

**THE THEORY OF COMPLEXITY ADAPTED TO INTERNATIONAL
RELATIONS: THE BEHAVIOUR OF THE VISEGRAD-UKRAINE COMPLEX
ADAPTIVE SYSTEM SINCE NOVEMBER 2013**

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“The theory of complexity adapted to international relations: the behaviour of the Visegrad-Ukraine Complex Adaptive System since November 2013”

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To my mum and her mum.

ABSTRACT

Complexity, a theory that is proper to the study of natural-related phenomena, is found to be an alternative framework to understand emergent events within the international system. This monograph correlates the language of complexity with international relations, focusing in the Visegrad-Ukraine relationship, which suffers from unexpected emergent events since the popular uprisings that took place in Kiev in November 2013. The complex system that exists among the Visegrad Group and Ukraine will feel the need to adapt to the recurrent emergent events ever since and self-reorganise in order to behave accordingly to unpredictable scenarios, particularly in regard to their energy-linked interactions and their political interconnections.

Key words: Complexity, Ukraine, Visegrad Group, Complex Adaptive Systems, self-organisation.

RESUMEN

La teoría de la complejidad, propia del estudio de fenómenos relativos a las ciencias naturales, se muestra como un marco alternativo para comprender los eventos emergentes que surgen en el sistema internacional. Esta monografía correlaciona el lenguaje de la complejidad con las relaciones internacionales, enfocándose en la relación Visegrad—Ucrania, ya que ha sido escenario de una serie de eventos emergentes e inesperados desde las protestas civiles de noviembre de 2013 en Kiev. El sistema complejo que existe entre el Grupo Visegrad y Ucrania se ve, desde entonces, en la necesidad de adaptarse ante los recurrentes eventos emergentes y de auto organizarse. De ese modo, podrá comportarse en concordancia con escenarios impredecibles, particularmente en lo relacionado con sus interacciones energéticas y sus interconexiones políticas.

Palabras claves: Complejidad, Ucrania, Grupo Visegrad, Sistemas Complejos Adaptables, Auto organización.

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ACRONYMS

AA	Association Agreement
CAS	Complex Adaptive System
CEEI	Central Eastern European States
CEI	Central European Initiative
DCFTA	Deep and Comprehensive Free Trade Area
EU	European Union
IR	International Relations
LNG	Liquefied Natural Gas
NATO	North Atlantic Treaty Organization
TASR	Tlačová Agentúra Slovenskej Republiky
USSR	Union of Soviet Socialist Republics
V3	Visegrad Three
V4	Visegrad Four

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INTRODUCTION

What would an international relations (IR) scholar say if told that there is an alternative theoretical framework, which is mostly associated with natural sciences, that defies the linearity of all the IR theories in which they have been relying their researches on? Perhaps this question would baffle most of them considering that a theory that is endemic to natural processes, they may tend to think, would not provide explanations to either political, economical, security-related or any other aspect of international phenomena. Reality is that the theory, or science, of complexity is based on concepts that fit splendidly to the non-linear correlations and interactions that exist within the international system.

Complexity differs from all the IR theories, no matter the paradigm to which they belong, in that it gives reasons for thinking of the international system as one in which unexpected and uncertain events can emerge at any moment, and there is no possible way of predicting the outcomes of any of them. This, in the end, gives the actors the task of self-organizing and adapting to any given situation that emerges from the environment or that appears as consequence of certain shifts in their interactions.

Through complexity one is able to conclude that there are certain interactions that are stronger or tighter than others. However there is no hierarchical differentiation on which set of interconnections is, undeniably, the most important one, unlike the linear theories in which security interests are superimposed to commerce, material capabilities are more important than economical ones or in which domination is the only way to understanding relationships among ‘core’ and ‘peripheral’ States. Complexity embraces them all, since there is no possible way of explaining an emergent situation within the international system if not approaching to the issue in a holistic way, thus including equally systemic, State-centric and socially constructed factors.

In order to provide a more comprehensible explanation this work will focus on the multiple adaptations that the relationship between the Visegrad Group, formed by the

Czech Republic, Hungary, Poland and Slovakia, and Ukraine. Since November 2013, when popular upheavals emerged in Kiev as a form of protest against governmental decisions taken by then President Viktor Yanukovich, a chain of convulse events appeared within the complex system that exists among the Group and Ukraine. Whenever a neuralgic matter unleashes from the cloud of uncertainty, be it a popular uprising, a change in presidential office, a threat on gas shortage, the signing of an Association Agreement etc., cohesive actions are to be taken in order to preserve the interactions within the system and, therefore, adapt to the given situation not to lose the interconnection.

It is due to the latter that the effects of the recent events in Ukraine cannot be limited to its repercussion in Ukraine. There is an entire set of dynamics that makes this country merely an agent of one system in which a series of interconnections with the Visegrad States should be preserved, not to mention the interactions with other actors that saunter in the system's environment, such as Russia and the European Union (EU).

Such being said, this monograph aims at revealing how does Complexity theory, applied to International Relations, explain the behaviour of the Visegrad-Ukraine Complex System¹ since November 2013? To which it is argued that in a non-linear relationship, such as the mentioned one, adaptability is the essential attribute that makes a Complex System self-organise in accordance to the emerging events that have appeared unexpectedly in the System's environment, affecting the interactions among its components. Such a relationship is evidenced when approaching to the Visegrad Group and Ukraine's interactions, particularly to their connections on energy affairs and political cooperation.

In order to demonstrate the applicability of complexity to IR, via the given case, four sets of arguments will be given. Firstly, historical ones; secondly, empirical ones; thirdly, holistic and relational ones; and, lastly, factual ones, related to the state of affairs. Furthermore, after conducting an exhaustive investigation on the topic, nearly no studies

¹ Hereinafter, the term written in capital letters refers explicitly to the Visegrad-Ukraine Complex System, whereas, when talking generally of complex systems, these would be written without capitals.

were found in academic data-bases in regard to the existence of a complex system neither among these two actors, nor on the behavioural shift of the Visegrad Group towards Ukraine and the system's environment in accordance to the emergent events that will be outlined throughout the next pages.

Ultimately, unpredictable situations, that do not necessarily involve both actors of the Visegrad-Ukraine Complex System, have made their relations to adapt to a series of emergent events produced by the interactions, both within its components and among the components and their environment. Nevertheless, a mainstream theory of IR would not frame the entire situation, as neither would they rely on the various and unforeseeable outcomes that one single event can have. Then, the definitive attempt of this research is to step aside from those traditional and linear enclosures, which are doing nothing but reducing international reality into unrealistic and simplistic terms.

1. VISEGRAD-UKRAINE RELATIONS THROUGHOUT HISTORY (1991-2014)

It has now been nearly a quarter Century since both the Visegrad Group was created and Ukraine gained its independence from the Soviet Union. Throughout the past 24 years, relations between the Visegrad Four and Ukraine have not certainly been as close and reciprocal as in the past decade. Even though, interactions have been unstopped and the Visegrad Group has never questioned the existence of Ukraine as an independent Republic, given the common communist yoke that they were all once trying to release themselves from.

Their relationship, then, can be divided into three stages. First, from 1989 which was when the Visegrad States became independent, until 1992, when the V4 rejected the entrance of Ukraine to the Group. Second, from 1992 to 2004, the latter being the year in which the four Visegrad States became full members of the European Union. Finally, since 2004 until 2015, stage through which Ukraine experienced the two greatest crises of its independent history. This was as well the time during which the relations became closer with the V4, due to the support that the group gave to Ukraine a propos the idea of becoming closer to the EU, being the latter, ironically, one of the triggers in a series of still ongoing events that began in the late 2013.

1.1. 1989-1992: The birth of Central Europe

1989 was the year of revolutions in Central Europe. It was then when the Soviet Union began to walk its path towards dissolution, just as the Republics that were formerly under communist rule, designed their own guidelines to abandon the stigma that rested upon them. The soviet economic and political impositions restricted countries such as Czechoslovakia, Hungary, Poland and Ukraine in the pursuit of an alternative State model which was ultimately aimed at making their way into the European cooperation and free market standards.

Civil demonstrations of support for non-communist social and political movements in Bratislava, Prague, Budapest and Warsaw were constant during the 1980's. The popular pressure and the political anxiety to establish a new government finally escalated until the point of engaging in democratic elections and choosing non-Soviet members of Parliament and Heads of State. The Polish and Hungarian successful upheavals were sealed, possibly in no better way than with the fall of the Berlin Wall in November 9th 1989, due to the legitimization that such event provided to their abandonment of the Soviet regime and mostly to their new governments. In the aftermath of the Wall incident, the Velvet Revolution led to the independence of Czechoslovakia from the USSR. A couple of weeks later a new decade came into being and, with it, three new Central European States.

The now independent institutions and the new political dynamics were being strengthened and consolidated progressively within these newborn States, however the integration process that involved the security and economic cooperation organizations of Western Europe was hardly showing any progress. For that reason a couple of years later, in 1991, the Republics of Czechoslovakia, Hungary and Poland decided to engage in a cooperation project of their own.

On February 15th 1991, Václav Havel, Josef Antall and Lech Walesa, the leaders of the newly established States, met in Bratislava and signed the *Declaration on cooperation between the Czech and Slovak Federal Republic, the Republic of Poland and the Republic of Hungary in striving for European Integration*. Such document constitutes the establishment of the Visegrad Group. The so called 'V3' or 'Visegrad triangle' was named after a Hungarian municipality in which the Kings of Hungary, Bohemia and Poland were summoned in the year 1335 by the need to claim mutual assistance among their Kingdoms. (Fawn, 2002, p. 52) It happened to be historically accurate to recall such event, as their non-monarchic successors were precisely committing to what the rulers of their countries had pledged for in the XIV Century.

As the wording of the Visegrad Declaration suggests, the Group was created to cope jointly with the intricate political situation that resulted from the atomization of the USSR and ultimately to integrate fully into the West European interactions. Additionally, in said document the three parties declared their will to “eliminate all existing social, economic and spiritual aspects of the totalitarian system; construct a parliamentary democracy, a modern State of Law and respect for human rights and freedoms; create a modern free market economy; and involve entirely in the European system of security and legislation” (Visegrad Declaration, 1991, para. 2).

The Visegrad Group was one of the first initiatives of regional cooperation of the Central and Eastern European States. Nevertheless, the Group was not designed to be an alternative to the European Union nor NATO or any other institution that is considered as a forum prone to cooperation with the West. On the contrary, the oath of allegiance made by the V3 is the vehicle these States chose to board in their search for full European acceptance. In 1993 however, Czechoslovakia accorded the division of the country into two separate Republics, the Czech and the Slovak. Such was not an impediment to continue with the process of integrating into the European free market, although it did pose additional challenges to the ulterior success of the project, coming from their new heads of government.

In the meantime, quite a few kilometers to the East, the situation regarding independence was still unsolved. At the time of the creation of the Visegrad Group, the Ukrainian Soviet Socialist Republic was still resting under the Soviet Union’s left wing. The way in which Ukraine became independent resembles in no way to the revolutionary acts led by civil movements in Czechoslovakia, Hungary or Poland. On the contrary, the Ukrainian secession was much more sudden given that it was triggered by an attempt of Coup d’état in Moscow 5 days before it decided to become a separate State. The Declaration of Independence proclaimed by the Parliament of Ukraine (the *Verkhovna*

*Rada*²) on August 24th 1991 ordered that a referendum should be held four months after the independence was proclaimed in order for the citizens to confirm the decision. (Verkhovna Rada of the Ukrainian SSR, 1991, p. 4)

The decision taken by the *Rada* in August was widely supported by the Ukrainians in December. However, even prior to the referendum the Visegrad Triangle had already recognized Ukraine as an independent State. Poland, Czechoslovakia and Hungary, along with Bulgaria and Canada were the first States to recognize internationally the existence of the Republic of Ukraine. (Fawn, 2005, p. 125) From this moment on, the interactions between the V3 and the new Central Eastern European State (CEES) began to self organize in response to the convulse environment in which they were submerged.

Ukraine, such as the rest of the emerging CEES, was in search for mechanisms that could allow the State to establish political and economic connections with the rest of the continent. Nevertheless, there was a particular feature that made different its process of integration from those of the remaining Central and Eastern States, including the V3: its relationship with Russia. Poland, Hungary and Czechoslovakia had not been Soviet Republics, as Ukraine was. The latter was part of the territory of the Union of Soviet Socialist Republics until the very day in which the referendum backed up the *Rada's* decision of becoming an independent State, during the last month of 1991. The Visegrad States, on the other hand, were not officially part of the USSR, but they did have communist imposed pro-soviet regimes that lasted for decades.

Ultimately, what mattered at the moment of the joint venture towards the future, were the similarities in the upcoming project of State that they mostly shared. The true importance of Ukraine for the Visegrad States, geopolitically speaking, was, first, the opportunity that the Ukrainian territory represented in terms of energy (hydrocarbon) flow given that the rich Russian pipelines and gas ducts run across its territory, and second, the fact that the Visegrad States could take advantage of Ukraine's eagerness to get closer to its

² Hereinafter maybe referred to as *Rada*.

Western neighbours in order to have an ally that still held strong ties with Russia. It was a strategy that could serve to maintain Russia neutralised, or in other terms, keeping it close enough as to assure non post-independence retaliations plus energy supply, and far enough to maintain a prudent relation that would not compromise the relations with the rest of the West European States.

In despite of the pledge for European integration that the V4 claimed, and of how appealing it seemed to be for other emerging States of the region to join the Visegrad cooperation initiative, the group was firmly decided not to accept any other member. Ukraine was not even independent at the time of its creation, so technically the Visegrad Group is older than the Ukrainian State itself, even if it is only for a few months. In that sense, for when they had already built two years worth of path out of major efforts, they would think twice, three times or as much as they considered before admitting the addition of a new road builder.

The members of the Visegrad Group knew that it was better having a fragile and somehow Russian biased State as Ukraine on their side. But they also knew that allowing such a country to join the Group as a full member would significantly draw out the process of rapprochement with the EU and NATO members. In 1992 therefore, the Visegrad Group rejected the official membership application submitted by Ukraine. (Wolczuk, 2003, para. 2-3) The Czech Republic, Poland, Hungary and Slovakia, considering even that some of their national interests were slightly dissimilar, knew very well that if they wanted to become a desirable member for the Western institutions they should build their path together, as in a sort of a 4-seat exclusive vehicle riding through a one car speedway lane.

1.2. 1992-2004: Walking different paths leading to the same end

The following years were not as easygoing as the previous ones for the Visegrad Group. The enthusiasm, with which the project was initially constituted, progressively began to fade. The four members were so eager of being admitted into the western institutions that

they decided to gradually forge their way on their own, instead of depending on the Group to reach their goal, although it must be said that the integrity of the regional body was never seriously compromised.

Polish President Lech Walesa, on the one hand, started promoting the idea of a 'NATO-Bis' in 1992. The project envisioned by the leader of Poland included not only the remaining two Visegrad members but also Belarus, Russia and Ukraine. Walesa thought that this 'club' served, first as an alternative to the North Atlantic Treaty Organization as the members of the alliance were not showing any particular interest on dealing with these countries, and then as a forum that would prepare their parties for when NATO eventually consented their membership. (Hyde-Price, 1996, p. 239)

As the former idea never came into existence, Ukrainian President Leonid Kravchuk in a failed attempt of leading a prosperous project of regional integration, proposed the creation of a 'Zone of Stability and Security' in 1993, from the Baltic to the Black Sea. The Ukrainian bid included the same States as its Polish counterpart's, plus the three Baltic States and a couple other Central European actors such as Romania, Bulgaria and even Austria. However, it excluded Russia. The sole idea of having such a large security area without including Russia was challenging, especially for the Visegrad Group since it was being already threatening to pursue NATO membership so shortly after they had cut all political ties to Russia now for them to allegedly exclude a key country that they could not afford to have as a declared enemy. (Wolczuk, 2003, p. 99)

Ukraine, in despite of the failure of the two mentioned projects and of Visegrad's membership rejection, was somehow being taken into account when thinking of regional integration. "Kyiv sought to join CEFTA and some of the working groups of the Central European Initiative (CEI). Polish and Hungarian representatives supported Ukraine's application for CEI membership, which was approved on May 31st, 1996 . The Visegrad countries also helped Ukraine enter the Council of Europe in November 1995" (Wolchik & Riszard, 2000, p. 136).

The, so far, close relations among the Visegrad States, nevertheless, were beginning to grow fainter. According to Martin Dangerfield, Professor of European Integration and Jean Monnet, Chair in the European Integration of Central and East Europe (2009) “the period 1993-98 is usually characterised as, at best, a time of dormant VG [Visegrad] cooperation” (p. 4). After the 1993 Czechoslovak split, the newly appointed Prime Ministers of the Czech Republic and Slovakia became actors that somehow posed additional challenges for the Group. Vaclav Klaus and Vladimír Mečiar, respectively, were not neither entirely pro Western nor Visegrad cooperation enthusiasts:

The Czechs thought that regional co-operation was a subtitle for the ‘real’ goal of ‘going West’. Slovakia, the only country with borders with each of the other three, could hardly reconcile the Visegrad Group co-operation with its difficult relations with Prague and Budapest. All this changed since 1998 with the departure from office of Mečiar and Klaus, and, the ensuing convergent Czech and Slovak policies towards Visegrad and EU/NATO enlargement. (Rupnik, 2003, p. 41)

Furhtermore, during the 1997 NATO Madrid Summit, the Czech Republic, Poland and Hungary were invited to join the alliance. The three Visegrad States finally became members of said organization on March 1998, though the Slovak Republic was excluded of the enlargement process. (Cottey, 2000, p. 36) These countries became the first ex communist allies and opened the door for other non western States to become part of NATO. Ukraine, however, was not in the alliance’s list for potential application. As a swing State, it was perilous for NATO to face Russia in such a decisive way as it was for Ukraine first, to attempt becoming a member of an organization that was historically against its giant neighbour and second, to put at risk the relations with Russia, given the still dependent ties they preserved.

Notwithstanding the North Atlantic allies were not expcting Ukraine to be a member of their organization in a near future, they acknowledged the importance, just as the Visegrad Group did and still does, of having Ukraine close to their interests. For that reason, NATO and its Eastern counterpart signed the *Charter on a Distinctive Partnership* on July 9th 1997. (NATO , 2009, para. 2) Even though the Visegrad States did not interfere

directly on said issue, they did open the door for further NATO enlargement or partnership for the remaining former communist Republics of Central and Eastern Europe, which Ukraine clearly took advantage of by signing the Distinctive Partnership agreement in 1997 and reinforcing it in 2009.

During the following years, the Visegrad countries focused on committing to the conditions that the European Union imposed to them in order to continue with their membership candidacy. The Hungarian Presidency of the Group between 2001 and 2002, aside from keep on pursuing EU integration, had the enhancement of the V4 relations with Ukraine as an important subject. The Group even invited commissioners from the EU to attend a meeting in November 2001, in which delegates from the Visegrad members and Ukraine were meant to discuss several methods to strengthen Ukraine's development and closeness to the regional integration initiative. (Hungarian Presidency of the Visegrad Group , 2001) A couple of years later, the four Visegrad States were at last *ad portas* of accomplishing one of its main goals, which also happened to set a turningpoint regarding the Group's relationship with its key Eastern Partner.

1.3. 2004 – 2015: Shifting towards the Central Eastern region

One of the main if not the primordial objective, that moved the Visegrad States to engage in regional cooperation, by means of the Visegrad Group, was fulfilled in 2004. The Czech Republic, Poland, Hungary and Slovakia were admitted as full members of the European Union on the first day of May 2004. With thus being achieved after thirteen years of lobbying, internal institutional adaptation and an arduous stage involving conflicts of interests among the four members, the V4 managed to engage in the dynamic cooperation of the region not as an alien partner but as a member party.

So, what now? If the purpose of the Visegrad Group had been achieved, was it then the end of it? In respond to these concerns, the Heads of Government of the Visegrad Quadrangle released the Kroměříž Declaration on May 12th 2004. (Brazova, Matczak, &

Takacs, 2013, p.7) Said document set a new route that gave a whole different meaning to the *raison d'être* of the Group. The Declaration states that the Visegrad States:

[...]Reiterate their commitment to the enlargement process of the European Union. They are ready to assist countries aspiring for EU membership by sharing and transmitting their knowledge and experience. The Visegrad Group countries are also ready to use their unique regional and historical experience and to contribute to shaping and implementing the European Union's policies towards the countries of Eastern and Southeastern Europe.

The Visegrad Group countries are committed to closely cooperating with their nearest partners in the Central European region. (The Kroměříž Declaration, 2004, para. 4-5)

That very last sentence is the one that sets the inclusion of Ukraine in a much more significant level. Ukraine borders three of the four Visegrad States, namely Poland, Hungary and Slovakia, therefore since the EU enlargement of 2004, the Visegrad Group became the natural border of the European Union to the East. Since then, Ukraine became much more prone than ever to be a potential candidate for EU partnership, being sponsored by the new Central European members or why not, they thought, for future membership.

Membership, due to various factors such as institutional weakness, being a pivot to Russia, and the basic question of it truly belonging ethnically, culturally or politically to Europe or not, makes it hard for the EU members to step up Ukraine's status to more than a remote candidate. The mentioned matters raise countless doubts that restrain the consideration of Ukraine for European membership.

The Visegrad Group, conscious of that particular situation, began lobbying in order for Ukraine to acquire certain perks and seek a formal Partnership Agreement. The State that led the Ukraine lobby, with the support and consent of the remaining three members was Poland, given that it was the country that had the closest relations with Kiev, and still does, out of the Visegrad Group. (Kaminska, 2014, p. 82)

The Visegrad initiative, led by the Polish, included a Visa facilitation agreement between Ukraine and EU members, based on the belief that it would bring the Eastern State much closer to the European Union. (p.83) The Visa exemption proposal did not succeed as

promptly as their proponents expected, mainly because it was proposed very shortly after Poland and the other Visegrad States joined the EU, meaning that they were still learning the formal procedures, accommodating to the institutional norms and familiarizing with Visa procedures within the organization, and also, because it was not backed up by many EU members. (p.82) Even the Czech Republic and Slovakia were still reluctant to the idea of having Ukrainians to enter their territories Visa-lessly.

Changing radically the scenario, the Orange Revolution that took place in Ukraine between 2004 and early 2005, happened to turn out well for the country in terms of regional support as well as of future opportunities for broader EU advantages. The change in government was the shift that Ukraine needed regarding European integration, given that Viktor Yanukovich was more on the pro Russian side than the candidate that was finally elected as President, Viktor Yushchenko. (Sushko, 2004, pp. 2-3)

From this particular event, during which Ukraine suffered from a two-month power vacuum, was that the Visegrad Group as a whole began to bid resolutely in favour of its EU rapprochement. Prior to the revolution, however, Yushchenko's approval of engaging in much tighter interactions with NATO and the European Union, made Slovakia and the Czech Republic to reconsider their Visa related restrictions for Ukrainian citizens, and to support the lobbying of their two other Visegrad partners in a way that was ostensibly more sincere. (Zielys, 2009, p. 41)

2004, however, was not only the year in which the Orange Revolution took place. This was also the year during which the 1994-2004 *Partnership Cooperation Agreement* (PCA) between the EU and Ukraine expired. As the elections in Ukraine had finally favoured Yushchenko, the members of the Union may have decided that the timing was good enough for them to offer an *Association Agreement* (AA) to its Eastern neighbour.

The Eastern Partnership, however, came into force four years after it was signed, meaning that the true year in which it had to be renewed was 2008. However, as the timing

was in favour of the parties, and Poland, along with its three other Visegrad colleagues, was supportive of the idea, the preparation towards negotiations for the AA began earlier. What has to be taken into account is that the PCA automatically renewed itself or had to be enforced continuously until a new agreement was signed and ratified by the actors involved, and also that the formal process of negotiation aimed at subscribing the AA only began after the 2008 Paris Summit. (Tyshchenko, 2011, pp. 10-11)

The negotiations culminated successfully in 2012 and even included, within the framework of the AA, an opportunity for Ukraine to get involved, to a great extent, in the European market, via the Deep and Comprehensive Free Trade Area (DCFTA). (Tyshchenko, 2011, p. 11) Ever since, the Association Agreement³ has been ready to be signed and ratified by both Ukraine and the 28 members of the European Union.

In the meantime, and as a parallel measure of cooperation with their Eastern Partners, the V4 came up with a project that had been designed with the purpose of enhancing the relations as well as the bilateral political and technical cooperation of the Group with certain States. The Visegrad Plus or ‘V4+’ initiative was formalized during the period of the Group’s Hungarian Presidency of 2010.

The objective of this cooperation strategy, according to what the four Heads of Government affirmed during their 2010 Budapest Summit is “promoting [...] the Euro-Atlantic integration of the Western Balkans and the Euro-Atlantic alignment of the Eastern Partners, strengthening energy security of our region, [and the] adoption of a common spatial development document [...]” (Heads of Government of the Visegrad Group, 2010,

³ The Association Agreement comprises “enhanced cooperation in some 28 key sector policy areas, including transport, environment, cooperation on industrial and enterprise policy, public finance, macroeconomic stability, company law, banking, insurance and other financial services, information society, information technology and telecommunications, tourism, agriculture and rural development, fisheries and maritime governance, mining, cooperation in science and technology, space cooperation, consumer protection, social cooperation, public health, education, training and youth, cooperation in the cultural and audio-visual field, civil society cooperation, cross-border and regional level cooperation etc. based on gradual approximation with EU acquis” (EU External Action - European Commission , 2014, p. 2)

para. 2) The Visegrad Group, as a result, became a sort of paliative for other Central European countries. States such as Moldova, Serbia, Croatia and Ukraine that had not been included in the EU enlargement processes of 2004 and 2007, kept themselves marginalized of many perks that are proper to members of the Union. Therefore, the Visegrad Group, via the 'V4+' and the, must be said, precarious Visegrad Fund, tried to be the leading head of Central and Eastern European integration. This cooperation platform surely encompasses Ukraine, and it has been particularly useful when dealing and expressing their support during the 2014 crisis.

The crisis that began in Kiev in 2013 with a popular upheaval that was triggered, among several reasons, by President Yanukovich's refusal to ratify the Association Agreement with the European Union, rapidly escalated into a regional crisis which involved not only Ukraine's western neighbours, but Russia as well. "The main risks would include the interruption of energy supplies, possible instability in the border regions, and the influx of migrants on refugees. These common interests strongly motivated the Visegrad Group to take joint actions during the crisis" (Rácz, 2014, p. 4).

For instance, during a meeting in Kiev of V4 leaders and Ukrainian President Petro Poroshenko shortly after he assumed office, the Slovak Deputy Prime Minister Miroslav Lajčák, on behalf of his country and of the other three Visegrad members, declared:

Slovakia will be the leading country in the areas of Energy Security and Security sector reform; Poland will be a leading country in the areas of decentralization, reform of regional and local administration and management of public finances; Czech Republic will be a leading Nation in the areas of civil society, media and education; and finally, Hungary will be the leading country for economic policy, support for the small and medium-sized enterprises and the implementation of the CEFTA. (Lajcak, 2014, 1:16-1:43)

Such statement does nothing but confirm the need for the V4 to unite and adapt to the situation by means of numerous official statements in which the Group expressed its concern and further actions to assess the issue. Now that the preamble to the 2014 crisis has been presented, the following stage is to show the way in which the Visegrad Group, along

with the very Ukraine, have managed to cope with such an unpredictable phenomenon. The latter will constitute the objective of this research; therefore it will be thoroughly discussed in subsequent chapters.

Professor Andrei P. Tsygankov Ph.D synthesizes the Ukrainian political struggle in its international front by affirming that “for Ukraine, a culturally torn country, the challenge is to preserve a balance in its foreign policy vis-à-vis Russia/CIS, on the one hand, and the West, on the other” (Tsygankov, 2001, p. 206). This premise, ultimately, could be applied at any moment of Ukraine’s 24-year Republican life and it will accommodate brilliantly to any given situation, being it either a political revolution, the negotiation of an agreement with the European Union or the very relationship with its Central European neighbours, such as the Visegrad countries.

2. THEORETICAL AND CONCEPTUAL FRAMEWORK

First and foremost, the components of the theory of complexity were not clearly intended to fit the dynamics of the international system. Complexity was meant to relate to biological, chemical, mathematical and evolutionary phenomena, among other natural scientific disciplines, which could serve from most concepts developed by the theory in order to explain neuronal functions, numeric equations, the reactions and bonds of chemical elements and the evolution of organisms via, mostly, computational modeling. Nevertheless, certain recent investigations led by complexologists, such as Emiliano Kavalski and scholars of the field of International Relations, such as Robert Jervis, just to name a couple, have found an ontological closeness among Complexity and International Relations.

Somehow, there are several elements of chaos and complexity that may be inserted accurately into the analysis of State interactions and the way in which they behave, be it through patterns, impulses etc. The International System, by itself, has been considered by some as a complex system. In a minor level, the interactions that are built between two or more actors within the international scenario, constantly involve violence, poverty, commercial exchanges and many other elements that are covered by clouds of uncertainty, unpredictability and non-linear dynamics.

2.1. Complex systems

In words of Ion Cîndea (2006) “we use the term *complex system* to denote *a set of interconnected and interdependent parts*. The most important features of the complex systems are interconnectedness and the emergence, i.e. the fact that *the whole cannot be reduced to the sum of the components*” (p. 47). Among the Visegrad Group and Ukraine lies a relationship that is surrounded by a convulse environment which is filled of uncertainty, non-linearity and unpredictability, all of which lead to the emergence of a variety of interactions within the complex system.

In the case of the V4-Ukraine complex system, their multiple and equally relevant interactions, which go from energy cooperation to political cooperation, just to name a couple, are so interconnected that any variation or disruption in the system's dynamics will, by and large, have consequences in all of its agents. In such sense, Jeffrey Johnson (2013) asserts that the science of complex systems "attempts to provide methods of understanding the dynamics of systems where conventional methods fail. [...] There are many systems in which the behaviour of the whole emerges from interactions between the parts, e.g. traders in markets, birds in flocks, people in cities, and cells in bodies" (p. 8) to which now States in the international system must be added. The nature of the system makes it virtually inevitable of decomposition.

The key aspect then is not taking every single agent that form the complex system as a micro-structure since, by definition, the sense of *system* falls apart. The feature that must be considered is the self-organisation that occurs from the actions that the agents take in regard to one another, forming thus the out coming behaviour of the entire system. What truly matters when approaching to a complex system are the interactions that result from the unpredictable behaviour of the agents which are conditioned by an uncertain and non-linear environment.

2.2. Behaviour of a complex system

Regarding behaviour, Professor Yaneer Bar-Yam (1997) states that the proper way in which the behavior of the whole system should be considered is parting from the behaviour of each agent involved, by itself, to then bring such analysis into the complex picture by relating each single action among them. The latter, leads Bar-Yam to even affirm that the difficulty of understanding complex systems, as described in his book *The Dynamics of Complex Systems*, is that the entire system cannot be understood without describing each part of it, prior to the comprehension of the whole (p. 1).

However, this does not mean that the behavior of each Visegrad State would be thoroughly evaluated in a unitary level, although approximating to their individual behaviour is helpful to understand the adaptation of the Group to emergent events. Yes, each of their actions in regard to the variables must be taken into consideration. Yet, to what this investigation concerns, the V4 will, mostly, be taken as a whole, meaning that the behaviours that will be analyzed, in a particular level, will be: the Group's, on one hand, and Ukraine's, in the other. Then, after fulfilling each description of the parts, is when both sets of actions and behaviours are interrelated to determine which are the core interactions of the two agents and how the complex system self-organises, which is strictly what matters in this context, just as Bar-Yam suggests.

2.3 Emergence and self-organisation

There are two intrinsic conceptual aspects to complex systems. This duo gives the actual basis of what a complex system is since it condenses the nature of unpredictability and non-linearity: emergence and self-organisation.

On the one hand, “systems may develop emergent properties that do not derive from a simple aggregation of their components, and it is the interaction among the system's components that creates the complexity and uncertainty that characterize the resulting system” (Hoppmann, 1998, p. 314). The emergence, then, is the channel through which any variation in the dynamics of the complex system is transformed into new properties, coming either from the environment or from the interactions among its components. Such properties or events that emerge unexpectedly are the ones that reconfigure the interactions, due to the molding of the previously existing conditions.

Furthermore, “when a system has a global emergent property, the behavior of the small part is different in isolation than when it is part of the larger system” (Bar-Yam, 1997, p. 12). Such will be demonstrated in Chapter 4, when the interactions among the Visegrad Group and Ukraine are presented as well as those of each of the four Visegrad

States separately, not only with their Ukrainian counterpart, but also with other actors in the Complex System's environment.

Bar-Yam's assertion ratifies the idea of the interactions among agents being the key to understanding the behaviour of the complex system, and the unpredictable outcomes that are product from such interactions. Resulting from the latter, the components of the complex system may begin to design a set of patterns, and new interactions that respond to no external authority, just to the dynamics that must be coped with as a comeback to the alteration provoked by the unforeseeable occurrence. As Neil E. Harrison (2006) puts it, "Properties of the system are emergent, created by the interaction of the units" (p. 5). It is due to those stimuli or events that the environment by which the complex system is surrounded gains its relevance.

The International System, being itself an open and anarchic field in which uncertainty, non-linearity and unpredictability set their flags, serves as the environment in which the V4-Ukraine Complex System sets. "We see that emergent properties cannot be studied by physically taking a system apart and looking at the parts (reductionism). They can, however, be studied by looking at each of the parts in the context of the system as a whole. This is the nature of emergence [...]" (Bar-Yam, 1997, p. 11). The events that have taken place within the Visegrad-Ukraine Complex System are, therefore, an example of the way in which the emergence of new properties in the core of a given complex system leads to the adaptation of the bonds among its components.

Regarding now self-organisation, the concept implies that there are no guidelines for the components of the complex system to create new interactions. The properties that emerge are spontaneous and respond to a certain event, be it fortuitous or not.

In other words, complex systems adapt to changing circumstances (Simon 1996). This can lead to evolutionary system behaviour and to self-organized criticality (Bak and Chen 1991; Holland 1995; Simon 1996). Self-organized criticality is the idea that a minor event in a composite system can start a chain reaction that then can affect any number of elements in the system (Bak and Chen 1991). (Geller, 2011, p. 66)

However, the way in which interactions are reset do not follow any authoritarian imposition nor any order coming from a hierarchical superior. The components of the complex system interact and organize on their own in response to emergent properties, hence the term self-organisation. Then, if emergence is linked to the interactions that are created within the complex system, self-organization is proportionally linked to the structure of the system itself. The latter, then, can be seen as the organisational response of the complex system to the perks of emergence.

2.4 Uncertainty and non-linearity

Sufficiently has it been reiterated the role that uncertainty and non-linearity take when it comes to explaining complex systems. But, what exactly do complexologists mean as they refer to them? On the first place, in L. Douglas Kiel's and Euel Elliott's (2004) concept "uncertainty is an important element of nonlinear systems since the outcome of changing variable interaction cannot be known" (p. 6). This term is strictly related to behaviour. The fluctuant nature of the interactions that exist within any complex system makes it impossible to know exactly which will the outcome of a given event or stimulus be. In this sense obviousness and expectedness, which are both impossible amid a complex system, are the antithesis of uncertainty.

What Stuart Kauffman (1995) has to say about this is fairly on the same page of what has already been stated. However, Kauffman mentions not only uncertainty, when referring to the outcome of the actions taken place amid complex systems, he introduces unpredictability.

At this poised state between order and chaos, the players cannot foretell the unfolding consequences of their actions. While there is law in the distribution of avalanche sizes that arise in the poised state, there is unpredictability in each individual case. If one can never know if the next footstep is the one that will unleash the landslide of the century, then it pays to tread carefully. (Kauffman, 1995, p. 17)

Then, not only is one unable to know precisely which will be the repercussion of any act, but due to such, one would not be able to accurately predict the result of a given event nor the behaviour of the players affected.

Moreover, nonlinearity doesn't concern merely the behaviour of the components of the complex system. This concept refers to the product of such behaviour, namely, the possible and multiple outcomes to one single event, impulse or problem. In order to reach a better understanding of nonlinearity, the work of mathematician Henri Poincaré must be brought up since his findings constitute the milestone of the concept. Poincaré did not speak exactly about nonlinearity. What he did was to determine that the initial conditions of an event or phenomenon should be known in order to attempt knowing the possible paths it may follow towards an outcome or solution. (Tufillaro, Abbott, & Reilly, 2013, pp. 2-3)

Regarding the findings of Poincaré and the mentioned behavioural nature of the agents, Tufillaro, Abbott and Reilly (2013) provide two cases through which they exemplify the nature of the concept: "Some of the motions around us - such as the swinging of a clock pendulum - are regular and easily explained, while others - such as the shifting patterns of a waterfall - are irregular and initially appear to defy any rule" (p. 1). Both of the examples that these authors offer are ideal to elucidate the dynamics of linear and nonlinear systems. On one hand, the pendulum of a clock swings invariably for as long as the mechanical system remains in motion. The movement of such pendulum is predictable, as it resembles the precision that is proper to a clock's linear system. The linearity relies on the certainty that there is a force that pushes and pulls the pendulum, responding to the synchronization of the system, and that will perpetually cause the very same outcome.

On the other hand, the waterfall will also keep flowing for as long as there is a mighty water source that produces it. However, the patterns that it produces are different every time, taking into account that they depend on the water flow, the strength of the river tide, the rocks to which the water clashes and so on. Certain it is that there is a principal input element, which is water, but the outcomes will constantly vary depending on certain

conditions and the interactions of such input with the environment. That is what makes a waterfall a nonlinear system.

The same happens with the interactions among Ukraine and the V4. There is, for example, political cooperation from the Visegrad States towards Ukraine amid the frame of the European Union. Such cooperation guide the complex system to behave in friendly and condescending terms, at least to what such realm respects. However, the interactions of the agents of the complex structure led to the emergence of civil riots in Kiev in November 2013, which then turned into a bigger concern when other actors became involved. These are unforeseen events that were the outcome of a set of political interactions that were not meant to provoke them, whatsoever. The latter is just an example of how emergence and nonlinearity are both concepts that are helpful to illustrate the situation.

2.5 Adaptability

After all that has been said, the V4-Ukraine complex system that has been depicted can be classified as, what John Holland calls, a complex adaptive system (CAS). In Holland's own terms: "A *CAS [Complex Adaptive System]* consists of a large number of interacting individuals, called *agents*, that adapt or learn as they interact" (Holland, 2007, para. 6). Certainly, as it has been stated, the complex system conformed by the V4 and Ukraine has proven to be adaptive to the circumstances that arise as unexpected events emerge. Far from falling apart, the behavior, not only of each agent, but of the entire system has shifted in response to the crisis. This creates emergent properties that will be the ones that make the whole complex system to respond assertively to the events that cannot be foreshadowed.

On this same realm Murray Gell-Mann, the Nobel-winning physicist who first introduced the term 'Complex Adaptive System', gives four characteristics for identifying a CAS. In spite of knowing that the reference may be somehow extensive, it is important to have it due to the connection that is has with this research.

The following are general characteristics of a CAS:

1. Its experience can be thought of as a set of data, usually input → output data, with the inputs often including system behavior and the outputs often including effects on the system.
2. The system identifies perceived regularities of certain kinds in this experience, even though sometimes regularities of those kinds are overlooked or random features misidentified as regularities. The remaining information is treated as random, and much of it often is.
3. Experience is not merely recorded in a lookup table; instead, the perceived regularities are compressed into a schema. Mutation processes of various sorts give rise to rival schemata. Each schema provides, in its own way, some combination of description, and (where behavior is concerned) prescriptions for action. Those may be provided even in cases that have not been encountered before, and then not only by interpolation and extrapolation, but often by much more sophisticated extensions of experience.
4. The results obtained by a schema in the real world then feed back to affect its standing with respect to the other schemata with which it is in competition. (Gell-Mann, 1994. pp. 18-19)

What seemed to be an agent-based Complex System among Ukraine and the Visegrad Group turned out to be an Adaptive one, after considering these principles. The inputs, in the case of the V4-Ukraine Complex Adaptive System are, at first, the political negotiations in which the Visegrad countries intervened to include Ukraine in the European Eastern Partnership program. However, it was precisely Ukrainian President Viktor Yanukovich's rejection to sign the EU-Ukraine Association Agreement the first unexpected emergent property, along with the civil protests in Kiev that then escalated nationally, to which the Complex System had to adapt. This input, which comes from the political behavior of the agents involved in the CAS, produced a series of disproportionate outputs that had effects in the entire system as not only the political interactions were affected but the commercial, energy-linked and migratory, among others.

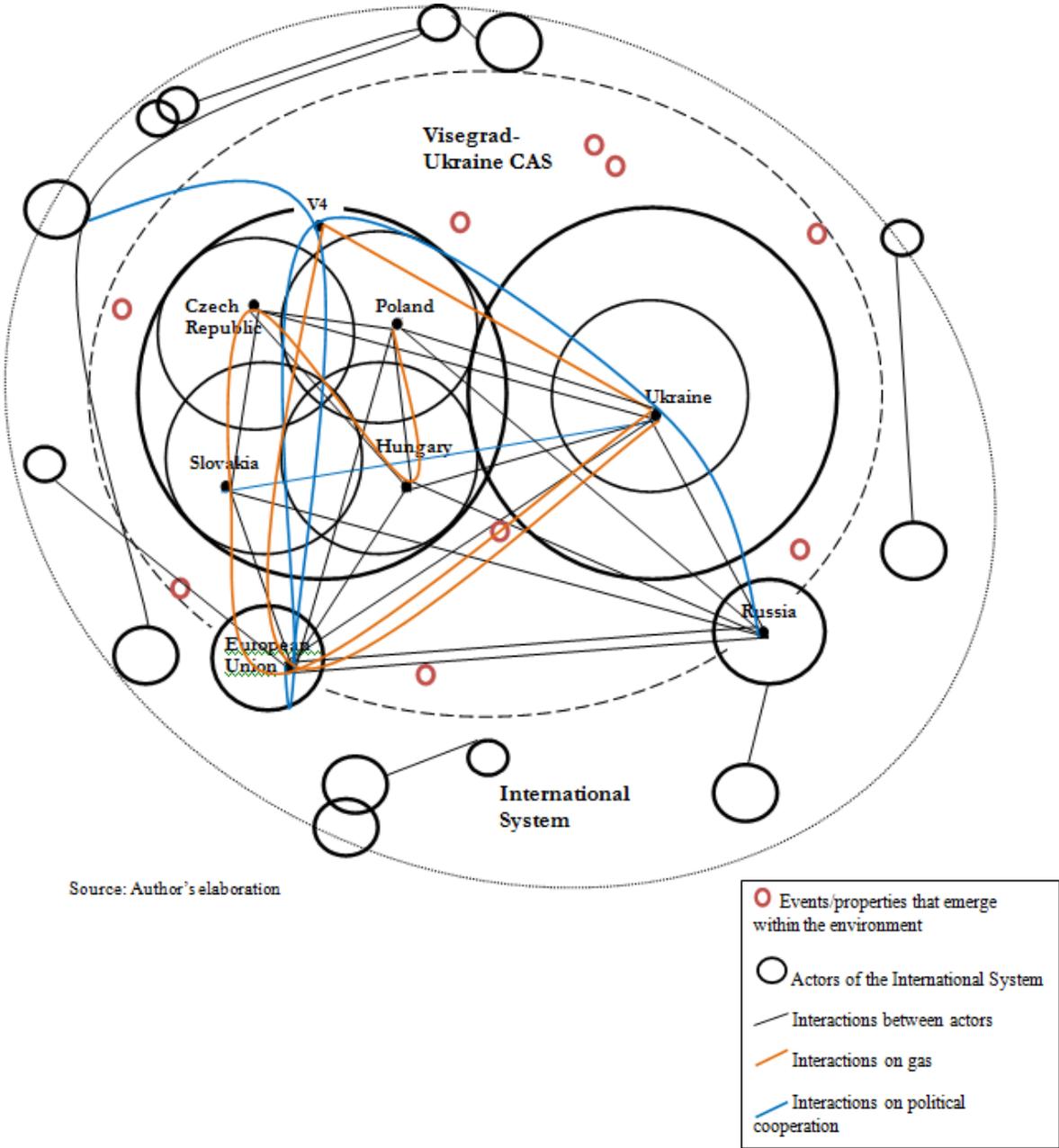
Even though the EU Partnership agreement that the Visegrad Group supported was perceived as regular to the CAS interactions, the effects it provoked were totally unexpected. Then, each of the existing interactions among the agents of the Complex System suddenly faced a cumulus of random information that had to be sort by them in order to adapt to the emergence of its reactions.

What this demonstrates is precisely that whenever a neuralgic matter unleashes from the cloud of uncertainty, cohesive actions are to be taken in order to preserve the interactions within the system and, therefore, adapt to the given situation not to lose the interconnection. It is due to the latter that the effects of the recent events in Ukraine cannot be limited to its repercussion in Ukraine. There is an entire set of dynamics that makes Ukraine merely an agent of one system in which they all invariably relate to one another. Ultimately, the properties that emerged in the CAS' environment since 2013 did not affect the Visegrad Group on its own, as it did not affect Ukraine by itself; they disrupted sets of interactions that existed among the two of them. This being said, Reuben Ablowitz succeeds in explaining what has just been exposed by means of a tuneful analogy:

If I play two notes together on the piano, there is an aspect of quality of this sound which is not the property of either of the notes taken separately. The chord has the characteristic of 'chordiness'; the harmonious combination of sounds has a new attribute which no one of its individual components had, but which is due solely to their togetherness. (Ablowitz, 1939, p. 2)

Take a moment to think of a Complex System as the string duo of an orchestra, in which Ukraine is a violin and the Visegrad Group a viola, and the orchestra is the environment. The musician who plays the violin is familiar with the sound of his instrument; she knows exactly which note is to be produced just by pressing a string onto the fingerboard while stroking it gently with the bow. Since the outcome matches the input, and the effect can be predicted, this is a linear system unlike the one that is presented in this work. In international complex systems interactions are like the sounds that the instrument produces, however a variety of notes result by pulling one same string, and each time the note has a different and unpredictable intensity and pitch, making it non-linear.

Figure 1. Structure of the Visegrad-Ukraine Complex Adaptive System.



That is it. Since November 2013 those intangible strings called interactions were pulled in a way they were not used to be pulled and were affected by the heat of the environment, thus they had to be tuned back. Even if the strings were all stretched out, a remarkable melody could yet be reproduced, probably not in the same key as the previous

ones, but still in a harmonious way. The viola, as it is still the other component of the duo, has to be refurnished and adapted to the new sounds of the violin, even when it remained apparently unaffected by the environment or the string overstretching.

When other instruments in the orchestra, which resembles the existing actors in the environment of the CAS, such as Russia and the EU, are to play a march together, they receive the impact of the strings that were stretched out since the sound made by the duo will be unexpected. The orchestra would have to continue playing, in a different way, but it will still be playing. As of the violin and viola, they will still be able to play a wondrous symphony when adapted to the sounds of each other, but the noise of the other instruments would be absolutely out of key.

So, taking such into consideration, the properties or events that emerged from the environment reverberated particularly within the energy and political interactions among Ukraine and the Visegrad States. Since then, a vast amount of unexpected outcomes appeared, which affected the entire complex system due to the intrinsic intertwined dynamics that exists among its agents and to which the components needed to adapt. Complexity then, provides an explanation for the effects that these unforeseen properties had in a set of actors whose interactions cannot be disaggregated, all this via the understanding of the uncertainty, non-linearity and self-organizing schemes that are endemic to a complex system.

3. THE FIFTH DEBATE: EMERGENCE OF A COMPLEX THEORY OF INTERNATIONAL RELATIONS

Non-linear systems are able to be found practically everywhere, though not every existing system is non-linear. Just as in the example of the clock's pendulum given in the previous chapter, many other daily perceivable activities are strictly linear, such as the way in which an engine ignites in order to produce vehicle motion or the way in which the audio system, in said vehicle, reads a CD.

In that same sense, several actions that take place within the International System are prone to be taken in a linear fashion, given that certain type of outcomes regarding phenomena such as war, trade, migration can respond to similar historical or current factors. In fact, most of the paradigms in International Relations that are considered as traditional, and to a broader extent, even those that are not properly the classical ones, usually analyze international phenomena through a linear perspective. Given that the previous chapter presented the origins of the Sciences of Complexity and its ambiguous application in natural sciences, in this chapter Complexity turns into a tool that not only fits biology or mathematics but an actual social science, such as International Relations.

3.1 The misconceived linearity of non-linear International Relations

International Relations should be thought of not just by merely relating the actors to one another, or finding the ways in which they interact, but instead, or let's say, as well, knowing that actors not only interact *within* the system, they also interact *with* the system itself. None of those approaches are exclusory form one another. That is why categorizing certain theories into 'systemic' or 'State-centred' is simplifying a discipline that is far from being linear. For a phenomenon to be understood, its components must not be reduced, torn apart or subtracted for them to be explained separately. Yes, one single phenomenon can be explained in many different ways, but the essence of the problem cannot be explained without correlating all the known facts that are endemic to it.

The so-called debates, that have taken place among the multiple theoretical streams of the discipline of International Relations, have all ended up by presenting scientific or epistemological arguments rather than integrating the different perceptions of each theory in order to have a broader awareness of the perceived reality. In this respect, Thomas Kuhn (1996) could not be more accurate when presenting the close-mindedness that becomes evident by the way in which normal scientists conceive their surroundings. Normal scientists engage in

An attempt to force nature into the performed and relatively inflexible box that the paradigm supplies. [...] those that will not fit the box are often not seen at all. Nor do scientists normally aim to invent new theories, and they are often intolerant of those invented by others. (p. 24)

Kuhn made, back in 1962, one of the most outstanding contributions to the methodological differentiation of the way in which the phenomena of multiple disciplines are studied. More than half a century has gone by, and still the nature of what he called 'Normal sciences' is invariable. The discipline of International Relations has not been exempt of the permeation of Normality. Furthermore, the discipline itself is often simplified by categorizing it into a normal science, given its realist grounds and the subsequent theories that have sprouted from Realism and against it. Complexity did not quite enter the theoretical discussions in International Relations until Jack Snyder and Robert Jervis published their work *Coping with complexity in the international system* in 1993.

The latter was the first approach of Complexity as a holistic alternative to the traditional and normal [in Kuhn's normal scientific terms] paradigms of the discipline. In 1975, John G. Ruggie had dedicated a chapter on Todd La Porte's *Organized Social Complexity: Challenge to Politics and Policy* (Ruggie, 1975) to present shortly how Complexity could be useful when planning public expenditure. Ruggie's dissertation used the term 'planning' in a Complex context. Perhaps, he was trying to propose a sort of modeling sample for public planning, but the text had plenty of 'what-if' questionings,

instead of presenting several concrete scenarios based on the multiple possible outcomes that would derive from a certain strategies of public planning.

In 1977 Robert O. Keohane and Joseph Nye Jr. coined a revolutionary term, considering the ingrained realist perception that a State should be self-sufficient and, thus, should be able to guarantee its own military security and, at a much lower extent, its economic stability without depending on any exogenous transaction. Complex Interdependence, though it gave a different view of the interactions among the actors of the International System, was almost exclusively focused on economic interdependence and commercial bargaining, leaving aside the countless other axes that are also interdependent between States, Institutions and the remaining actors of the system.

Additionally, in the first revision of their text, that was published on the tenth anniversary of the original *Power and Interdependence*, the authors claim that the realist hierarchical organization that sets military power over economics is to fade with the emergence of Complex Interdependence (Keohane & Nye, 1987, p. 730-731), just as one would expect to happen if grounded on a Complex non-linear perspective. However, a few paragraphs later, Keohane and Nye remind the reader that “In chapter 1 [pgs. 16-17 of the 1977 publication] we argued that it must always be kept in mind furthermore that military power dominates economic power... yet exercising more dominant forms of power brings higher costs. (1987, p. 731) Such an assertion vanished the promise of a truly Complex theory of International Relations, even if it was meant to be framed by the neoliberal stream of the discipline.

The previously mentioned attempts of inserting Complexity into the International Relations' scholar scene, were condensed in *The fifth debate and the emergence of complex international relations theory: notes on the application of complexity theory to the study of international life* (Kavalski, 2007), the work that announced the appearance of a Fifth Debate within the discipline. The debate that follows the Realist vs. Idealist, the Behaviourist vs. Traditionalist, the Neorealist vs. Neoliberal and the Positivist vs.

(Neo)Structuralist is one in which nonlinear dynamics, self-organization, resilience and the distancing from simplistic assertions are presented as some of the main contributions to the study of the complex international life.

The rise of a Complex International Relations theory suggests the need for the phenomena of the discipline to escape from the linear cell that all the previous paradigms had locked them in. The insertion of Complexity in the study of world affairs does not, as Kavalski reminds that Gerry Gingrich (1998, p. 1) states, “ ‘yield answers, at least not in the sense of those we have typically sought to describe our world and predict its events since the beginning of the Scientific Revolution. What it does yield is a new way of thinking about the world’ ” (Kavalski, 2007, p. 438).

To a larger extent, Emilian Kavalski notes that the theorists that find in Complexity the ultimate way of approaching to world affairs describe the International System as a Complex Adaptive System. In the author's own words the Complex Adaptive System perspective suggest that: “(i) it is not a cluster of unrelated activities but an interconnected system; (ii) that this is not a simple system, but a complex one; (iii) the interconnectedness between the parts of the system is not unchanging, but constantly self-organizing—that is, it is their capacity to cope with new challenges that makes the system adaptive” (2007, p. 444). He relies on the explanations given by Lars-Erik Cederman, James Rosenau and Louise Comfort, three of the scholars that are known for integrating concepts of Complexity with International Relations, to emphasize in the resilience and relative order that self-organization and emergence provide to the system.

Besides considering the International System as a Complex Adaptive one, the Fifth Debate also adds an ontological novelty to the non-linear approximations to the discipline. Stemming from Gunderson and Holling's theorizing, the term panarchy emerges as a concept through which the interactions of nature, the ecosystem and human activity relate and self-organize, playing with two well-known dichotomies: (i) change and persistence; and (ii) the predictable and unpredictable. (Gunderson, Holling, & Ludwig, 2002, pp.5-6)

In order to understand thoroughly what panarchy is an example based on the author's findings will be provided.

Imagine the human food chain. For a human to eat, it must interact with the environment: an individual hunts, harvests crops, fishes, trains other animals to help them find potential nourishing sources, among others. However, the food chain is susceptible of being altered by the environment. Unexpected natural phenomena such as droughts, floods, blizzards or demographic variations can affect the production. Similarly, man provoked events like oil spills, mismanagement of natural resources, overexploitation and market failures can also affect the production and distribution of food . So, how to cope with these emerging properties? How to create a balance so that dealing with one problem would not provoke two additional problems derived from the first one? Those are the real challenges.

Humans not only interact with the ecosystem, they also interact with their political environment and with one another's thoughts. The actors in the International System do the same; they interact with each other and with the system itself, coping with emergent properties that sometimes are provoked by themselves or that may emerge from structural responses to unpredictable events. States, institutions and the other multiple actors in the international complex system also have to cope with change and persistence and with the predictable and unpredictable, even though relying on the predictable may cause the actors to ultimately rely on nothing, since predicting the exact outcome of an impulse is far from being plausible.

3.2 The perils of Causality in International Relations

The traditional theoretical approaches that aim to analyze international events are prone to be seen as reductionist. Every single event that takes place within the International System has its own impulses that may arise from emergent properties, which produce both immediate and sudden reactions. Let us consider the outbreak of the Great War, during the second decade of the Twentieth Century. A single event such as the assassination of

Archduke Franz Ferdinand and his wife in Sarajevo, in 1914, has been claimed by many as the reason that led to one of the deadliest conflicts in recent history.

What about the Imperial downfall? Or what about the nationalistic sentiments that were sprouting throughout Europe at the time? And what is to be said about the prestige that each of the involved territories would gain via the appropriation of new lands and resources? The Great War was not the consequence of a single stimulus. A bare murder could not have caused millions of casualties and the reorganization of an entire continent, including the dissolution of some of the greatest empires in the West.

There is no such thing as causality when considering a Complex System. Outcomes such as the multiple events that have taken place in Ukraine, affecting not only the country in which they emerged, hence turning into a major geopolitical issue, cannot be reduced to the sole fact of Viktor Yanukovich's decision not to cooperate to a deeper extent with the European Union.

A priori, it would seem irrational that a Head of State would prefer to assure cordial treatment with one single State, for instance neighbouring Russia, than taking advantage of the commercial and cultural offerings that a group of 27 States presented to his country by means of an Association Agreement. Nonetheless the perception of the decision mutates when considering aspects such as the ideological background of said leader, the reforms that were demanded by the counterpart in order to implement the agreement, the ethnic composition of many Ukrainians, the geographical position of the country, the dependence on the Russian market and many other interactions that Yanukovich may have taken into account when assuming his position, without mentioning several other interactions regarding the easternmost members of European Union that he may have decided to overlook. The decision may appear to not be entirely rational, but it does not escape from being logical when looking at the whole picture.

To enter in the perilous domains of causality when facing any sort of event within the International System is misleading. It is not possible to determine the exact cause of any given fact just by the nature of the consequences (Salmon, 1998, p. 13), nor can we be completely sure of the outcome of any given impulse. Wesley Salmon, being influenced by the ideas of Carl G. Hempel, came up with an alternative way of analyzing causality, which more than alternative turned out to be complementary to the non-co relational thoughts of David Hume, thoughts that have been the milestone of the preceding arguments.

Salmon agrees to a great extent with Hume's reflections on the impossibility of finding a direct connection between cause and effect, to which he adds a new concept that emerged from a loophole he found in Hume's assertions. Statistical correlations, as Salmon decided to present them, are relevant indicatives of causal relations of some sort between the symptoms⁴ of a cause and the subsequent outcome. (Salmon, 1998, p. 45) For instance, feeling chills is a symptom associated with the developing of influenza, as it is also associated to having feelings for another individual, as well of being related to the popular expression of experimenting a hunch. As Salmon says "there are distinct effects to a common cause, and the common cause explains the statistical relation" (1998, p. 45).

When correlated with the actual outcome, which let's say turned out to be a respiratory infection, those chills have a statistical relevance when looking for the causes of the infection, which is not the same as asserting that the chills caused the disease. It all turns into a matter of statistical probability. Regarding the situation in Ukraine, the increase in reverse gas flow between the Visegrad countries and Ukraine is the symptom of a failure in the Ukrainian strategies of energy security; as well of being a symptom of the renewed will of cooperation among the V4 and Kiev; as could also be symptom of the

⁴ Salmon warns not to confuse the symptoms of a phenomenon with its causes. The symptoms are the natural alerts that are given prior to the emergence of the cause. A given symptom may not necessarily develop into a cause of a given event. Symptoms are what must be treated in order to prevent the appearance of the cause, but sometimes treating the symptoms may not be sufficient to prevent the cause to appear (Salmon, 1998).

rapprochement that is intended with both the V4+ platform and the gradual enforcement of the EU Association Agreement.

A structuralist theory of International Relations, such as neorealism, would most likely find the reverse gas flow as a way in which the Visegrad providers exercise their power over Ukraine, which is not self-capable of producing their own energy, thus placing it in a category hierarchically inferior to that of the gas providers. Classical realism, in the meantime, would find obnoxious and irrational that Ukraine would not engage in a military confrontation with the gas provider so that the State could gain the property of the energy source. The latter given that the procurement of energy is a national interest, however secondary or tertiary to the military security, of course.

It is due to the previously illustrated arguments that Complexity was chosen as the theoretical frame in the making of this work. The situation that Ukraine has had to sort out since 2013 is perfectly unable to be seen as premeditated. No existing theory of International Relations could have predicted such an escalation of events. Neither, of course, could have Complexity because ungrounded predictions are exactly what the theory tries to avoid.

The unpredictability of the complex International System is based on the emergent properties that can appear in form of a leader's decision, the securitization of a certain issue of political relevance or popular upheavals, all of which are unexpected and cannot be foreseen entirely. These examples of emergent properties are used particularly because those were some of the many impulses that led to the Ukrainian crisis. Said emergent properties, as well as others that can arise at any moment dare not only the State in which they may emerge, but the complex system to which they belong due to the interconnection among actors, with resilience and self-organisation, which will be explained in the following section.

4. THE VISEGRAD-UKRAINE COMPLEX SYSTEM: ADAPTABILITY IN MOTION

Interactions among actors are what nourish the International System. The way in which they behave and self-organize in due course to the emergent events they constantly face, is what ends up building their relationships. Ultimately, actors compose the System and their interactions *are* the System (a complex one, certainly).

Within a macro-complex system such as the International System, a variety of Complex sub-systems rely, which are formed by the interdependent interactions that certain actors have managed to establish among themselves. As stated by Kavalski (2007, p. 438), “complex systems are not uniform—there are relationships of differing strengths between their components (and those with especially tight connections form sub-systems”. Well, one of those sub-systems is the Visegrad-Ukraine Complex System.

The Visegrad countries demonstrate, as they did throughout most of the Cold War, that their geographical positioning haunts them relentlessly. Not even after gaining their awaited independence have they managed to build a proper and own Russian and European foreign policy as these four countries seem to be fated to perpetually shift from one corner of Europe to the other. Mohammed Ayoob (1989), noted International Relations scholar, would refer to this ambivalence as ‘schizophrenia’. However, Ayoob’s State schizophrenia refers to the dual role that Third World States take regarding, on the one hand, the distribution of capabilities and resources within the structure and, on the other, their role as States and the destabilizing consequences that said redistribution may have on them. (p. 70)

Continuing on the line of Ayoob’s psychological reference one would be tempted to assert that the ambivalence in the foreign policy of the Visegrad Group in regard of the situation that emerged in Ukraine in 2013, is to be called hypocritical. The latter given that the Group has condemned the actions that Russia has taken in eastern Ukraine followed by the support given to Poroshenko’s election, with whom the Visegrad leaders have met more

than once⁵, but most Visegrad members have also shown their displeasure about the sanctions that the European Union, of which they are members as well, has imposed to Russia.

During their first official encounter in Bratislava for the November 2014 Visegrad Summit all countries conveyed, as Slovak president Kiska stated, “that a united approach within EU is needed and that sanctions against Russia were needed,” as quoted by TASR⁶ (Cuprik, 2014, para. 7). Moreover in May 2015 the Visegrad Group released a statement in which “the V4 countries condemn the illegal annexation of Crimea by Russia which they consider a violation of international law and a direct challenge to European security” (The Visegrad Group, 2015, para. 9). Nevertheless, previous to said declarations, the members of the Visegrad Group with the exception of Poland showed very reluctant to the round of sanctions that enhanced the temporal restrictions on the exchange of agricultural products, energy related goods, technologies and associated services.

In September 2014 when the European Council was preparing the second set of sanctions and the amendments to the first, the Czech Republic, Hungary and Slovakia declared their disagreement with the economic restrictions that the European Union imposed to Russia. According to the report released by the Strategic-Culture Foundation in the aftermath of the European leaders meeting

Prime Minister of Slovakia Robert Fico called for postponing the decision to introduce the new package. Czech Prime Minister Bohuslav Sobotka disagreed with parts of the draft on new European Union’s sanctions against Russia [...] Hungarian Prime Minister Victor Orban [was] more straightforward. According to him, the sanctions will boomerang and hit the

⁵ The first official meeting of the four Visegrad Heads of State and Government with President Poroshenko was held during the V4 Summit on November 15-16, 2014 in Bratislava, to which Germany was also summoned (Cuprik, 2014). The Visegrad Ministers of Foreign Affairs then visited Kiev in December of the same year and met with Ukrainian Officials, including the President, and with Federica Mogherini, High Representative of the EU for Foreign Affairs and Security Policy (President of Ukraine Official Website, 2014).

⁶ News Agency of the Slovak Republic

European Union more than Russia. He also wants Brussels to compensate the damage to be inflicted on producers. (Gulevich, 2014, para. 3-4)

Certainly the only Visegrad State that consents fully with the measures taken by the European Union is Poland. As said before, the components of a Complex Systems have different degrees of fixation. True it is that the Visegrad Group has its own ties within itself, which in some cases such as the Slovak and Czech Republic's, are much tauter in certain aspects due to various reasons. Additionally, the Visegrad Group and Ukraine have managed to establish their own networks, which are capable of enlarging or diminishing as emergent and spontaneous properties appear.

As if those were not enough, the V4 has other sets of connections with other actors of the Eastern European region, in addition to those they have largely established with Russia and with the European Union, although with the two last ones the interconnections are set on a more State-to-State level rather than between the Group and the actor, different from the Complex System that involves Ukraine. Satisfying all these countries and keeping the V4 interconnections with them unaffected is not possible, even more when there are additional interests in which multiple actors are involved, regarding vulnerable issues as, just to name one, the energetic.

Now, knowing that unanticipated events have taken place since the crisis emerged and that multiple sets of interconnections have been self-*reorganised* as a result, the foreign policy strategies that the Visegrad Group has taken as a unit, and even the positions that the members have announced as individual actors become reasonable. "CAS are dynamic systems able to adapt *in* and evolve *with* a changing environment. It is important to realize that there is no separation between a system and its environment in the idea that a system always adapts to a changing environment" (Chang, 2001, p. 2). The so called hypocrisy of the Visegrad actions fades when considering resilience as a key attribute of Complex Adaptive Systems, such as this one.

The Visegrad-Ukraine Complex System has had to adapt to the emergent properties that the environment has produced, for instance: the popular upheavals in Kiev in November 2013, the EU sanctions to Russia, the election of a new president in Ukraine in 2014, Russia's threat on gas shortage, Russia's armed intervention in east Ukraine, and so on. On the one hand, the Group was committed with Ukraine's rapprochement to the Western European dynamics years prior to the emergence of said properties. Hence, after one of the multiple meetings of Visegrad and Ukraine leaders in December 2014 the Group vowed to give assistance to Ukraine in multiple aspects, (The Visegrad Group, 2014) so it could take advantage of the ideology of the new Ukrainian Head of State in order to enhance cooperation with the European Union.

However, as mentioned, all Visegrad countries had their own previously established interconnections with Russia. Even if within the environment of the Complex System a first unpredicted property emerged during the late 2013, followed by other numerous stimuli that were related to the same phenomenon, the actors of the V4-Ukraine Complex System could not leave unattended their relationship with Russia nor their pledge of commitment towards the proceedings of the EU.

4.1 The Visegrad-Ukraine Complex System adapts as properties emerge

Self-organization is just as spontaneous as emergent properties themselves. When a complex system faces unexpected emergent properties, the actors in it and the system itself adapt their behaviour to the environment. That is what resilience is all about. The Visegrad-Ukraine Complex System did not dissolve; the actors instead modified their behaviours in accordance to the unexpected variations of the system. So, how is it exactly that the Visegrad-Ukraine Complex System has managed to adapt its behaviour when it comes to the emergent properties related to the Ukrainian-related events that have been appearing since 2013?

As the sets of interconnections amid this complex system are numerous, this section will focus in just two of the sets, which are perhaps the ones in which relations are intertwined at the highest level: First, gas flow, and second, political cooperation.

Gas Flow

Geographical proximity is one of the multiple factors that have made the system between the V4 and Ukraine a Complex one, as is also one of the features that are fundamental when correlating the effects of neighbouring actors in the behaviour of the system's environment. Precisely, one of the issues associated to geography is the interstate energy flow between Russia, Ukraine and the Central and Western European countries, including the Visegrad States of course.

According to the Atlas of Economic Complexity at Harvard University, the Russian Federation situates among the Top 3 States to which the Visegrad countries both import from and export to, slightly behind the undisputed number one commercial hub of the V4: Germany. (Harvard University , 2013a) Ukraine, meanwhile, stands much lower in Visegrad's import-export ranking, fundamentally relying on semi finished iron products, iron ores, small-sized technological appliances and optical fiber cables. (Harvard University, 2013b) Back to Russia, around 87% of the Russian exports to Poland in 2013, the year in which the first emergent property made its appearance, were related to gas and petroleum based products; 89% for Hungary; 80% for Czech Republic; and an astonishing 92% for the Slovak Republic, in the same year and realm. (Harvard University, 2013c)

Russian hydrocarbons are essential to the Visegrad countries, given that the Russian Federation has become its main and almost exclusive provider of scarce energy-related materials and commodities that literally fuel many of their industries and homes. In this picture, Ukraine is but a geographical mediator when it comes to gas and petroleum supplies for the members of the Visegrad Group. It is merely the territory that serves as

bridge between the provider and the dozens of millions consumers that benefit from the product in their final destination.

The four Visegrad countries find in Russia a crucial trading partner but they are conscious of the need in diversifying their gas suppliers. According to that is the variation that was evidenced in the previously mentioned Visegrad-Russia gas commercial balance. At the end of 2014, year in which most of the depicted emergent events appeared, Poland had reduced its gas and oil-related imports from Russia to 83%, Hungary to 82% , Czech Republic to 79%, and Slovakia to a surprising 65%. (Harvard University , 2014) These numbers confirm that, not only regarding energy-linked events, but whenever one faces a complex emergent event, change is constantly there. Unexpectedness is linked to the mutation of events at an arrhythmic pace, meaning that an upcoming second brings within as many variations to a situation as second there are in a day. Unpredictability, then, and constant change are in the nature of emergence.

None of the Visegrad States is willing to experience a shortage of industrial or quotidian activity due to their neighbour's crisis, hence making them to look towards their overseas Atlantic partner in order to have a backup. It was reported that "the prominent Visegrad Group asked House speaker Boehner⁷ to help fast-track Liquefied Natural Gas (LNG) exports from the United States. They argued that this would enhance European gas supply security and lower gas prices in their countries" (Goldthau & Boersma, 2014, p. 13). The emergence of Russian threats on gas flow suspension to Ukraine in February 2015, (Withnall, 2015) in response to the already mentioned sanctions, made it even more imperative for the members of the Complex System to find alternatives on gas supply. Varying the gas routes and supporting the creation of alternative gas pipelines in Europe, which would eventually not be built in Ukrainian territory anymore, would leave Visegrad in an apparently secure situation regarding energy supply.

⁷Refers to Republican Congressman John Boehner, who was speaker at the United States House of Representatives from 2011 until 2015.

But, what about Ukraine? The Ukrainian government does not own the gas that flows through its territory from Russia to Central and Western Europe. The natural gas that travels through Ukrainian pipelines belongs to the Russian State-owned company Gazprom, therefore the rightful benefits for Ukraine tend not to be as great as thought of. However the transit fees that Russia pays annually to Ukraine, as assured by Prime Minister Arseny Yatseniuk (2015), are approximately \$2 billion⁸, that the government would stop receiving due to the redirection of 140 billion cubic meters of gas (para. 3) that would flow through the alternative Nord Stream pipeline⁹.

Additional to the Nord Stream line that will communicate Russia with northern Germany via the Baltic Sea (Nord Stream AG, 2015, para. 3), there are other duct projects for providing gas to Europe that will not involve Russia nor Ukraine. The V4 has been keen to the idea of establishing the Southern Gas Corridor¹⁰, which would begin in Azerbaijan's Caspian Sea coast and reach Southern Italy. The 3,500 km of gas ducts would be sectioned in three stretches. The first one, the South Caucasus Pipeline would go through Azerbaijan and Georgia; the second one, the Trans Anatolian Pipeline would cross Turkey entirely; and the last one, the Trans Adriatic Pipeline, would flow through Greece, Albania, the Adriatic Sea and end up in Italy, where it would connect with the existing pipelines in Europe. (TAP-AG, 2015, para. 3).

The Visegrad Group has pronounced in favour of the Southern stream; the four countries even supported it publicly during the EU 2030 Council held in Brussels in October 2014. (CEE Bankwatch Network , 2014). A year after those first declarations on support of the infrastructural project, Visegrad's position continued to be pro-Corridor, which means that this actor was determined to adapt to the situation posed by the environment. The Foreign Ministers of the Group acknowledged in November 2015 the importance of the Southern Gas Corridor for the Central European region and assured, in

⁸ Ukrainian Prime Minister, in his September 10, 2015 declaration, did not specify the currency of said \$2 billion.

⁹ See Annex 1. , Map 1.

¹⁰ See Annex 2., Map 2.

voice of the Hungarian Minister Péter Szijjártó (2015) that they will commit to “take joint action in order to guarantee the energy security of Central Europe and to have the EU consider it as a common European interest” (para. 5).

Ukraine, on the other hand, is not as supportive as its counterpart. The Complex System, then, began to behave in a different way concerning the energy issue. The system organized in such a way that the gas interconnections would not be interrupted between the actors, even if Ukraine is eventually left out of the existing gas route. For instance, in December 2014 the Visegrad Group stated in an official announcement that it would provide assistance to Kiev¹¹ in a number of subjects that need to be adapted to the emergence of the crisis. Among these issues are territorial integrity, health-care assistance, institutional and financial reforms, the consolidation of a civil society and, of course, energy security. (The Visegrad Group, 2014b)

The cooperation on energy security includes two strategies of adaptation that permits the Complex System to enhance its interactions. First, not only the Visegrad countries, but the European Union and several other regional actors agree in the need to reform the Ukrainian national gas company NAK Naftogaz. The needed reform would permit Ukraine to gain more control over its own gas reserves and therefore to encourage the independence on Russian natural gas. In the second place, the Visegrad Group said to be committed with the uninterrupted supply of gas to Ukraine, and so it was expressed in the Statement that the Energy Ministers of the Group released as a conclusion of their official meeting in September 2014, in which they said they would “keep Ukraine energy situation on the top of the political agenda” (Ministers of the Visegrad Group, 2014, para. 4). In fact, since the ending of 2013 Ukraine has been negotiating with Hungary and Slovakia the possibility of gas providance to the easternmost country via reverse gas flow.

¹¹ Each Visegrad State vowed to sponsor a specific area for cooperation. The Slovak Republic was left in charge of the energy sector. See Chapter 1, pg . 25.

In 2015, after legal battling with Gazprom and a failed attempt of consent in the Ukrainian Parliament, the *Rada* approved the gas association between Ukraine and the Hungarian system operator FGSZ. (UNIAN, 2015) This decision follows the pledge for assistance offered months before by the Slovak Republic regarding the increase of reverse gas flow to Ukraine. Reverse gas flow allows Ukraine to take a portion of the gas imported by Hungary and Slovakia without additional shipment. This will ensure continuous gas supply to Ukraine as long as the agreements among these countries remain active and even if the gas route that goes through Ukraine is replaced by an alternative one.

Political Cooperation

Cooperation has been offered by the Visegrad Group to Ukraine in more than a few opportunities, as has been depicted throughout this work, and Ukraine has responded to such assistance in a quite reciprocal fashion. One of the events that made the situation among the actors of the Complex system to adapt in the way that it has is the election of Petro Poroshenko as President of Ukraine. As a matter of fact, Poroshenko assumed office on June 7th 2014. Then, twenty exact days after the new Ukrainian Head of State began his presidential period, he travelled to Brussels and once there he signed the EU-Ukraine Association Agreement¹² that his predecessor refused to less than a year before. (EU Council , 2015)

As of November 2015 all four members of the Visegrad Group had notified the Council of the European Union with their National Parliaments' approval of the Association Agreement. For instance, the Slovak Republic and Hungary were two of the first ten EU members that notified the Council with their favourable decision. (EU Council , 2015). The last one of the Visegrad Four to announce officially its approval to the EU was the Czech Republic in November 2015; however the Czech Senate had already given its approval to the Ukraine Association Agreement in December 2014, (Interfax, 2014) but due

¹² See European Union. (2014, May 29). *Association Agreement between the European Union and its Member States, of the one part, and Ukraine, of the other part*. In: Official Journal of the European Union : http://eeas.europa.eu/ukraine/docs/association_agreement_ukraine_2014_en.pdf

to bureaucratic paperwork and several other executive delays, the notification was not made in Brussels until the end of 2015.

The already mentioned assistance that the Visegrad Group promised to give Ukraine involving several topics, which was sought to provide stability and further tools to accomplish self-help amid the crisis, had also a not-so-disguised second intention. As the Complex System needed to adapt to the environment and behave accordingly, the cooperation that the Czech Republic, Hungary, Poland and Slovakia propose to Ukraine was also aimed at accomplishing the needs that the European Union require in order to enforce fully the AA.

Moreover, the temporary enhancement of the “V4+Ukraine” platform, the International Conference in support of Ukraine, and the Riga Eastern Partnership Summit of 2015, all of which were attended by the four members of the Visegrad Group, were chances that one of the components of the Complex System took in order to bring resilience to the environment, taking into account that the last two were organized by the European Union.

As an example, during the International Conference in support of Ukraine, which summoned leaders from all over the world in Kiev for a day in April of 2015, Deputy Prime Ministers of Slovakia, Poland and the Czech Republic decided to be part of several panels in support of Ukraine’s environment, its opportunities of investment and economical perspectives. (Support for Ukraine, 2015). As irrelevant as it may appear, the participation of these Central European delegates in the conference was a sign of the Visegrad countries’ will to adapt themselves and contribute to the adaptation of Ukraine to the situation that was affecting their relations.

Regarding the previous, Nobel laureate Ilya Prigogine’s and fellow philosopher Isabelle Stengers’ assertion on the response of the components of a complex system to an external unexpected stimuli, can be related to the variations in the Visegrad States’

behaviour during these emergent events, even though the authors were referring to bifurcation in thermodynamic patterns: “a random fluctuation in the external flux, often termed “noise”, far from being a nuisance, produces new types of behavior, which would imply, under deterministic fluxes, much more complex reaction schemes” (Prigogine & Stengers, 1984, p. 166).

As said previously, the Ukrainian government has been responsive to Visegrad’s assistance, such as it has embraced certain strategies that the environment has come up with, in order to cope accordingly with the emergent situations. During the second semester of 2014, for instance, Ukraine agreed to engage in a sort of conciliatory dialogue with Russia that was to take place in the Belarusian capital. A number of summits were held in Minsk under the vigilance of the EU and other third parties, which eventually concluded with the Minsk II Agreement in February 2015.

The Minsk dialogue, in which Germany and France intervened as mediators to ameliorate the tension between Russia and Ukraine, apparently served as a platform to reduce the hostility that harms the territorial and national integrity of Ukraine, which has been extended to the instability of the region. However, and in despite of the existence of an agreement, the crisis will not reach an absolute end just by the mere fact of signing a satchel of documents. Not even when all of the conditions that the parties accorded are met will the crisis fade as an emergent phenomenon, nor when all the acts associated with the utter end of armed confrontations are enforced.

President Hollande and Chancellor Merkel seemed to have forgotten that the crisis does not rely exclusively on the armed confrontation between the pro-Kiev and pro-Russian factions, which was ultimately what the Minsk II Agreement aimed to settle down. It was staggering for the Russian government to have lost such a visible supporter of its Eastern European Policy as Yanukovich after the revolts of 2013 in Kiev fueled a political emergency that ended with his resignation. As the fire began to turn uncontrollable, Moscow took advantage of the numerous Russian-born, Russian-descend or just pro-

Russian population that live in Eastern Ukraine in order to legitimize a so called humanitarian intervention across their shared border. Said intervention, harmless in appearance, escalated until it reached its peaks when Russia annexed the Crimean peninsula and rebels took control of Donetsk and Luhansk.

The situation that Ukraine faces is not directly detached from the popular upheavals in Kiev. As additional emergent properties began to show, it suddenly became a geopolitical crisis that terminated in the pro-Russian and Pro-West confrontation. This particular set of emerging events is an example of the unpredictability of Complex Systems. Bellicose interstate actions were not expected to take place in the very moment of the popular risings bursting in the Ukrainian capital; neither were anticipated the reactions of the Visegrad countries, in terms of how important a crisis that did not affect them at first, would end up meaning for them.

Complexity researchers Antoine Bousquet and Simon Curtis (2011) rightly affirm that “non-linear phenomena or systems are those which do not display proportionality between input and output, and in which small influences can result in large effects, most famously encapsulated in the metaphor of the ‘butterfly effect’, according to which a butterfly flapping its wings in Brazil results in a hurricane in Florida” (p. 46). Well, there is no need of adding transatlantic proportions to the effects of the butterfly’s flapping wings. Within a single region or country, there are hurricanes, earthquakes and all the natural phenomena that one can think which are susceptible to emerge following the drop of a pin. As a matter of fact, in 2013 that very pin that had been balancing on the edge of a rather flimsy surface suddenly dropped and produced not just an earthquake, but a series of aftershocks that made an entire set of actors to self-organize and adapt to unimagined and unprevisible events.

But, where did it drop? Perhaps it was in Kiev, maybe in Brussels, or was it in Moscow? The site of the crash is ultimately irrelevant, since it is not the place in which the pin drops what produces the earthquake and its aftershocks. It is the speed of the fall, the

weight of the object, the angle in which it lands, and the length of the waves that reverberate what defines the extent to which the emergent phenomenon affects a system and its environment. Even if uncertainty is one of the key elements of Complex Systems, one of the few things that one may be certain of when facing a Complex phenomenon, such as a crisis of this nature, is that one single event can produce numerous outcomes, and the ways of dealing with those outcomes are also, as we now may expect, as numerous as their causes.

CONCLUSIONS AND FURTHER CONSIDERATIONS

The ultimate key to survival is adaptation, be it for an animal species, a human group, a State or a Complex System. Amid the International System, which is anything but motionless, relies the true example of an adapting Complex International System, or sub-System considering Kavalski's work (2007), which is the one outlined throughout the previous pages.

Was there ever a crisis in Ukraine or were there instead a cumulus of unremitting emergent events, just as the ones that complex systems constantly face, that shook the country's interactions with the Visegrad Group? Most likely the latter, given that referring to it as a crisis is denying the complexity of the environment in which an adaptive complex system, such as Visegrad and Ukraine's, exists. The term crisis is but a linear term that expresses the unpreparedness of actors, whose interactions are erroneously presumed to be linear, to face emerging properties and adapt to them.

There were continuous emerging events since 2013, such as the refusal on the European Association Agreement; the unanticipated change in the Presidency of Ukraine; Russia's incursion in Eastern Ukraine; Russia's threat on cutting out gas to Ukraine; the European sanctions imposed to Russia, and the eventual acceptance of the EU-Ukraine AA, to name just a few, that redefined the interconnections among the Visegrad States and Ukraine. However, they adapted to the system's behaviour and perpetuated their interactions.

Even if the Visegrad Group was not directly linked to many of said events, the repercussions of all of them urged the V4 to make a shift in its behaviour and adapt to the situations of the environment. Decisions and all kinds of actions were taken by the components of the V4-Ukraine Complex System, which produced variable phenomena amid an endless cloud of uncertainty. As an exhibition of resilience, all the factors involved

in the strategies for adaptation mutated in order for the actors to adapt to the uncertain fate that awaited (and still awaits).

Given the case of the adaptation of this particular international complex system, let us not think of emergent properties as a source of change but of adaptation instead, since change is frequently mistaken as improvement. Usually, when anyone is told that a given situation has changed, such as the West did when President Yanukovich was removed and President Poroshenko took office, they tend to think that such change intrinsically involves some sort of progress regarding the previous condition. However, such idea fades rapidly when unexpected and unpredictable properties begin to emerge and the outcomes do not proportionally resemble the initial stimulus. States, human groups, ecosystems do not constantly search for change; on the contrary, they are sudden victims of it.

Unforeseeable properties emerge relentlessly in non-linear systems such as the Visegrad-Ukraine Complex Adaptive System, and the way in which the components of a complex system cope with the unavoidable challenges that the environment produce is by adopting a form of self-organisation, in this case, adaptation. International events are no two-faced coins; not even six-faced dice. There is no possible way of predicting accurate system alterations, thus there is no way of facing them until they take place. Such is the reason why change is not imperatively a source of wellness. Resilience is thus the term that follows change, instead of improvement. In this particular case, such is materialized by Visegrad organizing summits and assisting to conferences in support of Ukraine, designing cooperation programs aimed at improving financial, institutional, security-related and several other aspects that needed to be reformed in Ukraine, assisting its partner in alternative energy associated projects and so on.

The properties that emerged amid the Visegrad-Ukraine CAS proved that an event can be as beneficial for some as it can be detrimental to others. In most cases, the same single event produces many diverse outcomes that challenge one single actor to self-reorganise in not one but many different ways. For instance, Russian threats on gas cuts to

Ukraine, far from to enhance in deeper cooperation and find a long-term solution to said issue in which Russia progressively framed out. This demonstrates that a situation that may be seen as advantageous for the actor in which it appears turns out to have multiple outcomes, most, if not all of them unpredictable and some affecting the components in unwanted means.

There are two sorts of interconnections within the V4-Ukraine CAS, the ones that are bonded between the group as a unit and the ones that have been built between Ukraine and each of the four countries separately, as anticipated by Bar-Yam (1997)¹³. In either case, interests keep on being the fuel that powers the engine of the Visegrad-Ukraine Complex System. Ukraine's connections with the Group, as with each member, not to mention with Russia are grounded on numerous aspects, as it may be expected. It's a matter of pragmatism. Self-organisation in international relations, as shown in the so-linearly-called Ukrainian 'crisis' case, relates intimately with pragmatism.

A linear paradigm would find contradictory that the Visegrad States condemned the actions Russia has taken in Eastern Ukraine but that, at the same time, they reject the sanctions imposed by a group they wished so furiously to be a part of. Reality is they needed to adapt to the circumstances and self-*re*organise. It was in the V4's highest interest to maintain its interconnections as strong as possible with EU, but with Russia as well and, of course, with Ukraine. Additionally, the behaviour of the Complex System had to remain faithful to its links with NATO countries and the remaining Visegrad-Ukraine Eastern partners such as Moldova and Serbia, which are members of none of the above, and all of which are the components of the Complex System's environment.

Finally, as it has been made clear, a variation in one of the components of the system affects not only such component, but the other actors of the system as well as the environment. To talk of the outcomes of an emergent property in absolute terms of right and wrong or beneficial or detrimental is simplistic. An event within a complex system

¹³ See Chapter 2 , p. 30

takes various shapes, and it is in identifying and coping with those volatile and unpredictable outcomes where the linear theories of International Relations fall short. Traditional IR paradigms are exclusory, which means that a realist theory provides a glimpse of a given international affair in a different way that a liberal, constructivist, world-system or postmodern would.

A full picture of the outcomes of an emergent property is non-existent in IR when conceived in linear terms. The latter ends up by leaving unattended many of the interactions that occur within the actors in the International System, and even some of the theories do not even recognize certain actors as such, for instance, organizations such as the Visegrad Group. That is one of the main reasons for introducing complexity into the theoretical scope of the discipline, thus privileging it as the theoretical framework for this research.

Presenting the adaptation processes of every set of interconnections amid the Visegrad-Ukraine CAS (commercial, agricultural, migratory, territorial, institutional at an Intergovernmental level etc.) requires more thorough and specific investigations. However, this research is an invitation for IR students and scholars to step out of the linearity and simplicity that previous theories have sink International thinking in. Given the multi-disciplinary essence of the discipline, why not approaching to international phenomena in a Complex way? By doing so, one would understand that there is not a single solution to a single problem; there are multiple solutions to endless problems that will create feedback loops to which actors will need to constantly adapt.

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ANNEXES

Annex 1. Map 1. Nord stream pipeline



Source: Nord Stream AG. (2013, 13 August). *Nature Reserves along the Nord Stream route*. Retrieved from: Nord Stream AG: https://www.nord-stream.com/press-info/images/nature-reserves-along-the-nord-stream-route-2663/?category=115&sub_category=148

Annex2. Map 2. South Stream Corridor



Source: TAP-AG. (2015). *Southern Gas Corridor (SGC)*. Retrieved from: Trans Adriatic Pipeline : <http://www.tap-ag.com/the-pipeline/the-big-picture/southern-gas-corridor>