March, 01 of 2015, from: http://www.cne.gov.ve/web/estadisticas/index_resultados_elecciones.php
- Consejo Nacional Electoral. (2010). *CNE*. Retrieved in March, 01 of 2015, from Consejo Nacional Electoral: http://www.cne.gov.ve/web/normativa_electoral/elecciones/2010/regionales/index_principal.php
- Consejo Nacional Electoral. (2012). Retrieved in March, 01 of 2015, from CNE : http://www.cne.gov.ve/resultado_regional_2012/r/1/reg_000000.html
- Consejo Nacional Electoral. (2014). *Divulgación Alcaldes 2014*. Retrieved in March, 01 of 2015, from de http://www.cne.gov.ve/resultado_municipal_2014/r/1/reg_000000.html
- Constitución política de Venezuela . (December, 15 of 1999). *titulo V*. Retrieved from <http://pdba.georgetown.edu/Parties/Venezuela/Leyes/constitucion.pdf>
- Cruz, V. L. (March, 02 of 2015). Muchacho: La falta de unidad que se percibe es una realidad. *El Universal* .Retrieved in http://www.eluniversal.com/noticias/politica/muchacho-falta-unidad-que-percibe-una-realidad_51166
- Difunde la verdad . (2013, 02 06). Por presunta corrupción diputado opositor renuncia a la MUD. *Difunde la verdad* .Retrieved from: http://www.difundelaverdad.org.ve/portada/por-presunta-corrupcion-diputado-opositor-renuncia-a-la-mud/#.V6ZY2_nhDIU
- Dinero. (March,03 of 2013). La Venezuela de Chávez VS. la Venezuela de Maduro en datos. Retrieved from: <http://www.dinero.com/internacional/articulo/la-venezuela-chavez-comparada-maduro/206411> . P.1.
- Donaire, S. (February, 02 of 2015). Capriles dice que alcalde venezolano Ledezma fue "secuestrado" por el Estado. *El nuevo Herald* .Retrieved From: <http://www.elnuevoherald.com/noticias/mundo/america-latina/venezuela-es/article10760606.html>
- El Espectador . (June, 22 of 2014). Sube a 43 el número de muertos en protestas en Venezuela. *El Espectador* .Retrieved from: <http://www.elespectador.com/noticias/elmundo/sube-43-el-numero-de-muertos-protestas-venezuela-articulo-499857> pág. 1.
- El Tiempo . (February, 13 of 2014). Sacan del aire al canal colombiano NTN24 en Venezuela. *El Tiempo* .Retrieved From: <http://www.eltiempo.com/archivo/documento/CMS-13491935>.
- El Tiempo . (May, 25 of 2015). Trasladan al opositor venezolano Daniel Ceballos a cárcel civil. *El Tiempo*.Retrieved From: <http://m.eltiempo.com/mundo/latinoamerica/daniel-ceballos-opositor-venezolano-enviado-a-carcel-civil/15809355>
- El Universal . (May, 25 of 2014). Rosa de Scarano gana las elecciones con el 87% de los votos. *El Universal*. Retrieved from: <http://www.eluniversal.com/nacional-y-politica/140525/rosa-de-scarano-nueva-alcaldesa-de-san-diego-con-el-87-de-votos>
- El Universal . (July, 14 of 2015). Inhabilitan por un año a María Corina Machado para ejercer cargos públicos. *El Universal* . Retrieved From: http://www.eluniversal.com/noticias/politica/inhabilitan-por-ano-maria-corina-machado-para-ejercer-cargos-publicos_28183.
- El Universal . (16 de 01 de 2015). Ordenan casa por cárcel para Enzo Scarano por su estado de salud. *El Universal* .
- El Universal . (May, 25 of 2015). Patricia de Ceballos triunfa en San Cristóbal con 73.62% de los votos. *El Universal* . Rerieved From: <http://www.eluniversal.com/nacional-y-politica/140525/patricia-de-ceballos-triunfa-en-san-cristobal-con-7362-de-los-votos>

- El Venezolano. (April, 04 of 2016). Periodistas demandan complejo editorial Alfredo Maneiro por negar papel periodico. *El Venezolano*. Retrieved from: <http://www.elvenezolano.com/2016/04/04/periodistas-demandan-complejo-editorial-alfredo-maneiro-por-negar-papel-periodico/>. pág. 1.
- Fuchs, C. (2006). The Self-Organization of Social Movements. *Systemic Practice and Action Research*, P. 1-2.
- Fuchs, G. (S.F). Emergence in Complex Systems. University of Erlangen-Nuremberg,P. 4.
- Garcia, R. (2006). Sistemas Complejos . Bercelesona : Gedisa .
- Gershenson, C. (2005). Self-organizing Traffic Lights. *Universiteit Brussel*, P.29-31.
- Gleick, J. (1988). Chaos: Making a new science. *Ontario*: penguin books.
- Globovision . (June, 31of 2014). *Infografía: Ellos renunciaron a la MUD*. Globo vision . Retrieved From: <http://archivo.globovision.com/infografia-esto-son-los-que-han-renunciado-en-la-mud/>.
- Goldstein, j. (2011). The SAGE Handbook of Complexity and Management. London : SAGE publication .
- Gomez, N., & Maldonado, C. E. (2010). El Mundo de las Ciencias de la Complejidad. Bogotá D.C: Universidad del Rosario.
- Heylighen, F. (N.D). The Science of Self-Organization and Adaptativity . *Free University of Brussels*,P. 5-7.
- Hinterlaces. (August, 26 of 2014). Análisis: El rompecabezas de la oposición (Infografía). *hinterlaces*. Retrieved From: <http://www.hinterlaces.com/analisis/politica/el-rompecabezas-de-la-oposicion>.
- Holland, J. (1996). *The Hidden Order: How Adaptation Builds Complexity* . Basic Books.
- Holland, J. H. (1999). *Emergence: From Chaos to Order* . Chicago : Basic Books .
- Infobae . (November, 20 of 2014). Maneiro, el monopolio chavista para controlar el papel prensa en Venezuela. *infobae* . Retrieved From: <http://www.infobae.com/2014/10/19/1602774-maneiro-el-monopolio-chavista-controlar-el-papel-prensa-venezuela/>.
- Infobae . (September, 07 of 2015). La CorteIDH condenó a Venezuela y le ordenó restablecer la frecuencia de RCTV. *Infobae* .Retrieved From: <http://www.infobae.com/2015/09/07/1753667-la-corteidh-condeno-venezuela-y-le-ordeno-restablecer-la-frecuencia-rctv/>.
- International Crisis Group. (2007). La Revolución de Hugo Chávez. International Crisis Group. Retrieved From:[https://www.crisisgroup.org/~media/Files/latinamerica/venezuela/19_venezuela__hugo_chavez_revolution.ashx](https://www.crisisgroup.org/~/media/Files/latinamerica/venezuela/19_venezuela__hugo_chavez_revolution.ashx)
- Iordache, O. (2011). *Modeling Multi-Level Systems*. Berlin: Springer-Verlag Berlin Heidelberg.
- Kuhn, T. (1968). *la estructura de las revoluciones científicas*. Mexico: Fondo de Cultura economica.
- La Voz. (May,31 of 2016). María Corina Machado criticó decisiones de la MUD. *La Voz* ,Retrieved From: <http://www.diariolavoz.net/2016/05/31/machado-critico-decisiones-la-mud/>. pág. 1.
- Lafuente, J. (September, 12 of 2015). La Justicia venezolana condena a Leopoldo López a 13 años de prisión. *El País* .Retrieved From: http://internacional.elpais.com/internacional/2015/09/10/actualidad/1441891200_087531.html
- Lagi, M., Bertrand, K., & Bar-Yam, Y. (2011). The Food Crises and Political Instability in North Africa and the Middle East. *New England Complex Systems Institute*, 15.
- Langton, C. (N.D). A New Definition of Artificial Life. Retrieved From: <http://scifunam.fisica.unam.mx/mir/langton.pdf>
- Levy, D. (1994). Chaos Theory and Strategy: Theory, application and managerial implications. *Strategic Management Journal* , pág. 1.
- Lobo, C. (18 de 02 de 2015). El opositor Leopoldo López cumple un año preso de la justicia chavista. *El País*. Retrieved From: http://internacional.elpais.com/internacional/2015/02/18/actualidad/1424223099_827768.html
- Lorenz, E. (1962). *Deterministic non-periodic flow* . Massachussets: Massachussets institute of tecnology .
- Lugo, A. (September 29 of 2015). Mesa de la Unidad . (M. E. Salazar, Entrevistador)
- Mackay, R. (2008). Nonlinearity in Complexity Science. *University of Warwick*, P.1.
- Maldonado, C. (2009). *La Complejidad es un porblema, no una cosmovisión*. Bogotá: UCM.
- Maldonado, C. E. (2005). *Ciencias de la complejidad: Ciencias de los cambios súbitos*. Bogotá : Universidad Externado de Colombia.
- Maldonado, C. E. (2009). *Complejidad: Revolución científica y teoría*. Bogotá, Colombia: Editorial Universidad del Rosario .
- Maldonado, C. E. (2011). Ciencias de la complejidad: Ciencias de los cambios súbitos. *Universidad Externado de Colombia*, P. 7-17.

- Maldonado, C. E. (2013). *Significado e impacto social de las ciencias de la complejidad*. Bogotá: Colección Primeros Pasos.
- Martiz, V. L. (April, 24 of 2015). Conceden arresto domiciliario a Antonio Ledezma para que sea operado. *El Tiempo*. Available From: <http://www.eltiempo.com/mundo/latinoamerica/conceden-prision-domiciliaria-a-antonio-ledezma-para-que-sea-operado/15626078>
- Mesa de la Unidad Democrática . (2011). *Reunión Mesa de la Unidad Democrática* . Retrieved From: <http://unidadvenezuela.org/2016/05/40321/Cujicito> : Unidad .
- Mesa de la Unidad Democrática. (N.D). *Mesa de la Unidad Democrática* . Retrieved From Unidad : <http://unidadvenezuela.org/sobre-la-mud/>
- Mezza-Garcia, N. (2013). Bio-Inspired Political Systems: Opening a Field. In T. Gilbert, M. Kirkilionis, & G. Nicolis (Ed.), *Proceedings of the European Conference on Complex Systems 2012* (pp. 785-812). Springer
- Mitchel, M. (2009). *Complexity: a guided tour* . New York : Oxford University press .
- Morehead, G. (june 5 of 2011). Emergence in Complex Systems *.scilogs* . Retrieved From : http://www.scilogs.com/a_mad_hemorrhage/emergence-in-complex-systems/
- Moreno, L. (December, 12 of 2013). *La verdadera historia del partido MUD*. Retrieved From Noticiero Digital : <http://www.noticierodigital.com/2013/12/la-verdadera-historia-del-partido-mud/>
- Murga, M. A. (June, 23 of 2014). Ronald González renuncia a su cargo como coordinador adjunto de la MUD Carabobo. *Noticias 24*. Retrieved from: <http://noticias24carabobo.com/actualidad/noticia/24694/ronald-gonzalez-miguel-flores-debe-renunciar/>
- New England Complex Systems Institute. (N.D). *New England Complex Systems Institute: solving problems of science and society*. Retrieved From : <http://necsi.edu/guide/>
- Olver, P. J. (2015). *Nonlinear Systems*. Minnesota : University of Minnesota.
- Pardos, L. (October, 5 of 2012) *Chávez logra un cuarto mandato como presidente para estar 20 años en el poder*. El País. Retrieved From: http://internacional.elpais.com/internacional/2012/10/07/actualidad/1349633710_923402.html
- Phelan, S. E. (2001). What Is Complexity Science. From S. E. Phelan, *What Is Complexity Science, really?* (pág. 129). N.A: Lawrence Erlbaum Associates, Inc.
- Pierce, E. E. (2002). Non-Equilibrium Thermodynamics: An Alternate Evolutionary Hypothesis. *Crossing Boundaries*, P. 6.
- Priera, M. (March, 20 of 2013). Muerto el presidente, viva el vicepresidente. *El País*. Retrieved from: http://internacional.elpais.com/internacional/2013/03/06/actualidad/1362598147_467900.html. pág. 1.
- Prigogine, I., & Stengers, I. (1984). *Order Out of Chaos* . New York : Bantam Books .
- Puerta, M. I. (March, 13 of 2013). Crisis en Venezuela: análisis de la situación tras un mes de protestas. *La República*. Retrieved From: <http://larepublica.pe/13-03-2014/crisis-en-venezuela-analisis-de-la-situacion-tras-un-mes-de-protestas>. pág. 1.
- Raia, F., Selin, N., Huyck Orr, C., Strong, N., Lynn, F., & Bruce, H. (2010). *Definitions of Complexity*. Available From Developing Student Understanding of Complex Systems in the Geosciences: <http://serc.carleton.edu/NAGTWorkshops/complexsystems/definitions.html>
- Scharfberg, E. (June, 19 of 2015). El Gobierno de Maduro llena de trabas electorales a la oposición. *El País*, Retrieved From: http://internacional.elpais.com/internacional/2015/07/19/actualidad/1437329022_171500.html. pág. 1.
- Semprum, L. J. (May, 07 of 2014). ¿Por qué Capriles ataca a La Salida? *El Universal* . Retrieved from : http://www.eluniversal.com/noticias/opinion/por-que-capriles-ataca-salida_136655
- Sofronie-Stokkermans, V. (2012). *Non-Classical Logics*. Available From <https://userpages.uni-koblenz.de/~sofronie/lecture-non-classical-ws-2012/slides/introduction.pdf>
- Taleb, N. N. (2014). *Antifragile: Things That Gain from Disorder*. New York : Random House Trade Paperbacks.
- TeleSur. (December, 27 of 2015). Oposición venezolana deja ver sus diferencias para gobernar . *TeleSur*, Retrieved From: <http://www.telesurtv.net/news/Oposicion-venezolana-deja-ver-sus-diferencias-para-gobernar--20151227-0015.html> . pág. 1.
- Tello, R. E. (2015). *Mesa de la Unidad Democrática* . Caracas : Asocion Integral de Políticas Públicas .
- Vaio and Cristoforo, S. a. (2005). *Non-Linearity, Chaos and Complexity*.v. Oxford: Oxford University Press.

- Valenzuela, P. (2014). *Caída y resurgimiento. La evolución de la oposición política venezolana durante el gobierno de Hugo Chávez*. Mexico D.F: Scielo.
- Vargas. E (August, 09 of 2015) JAVU anuncia que se deslinda de la MUD: “Su interés no es el mismo que el nuestro”. Noticias 24. Retrieved From: <http://noticias24carabobo.com/actualidad/noticia/77609/javu-anuncia-deslinda-mud-interes-nuestro/>
- Vinogradoff, L. (February, 18 of 2015). Leopoldo López, un año preso por pedir la salida del Gobierno de Nicolás Maduro. ABC internacional . Retrieved From: <http://www.abc.es/internacional/20150218/abci-aniversario-encarcelamiento-leopoldo-lopez-201502171218.html>
- Waldrop, M. M. (1992). *Complexity: The Emerging Science at the Edge of Order and Chaos*. New York : Simon and Schuster PaperBacks .