

Complexity in World Affairs and the Ways to Cope with It



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Abstract As experts of International Relations (IR) began to embrace alternative theoretical approaches in recent decades, complexity thinking has also found itself a place within the boundaries of the discipline. Complexity-oriented approaches derive their appeal from the analytical and conceptual originality they bring to the discipline, as they help make sense of emergent phenomena such as geopolitical shocks, pandemics and financial crisis, for which monocausal models often fail to provide adequate explanations. This article seeks to outline the process during which complexity thinking has made its way into IR and address the question of how this approach contributes to broadening our understanding of world affairs. Europe's migration problem and the security threats posed by two radical groups, al-Qaeda and ISIS, have been chosen as two case studies to demonstrate the relevance of complex systems for IR. This article also offers ways to cope with the uncertain and complex features of global life, emphasizing that policymaking approaches require the internalization of traits such as resilience and adaptability.

Keywords Complexity · Complexity thinking · Uncertainty · International Relations · World affairs

Introduction

The realm of world affairs in its present form is increasingly characterized by growing interconnectedness. Developments taking place in certain parts of the world are capable of exerting greater influence over different parts due significantly to the techno-scientific advances, which enable rapid spread and movement of tangible and intangible assets such as norms, ideas, beliefs and goods and services. Human movement has also reached astonishing levels, creating consequences in a wide range of ways including the facilitation of cross-cultural interactions, inter-societal

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dialogues, cross-border terror threats and intense migration processes. Such interactive dynamics have made it implausible to separate issue-areas when analysing international developments. The speed with which international events and processes arise and reverberate across the international landscape has made it imperative for scholars and experts of world affairs to upgrade their intellectual tools so as to obtain the necessary means to comprehend the intricate and complex nature of world affairs. Overall, the growing intensity of international interactions demonstrates that complexity is becoming the hallmark of world politics. Despite this factual reality, the discipline of International Relations (IR) has been slow to comprehend the implications of this development.

At least since the end of the Cold War, IR scholars have gradually come to the awareness of the necessity of acquiring more sophisticated conceptual and analytical instruments to fashion a better understanding of world affairs. In response to this obvious need, complexity thinking has been embraced as an innovative approach, which has enabled experts to make sense of international phenomena that are marked by surprise, uncertainty as well as complexity. Complexity thinking's main utility lies in that it offers a viable alternative to the structure and agency-oriented perspectives in IR, thanks to the emphasis this theory places on the importance of interactions among various actors and factors. Therefore, this theory provides a useful prism in comprehending the dynamic and complex feature of international life, showing how developments taking place in the international realm may generate cross-border impacts. Thanks to viewing the realm of world affairs as a network, complexity-oriented approaches illustrate in particular how factors/elements and actors/entities intermingle and co-evolve in a dynamic manner. This approach is well tailored to the need for developing fresh conceptual tools to grasp the underlying dynamics that highlight our complex world.

It is in this context that the main purpose of this article lies in contributing to efforts that aim to raise awareness about the need to view an appraise international events and interactions through the lens of complexity. The fulfilment of this purpose requires illustrating complexity thinking's significance for IR discipline, along with offering an insight into the ways to cope with complexity in the international realm. To demonstrate how complexity-oriented approaches help broaden our understanding of world affairs, I develop my arguments in three parts. Firstly, I outline the process during which complexity thinking has found its way into the IR with a reference to the insufficiency of mainstream approaches. This section also lays out the basic parameters underlying complexity thinking and their implications for the IR discipline. Secondly, with the aim of demonstrating how the international realm has increasingly come to be marked by complexity, I examine the notion of issue linkage by choosing Europe's migration problem as my case study. This section illustrates how international phenomena may involve multidirectional causal interplays. Lastly, I assess the implications of complexity for international security by focusing on the radical groups of Al-Qaeda and ISIS. The discussion advanced in this part aims to show that complex threats require correspondingly complex security approaches.

Complexity in World Politics

Theoretical approaches based on positivist epistemology and utilitarian perspectives have long marked their imprint on IR discipline. Due to the commanding position of rationalist theories in particular, a historical and/or teleological conceptions have exerted a strong influence on the discipline [15, 46]. Such perspectives presume that social occurrences follow foreseeable paths and display predictable patterns, thus linear causality serving as the ultimate method to make sense of world politics. Explanations that put forward unidimensional cause-effect relationships rely upon mechanical analytical instruments, which highlight the international political realm as a closed system. This way of framing world politics gives way to a sub-discipline that can be defined as “Newtonian IR” [32: 139]. Newtonian IR enables IR scholars to simplify social reality so that clear-cut cause and effect relationships can be established in the international realm.

The Newtonian understanding of physical reality is predicated on three laws: unless it is met with a counterforce, an object’s speed of movement will remain constant (or if it is motionless, it will remain motionless); “the time rate of change of the momentum of a body is equal in both magnitude and direction to the force imposed on it”; and “when two bodies interact, they apply forces to one another that are equal in magnitude and opposite in direction.” The last law pertains to equilibrium conditions, “where all forces are balanced” [48]. In sum, Newtonian causality is closely associated with notions such as proportionality, linearity and orderliness, which emphasize that action-reaction exchanges between objects produce predictable and foreseeable outcomes.

The impact of the Newtonian understanding on IR discipline is manifest in concepts such as the balance of power [32: 138]. Perceiving reality as a regular interplay between rival actors that behave in a mechanical manner, balance of power theory presumes that if an actor increases its material power capabilities, it provokes a balancing act from others. This would occur because too much power in the hands of any one state would be threatening to other states, which would strive to bring the system back to its steady state by increasing their own power capabilities [52: 625]. The mechanical logic upon which the balance of power theory is built should not lead one to dismiss this theory as a blunt instrument, for it provides a useful prism in explaining certain international interactions, especially those between great powers. The attempts by the U.S to balance against the growing Chinese power would be a pertinent example in demonstrating the functionality of the balance of power as a theoretical tool [40].

Despite the utility of orthodox IR approaches in explaining certain international phenomena, global politics presents a much more complicated landscape, the understanding of which necessitates new conceptual and analytical instruments. Additionally, mainstream perspectives often prove to be inadequate in addressing key questions and issues concerning world affairs, as discussed below. Indeed, in recent decades, alternative IR approaches challenging mainstream views have started to emerge, offering more rigorous accounts as to how to analyse and make sense of

international events and processes. It has been posited by various IR experts since the early years of the post-Cold War that the realm of world affairs was beginning to look increasingly like a complicated landscape, where old approaches tailored for the bipolar structure were becoming defunct [44]. In a related vein, the failure of rationalist theories to give a convincing account of the factors that led to the end of the Cold War has also encouraged IR scholars to embrace new theoretical approaches [16, 35: 202–203, 49: 4–5]. Counted among these approaches is the complexity thinking, which emphasizes the necessity of viewing and evaluating world affairs through the prism of randomness, unpredictability or surprise.

Those emphasizing the necessity of applying complexity thinking to IR take their point of departure from the belief that, as natural and social systems operate by following complex trajectories, international phenomena cannot be explained through reductionist lenses [28: 11–15]. Such approaches are not only ill-suited to comprehend social reality *per se*, this view holds, but are also misleading as far as the necessity of developing methods and mechanisms to deal with policy issues is concerned [23]. Seen in this light, failing to account for the complex features of international interactions generates the risk of foreign policy mishaps, with the resultant political, economic or security costs. Taken together, complexity thinking, then, provides a prism to make both descriptive and prescriptive evaluations about world affairs.

The obvious utility of complexity thinking for IR is evident in the epistemological and methodological freshness it injects into the discipline, which is why a growing number of theoreticians are subscribing to this approach (See, for example; [5, 10, 16]). The process of complexity thinking's entrance into IR rests on a background that is characterized by a dialogue between different fields of science. This dialogue has come about through collaborative works conducted by experts specializing in fields such as mathematics, physics, biology, computer science, economics and political science [44: 34–35]. As complexity theory began to be employed in various fields of science such as physics and mathematics, a growing interest emerged to utilize this approach to explain social phenomena as well [30: 437]. When the social phenomenon in question moves beyond national borders, it falls into the IR discipline's area of interest.

As the following discussion will illustrate, international arena is pregnant with irregularities, unpredictable developments and randomness. This realm owes its contingent nature to the fact that it is often not the units themselves that determine the course of events, but rather the interplay between them, which is a key characteristic of complex systems. It bears stressing in this context that “[t]he main idea behind complex systems is that the ensemble behaves in ways not predicted by its components. The interactions matter more than the nature of the units” [47: 1200–1201]. In the international system also, interactions between components may be more determinative than agents or structures with regards to the way international events or processes unfurl.

In systems defined by complexity, collectivities tend to display different modalities than their constituent parts. This calls for new epistemological perspectives through which to attain the knowledge that is required to comprehend the unfolding

of international processes featuring multiplicities. Taleb states, for example, that “[s]tudying individual ants will almost never give us a clear indication of how the ant colony operates. For that, one needs to understand an ant colony as an ant colony, no less, no more, not a collection of ants. This is called an ‘emergent’ property of the whole” [47: 1201–1203]. The essence of the notion of emergence is nicely captured by Ablowitz, who emphasizes that “[i]f 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” [1: 2]. Quoted in Geller [26: 65].

In addition to emergence, other underlying properties of complex systems can be summed up as the open system feature, non-linearity and self-organization [12]. As opposed to closed systems, where the unit lacks the ability to interact with its environment, open systems allow the unit to engage in an input-output relationship with its environment. In this setting, deductive methodologies are ill-suited to conduct thought and research experiments, because the unit is unable to provide feedbacks outside of its environment—hence unfit for analysis. Wight [53: 58–59]. Obviously, the feedbacks that occur in open systems are positive in the sense of signifying an interactive relationship as opposed to negative feedbacks, which characterize linear models [10: 165–166].

Non-linearity, another feature of complex systems, refers to systems “which do not display proportionality between input and output, and in which small influences can result in large effects” [12: 46]. This property indicates the possibility that systems may exist and function in far-from-equilibrium conditions. In such situations, a prevailing order begins to lose its functionality in “a thermodynamically equilibrium system” and moves into a stage that is defined by disorderliness, in order to maintain its existence [45: 1]. To exemplify the existence of non-linear dynamics, one may recall the well-known butterfly effect metaphor [12: 46].

Lastly, in complex systems, natural or social organisms acquire an ability to self-organize, provided that they are able “to change their internal structure and/or their function in response to external circumstances” [8: 8040]. Oscillations in the external environment are absorbed in a way that does not adversely affect the self-organizing unit’s functioning, since the unit, in order to adapt to new conditions, is able to modify its structural properties. The principle of self-organization has been employed to describe a wide range of phenomena including cells, ecosystems, cities and galaxies [8: 8041].

Taken together, the implications of complexity thinking for IR are significant. By taking state-centric approaches as its main guide, orthodox IR ignores how international entities interact with their environment [31: 4–6]. What is required is to place less emphasis on actor or structure-oriented approaches, which are prevalent in mainstream IR, and utilize interaction-oriented approaches. This assertion is predicated on the main idea that the international system operates as a network, in which constituent parts in the form of individuals, firms, organizations, institutions, states and so on are in constant interaction with one another. This has significant methodological implications for IR in particular, and social science in general, such that predicting the way a system will operate in a complex or chaotic environment requires moving away from quantitative approaches and embracing instead qualitative methods. More to the

point, evaluations focusing on particular events or situations that occur at certain junctures are insufficient to extrapolate as to how the system itself is likely to operate [10: 173]. This calls for a holistic methodological and epistemological perspective, which takes as its referent system-wide interactive dynamics. It is also important to stress that complexity thinking does not disregard the significance of causal reasoning; it simply urges one to look beyond “monocausal paradigm[s]” [16: 20] and draws attention to the possibility that the way international events and interactions unfold may be the result of “complex causation” [36: 10]. Quoted in Kavalski [32: 143].

Issue Linkage in a Complex World

The allure of complexity-oriented approaches for IR discipline is especially noteworthy in contexts that are characterized by systemic or sub-systemic shocks such as the end of the Cold War, the Arab Spring and the so-called New Cold War (triggered by the Ukraine Crisis). In addition to these cases, other notable developments that fall into the same category are the global financial crisis of 2008, the Tunisian popular unrest of 2010, the European refugee crisis and the latest Covid-19 pandemic. These cases provide a basis for the assertion that the events that are triggered in one corner of the world are capable of spreading rapidly into different corners and lead to unforeseeable consequences internationally. This evokes the abovementioned basic proposition of complex systems, that interaction among units is the driver of various natural or social systems. The dynamic essence of natural or social systems is best captured by the oft-cited assertion that the whole is greater than the sum of its parts. Although, simplifying international political realities through a methodology based on isolation, deduction or abstraction may be essential for theoretical parsimony [51], one often comes across cases where more novel approaches are required to identify underlying causalities.

The European migration crisis offers a useful case in exemplifying the point. Although Europe has long been concerned with irregular migration from regions such as North Africa, the Syrian crisis added another layer of stress to the already-sensitive issue. The number of asylum seekers to the EU began to climb considerably from 2013 onwards due mostly to the impact of the Syrian Civil War. The number peaked in 2015, with a total number of almost 1.25 million people seeking refuge in Europe [21]. According to the information given by the EU, the Syrians topped the list in 2015 with 362,775 applications [20]. The impact of human flow from Syria to Europe and the internal problems this caused for member states were so considerable that even the scenario of EU’s disintegration has been voiced [42]. Although the Merkel government’s decision to open up Germany’s doors to Syrian refugees in 2015 served to alleviate Greece’s refugee burden, other member states such as Hungary and Sweden were distressed by the German plan [19: 7–8]. The disgruntled members of the EU, who proved unwilling to host the Syrian refugees, expressed uneasiness at what they saw as a unilateral German plan and began to level accusations regarding the division of refugee burden [13].

A more important consequence of the refugee problem for Europe was that it gave boost to far-right political parties. Countries such as Sweden, Australia and Germany have witnessed a surge in the popularity of populist and extreme-right wing political actors [33: 121–125]. This created the risk of upending the established political landscape in EU member countries, which in turn posed the threat of jeopardizing the cohesion of the EU itself. In the face of the rapid human inflow and the populist backlash it occasioned, EU states adopted controversial oversight and control strategies, which amounted to the objectification of refugees [4]. The way in which the refugee problem was dealt with in some member countries undermined the normative basis of the EU, with some even urging European nations to act in accordance with the Universal Declaration of Human Rights [3].

An assessment of the factors that have led to the worsening of the EU's refugee problem calls into focus the geopolitical landscape that has formed in the Middle East and North Africa region (MENA) with the beginning of the Arab Spring (See for a detailed account [6]). Even a cursory reading of the relationship between the Arab Spring and Europe's migration problem would demonstrate strong evidence for the existence of complex emergencies. In seeking to discover the initial cause that triggered Europe's refugee problem in the last decade, one would tend towards the self-immolation of the Tunisian street vendor Mohamed Bouazizi. This act occurred due to the undignifying treatment given to Bouazizi by the Tunisian local officials. This event set off a wave of protests in Tunisia, which eventually resulted in the removal of the Tunisian President Zine al-Abidine Ben Ali. Encouraged by the success of Tunisians in unseating the Ben Ali administration, protestors in Egypt, Yemen, Bahrain, Libya and Syria took to the streets with the same goal of bringing down their governments.

As decades-long authoritarian governments were overthrown in countries such as Egypt and Libya, the contagious effect of the Tunisian uprisings known as the Jasmine Revolution starkly demonstrates that minimal stress in one setting have the potential to cause widespread shocks. In this respect, the Arab Spring defies the principle of proportionality given that the initial cause that led to the event's occurrence far outweighs the effect that was generated, thus indicating the existence of far-from-equilibrium conditions. Occasioned by factors such as surprise, uncertainty and unpredictability, the emergent behaviour of the Arab Spring showcases the insufficiency of linear reasoning, since the events followed a chaotic trajectory, whose clearest manifestation is the civil war in Syria. Over the course of nine years, close to four hundred thousand people have lost their lives in that country, which is an outcome that could hardly be predicted at the outset of the protests in the MENA region [24].

The unpredictable path the Arab Spring followed provides strong evidence for the existence of complex dynamics, which gradually produced a refugee problem in Europe. But through the prism provided by some complexity theorists, we can take this analysis one step further and illustrate another crucial underlying cause that contributed to the geopolitical earthquake in the MENA region and a migration problem in Europe. Lagi, Bertrand and Bar-Yam contend that the failure of governments to provide basic needs such as food, water and other critical requirements

constitute the root causes of many social unrests. Importantly, they highlight the notion of “sudden perceived failure”, which suggests that governments, regardless of their performance, may not be directly responsible for the problem associated with the social unrest, but if the public keeps them accountable for their circumstances, they face the risk of a popular upheaval [34: 2].

It is through this prism that these three theorists explain the occurrence of the Arab Spring. As they outline, in 2008 alone, two years before the beginning of the Arab Spring, more than 60 riots—related to food price increases—had taken place in 30 different countries. Although, calm was restored following a fall in food prices, a greater surge in price level between late 2010 and early 2011 brought back social protests. The aforementioned time interval coincides with the start of the uprisings in the MENA region. The three complexity theorists demonstrate with reference to the United Nations Food and Agriculture Price Index that above the level of “210 ($p < 10^{-7}$, binomial test)”, populations feel the impact of higher prices caused by food shortages and this threshold was crossed in the case of the MENA region, which, from this view, triggered Arab uprisings [34: 4–5]. Although, Lagi, Bertrand and Bar-Yam highlight investor speculation and ethanol production as the main reasons for the jump in food prices, drought also played a vital role, as will be shown below.

The governments in the MENA region have not been inattentive to the issue of food security. Indeed, given publics’ sensitivity towards food prices, MENA governments have long made food subsidy programs a top policy priority. For example, in Egypt, one of the countries where the Arab Spring brought about a government change, the existence of food subsidy programs dates back to the time of the World War 1, in the aftermath of which the government sought to dampen the ongoing price increase in bread by importing large quantities wheat and flour. As government subsidization of food products has become an integral part of Egypt’s social policy, failure to rein in price increases has created the risk of social unrest, as witnessed during the 1977 riots [2: 5–7]. As for the period leading up to the Arab Spring, the unfavourable weather conditions in 2007–2008 had a negative impact on the food production capacity of exporting nations, which created challenges in addressing the global demand. As countries such as Egypt, which are highly dependent on food imports, were unable to obtain the required level of imported food quotas, this led to an increase in food prices, thus degradation of the living standards of ordinary citizens.

As noted above, although the problem subsided for a while, another surge in food prices from 2010 onwards occurred following a supply cut. The main reason for this cut was that major wheat producing countries—such as Ukraine, Russia and China, which had been hit by a drought—were unable to meet the global wheat demand [17]. Focusing on Egypt again, food prices in this country went up by almost % 150 between 2004 and 2014, during which two large scale social and political shocks occurred: the social upheaval of 2011, which brought down President Hosni Mubarak and a military coup, which toppled the Mohammed Moursi administration in 2013. A country where millions of households are dependent on food subsidies, the governments’ failure to meet people’s basic needs acted as a catalyst for the occurrence of political instabilities in Egypt.

The emphasis social scientists place on the role played by food security in Arab uprisings cast a valuable light on the factors caused the social unrests in the MENA region [37]. This is not to argue that factors such as authoritarianism, corruption and human rights violations played negligible roles. But food security has evidently served as a key contributing factor to the occurrence of a geopolitical turmoil in the region. Piecing together the actors and factors discussed so far, the overall argument demonstrates the difficulty of making sense of international issues in isolation. Relatedly, it also demonstrates the necessity of focusing on interactions rather than individual actors or events. As described, in the case of the Arab Spring, factors such as climate conditions, food security, internal political developments, geopolitical dynamics, civil wars and human movements interacted on a plane that transcends the internal boundaries of issue areas.

It is thus incumbent upon policymakers to take account of the possibility that events that they face may be the result of non-linear dynamics. This demands an awareness that situations may be following chaotic trajectories and the stress that accumulates over time may lead to unanticipated shocks [7: 79–80]. As Jervis remarks, “when variables interact in a nonlinear manner, changes may not be gradual. Instead, for a prolonged period there may be no apparent deterioration, followed by sudden collapse or transformation” [28: 39]. Such contingencies may come in the form of natural disasters (such as earthquakes and floods) or man-made events (such as wars and revolutions). It is also imperative to recognize the possibility for knock-on effects, the actualization of which generates new surprises with potentially unforeseeable consequences. The complex nature of international life calls upon policy makers to recognize that in issue areas there are usually “multiple parties and stages [which] permit many paths to unanticipated consequences” [28: 18].

How to Deal with Threats in a Complex World

Within the discipline of IR, scholars—even those that are situated in the mainstream—are not inattentive to factors such as complexity, unknowability or unpredictability. For example, although employing state-centric lenses, the notion of uncertainty features prominently in the works of mainstream IR experts [18, 27]. Especially works in the realist canon emphasize the existence of prevalent uncertainty in the international system due to the lack of an overarching authority that could impose order [39]. Although Realists give a convincing account about state-to-state relations—especially when they are defined by military competition—international political realm is littered with interactions among numerous actors and factors, most of which escape the lens of mainstream approaches. These can be summed up as “other key levels of cross-border relations—from individuals and states to transnational movements and the all-encompassing biosphere” [16: 15].

It also bears emphasizing that complexity thinking in IR “does not argue that international life is marked by the absence of regularities; rather that order (linear patterns), complexity (nonlinear patterns) and disorder (alinear patterns) coexist”

[30: 443]. Viewed through this prism, the insights offered by complexity thinking help fill in the epistemological and conceptual gap that exists within the IR discipline. Conceptual tools such as network-oriented approaches, which underlie complex systems, provide a useful window into the interactive dynamics of international life. “To understand human societies and their interactions”, as Clemens points out, “we must examine the complex interactions of actors on many levels—individuals, clans, regions, classes, societies, governments, states, civilizations, the international system of states, international organizations, and transnational organizations and movements (from IBM and Greenpeace to al-Qaeda)” [16: 21].

Given the fact that international life increasingly revolves around emergent phenomena in the post-Cold War period, it behoves policymakers to update their analytical lenses. The need for adjustment hinges upon the basic understanding that “in order for a system to survive in a complex environment, its control mechanism must be correspondingly complex” [25: 284]. A case study may help clarify the point. The complex organizational and operational characteristics of criminal groups or terror networks had a confounding impact on those that sought to neutralize or eliminate them [12: 55]. After the 9/11 attacks in particular, Al Qaeda acted through the basic premise of providing operational freedom to its militants so that frightening terror acts could be carried out by local cells. Burke describes the cell that perpetrated the Madrid bombings by noting that, “[t]hrough the web of connections around the group was vastly complex, touching London, Casablanca and Italy, no clear connection to south-west Asia and the al-Qaeda hardcore has ever emerged” [14: 5010–5012]. It would be apt to assert that Al Qaeda owed its operational effectiveness to its deterritorialized and decentralized character, and through its network of militants, it was able to undertake acts on a global scale [11]. Given the difficulty of governments to identify the operational brain behind terror acts, the loose and fluid structure around which Al Qaeda operated provided it with added strength.

The complex operational character of Al Qaeda ultimately made it imperative for the U.S to develop the necessary skills and mechanisms, with the aim that the operational capability of the terror group could be degraded and its militant base could be neutralized. Since 1990s, the U.S in particular, knowing that bipolar world order had given way to a more complex international landscape in which non-state terror groups found a fertile environment to thrive, invested in capabilities to conduct “complex contingency operations” in a wide range of conflict theatres such as Somalia and Iraq [41: 39]. The U.S took this one step further after the 9/11 attacks by embracing tougher measures tailored for asymmetric threats. As stipulated in the 2004 Global Defense Posture, the “complex strategic environment” forced the U.S “to develop a flexible forward presence that would enable it to project power wherever threats might emerge” [43: 87]. The newly adopted security paradigm showed that the U.S sought to address emergent threats that possessed complex features by forging units that could operate with speed, resilience and adaptability. In other words, complex risks necessitated complex security assemblages.

The existence of complex risks does not mean that governments should focus their attention merely on unconventional threats that operate through fluid and decentralized structures. On the contrary, complexity thinking maintains the view that international actors must be prepared for various contingencies, be them in the form of conventional or unconventional threats. Referring back to the aforementioned discussion, new groups that thrive on the same ideological ground as Al Qaeda emerged in the following years, but importantly, not all of them chose to follow in Al Qaeda's footsteps. This rendered them more of a conventional threat than Al Qaeda was. ISIS provides the most pertinent example in this regard. Although ISIS has proved itself a serious threat on account of its ability to destabilize the Middle East and broader international security environment, its downfall occurred fairly quickly compared to Al Qaeda. The degradation of its operational capability by actors that sought its demise constituted a significant setback for the group to pursue its agenda. This occurred in a few years' time, as the international coalition, which was formed after ISIS's seizure of a large swath of land in Iraq and Syria, leaned on the group with overwhelming military force. The U.S.-led international military coalition not only rooted ISIS out of its strongholds, but also conducted insistent air operations against the hideouts of ISIS remnants so that the group could never reform [38].

The fate that befell ISIS is to a great extent the consequence of the way it operated: rather than assuming a complex, flexible and decentralized operational and organizational structure modelled on Al Qaeda, the group possessed a rigid, hierarchical and territorial character under the banner of a caliphate. This rendered ISIS an entity that was similar to that of a territorial nation-state. The self-defeating aspect of this strategy was that the international coalition found a convenient enemy to deal with, since ISIS lay on a huge stretch of territory, making itself an easy target for airstrikes. Tripp aptly summarizes ISIS's strategic blunder by noting that "[t]he murderous obsession with territory as a symbol of political prowess has been the downfall of military campaigns in history and seems now to have gripped the IS leadership as well" [50].

The territorial character of ISIS was clearly a significant handicap for this organization. On the other hand, since the underlying "cement" that binds ISIS-like groups is an all-encompassing cause (such as achieving a vision of puritanical Islam), it would be premature to assert their total demise. As long as the ideological belief system around which individuals and groups coalesce maintains its appeal, radical movements preserve their ability to regain their strength and therefore revitalize their militant network to continue to pursue their goals [29]. This assertion corroborates the view propounded by complexity-oriented approaches in IR: the course of world affairs may be determined by "the interactions of both material and intangible forces" [16: 22]. Also acknowledged by social constructivists, intangible factors such as beliefs, norms and ideas are crucial motives in individual and group behaviour [22].

It is also worth remarking in this context that, as humans and human systems such as states possess the habit of imitation and socialization [9, 51], there is no reason to assume that militant groups lack the ability to update and modify themselves through learning and observation. Relatedly, through a process of "selective learning", they can assimilate and avoid their counterparts' successes and failures. This calls for the

necessity on the part of governments to remain vigilant against threats that possess attributes such as adaptability and self-organization. Units that act through such attributes are best described as complex adaptive systems, which are systems “that are capable of changing and learning from experience” [10: 175]. Given the fact that ISIS prosecuted shattering terror attacks through its sympathizers in a wide range of countries including Indonesia, France and Turkey, the possibility that this group may switch to a non-linear organisational and operational model to resuscitate itself requires close monitoring.

Taken together, the existence of emergencies and contingencies in international life makes it imperative for governments to have the necessary practical and intellectual instruments to deal with various eventualities. This remark is not intended to imply that actors should possess clear-cut pre-existing plans for contingencies, with the aim that they can operate on the international landscape without encountering undesired surprises. In a complex world, such a prescription is ill-suited. What is required is to flesh out an understanding so that complexity is internalized as an inherent feature of world affairs. To make the point, Kavalski gives an intriguing example from the practice of surfing:

Surfers go out into the ocean expecting to ride a wave whose size, speed, strength and timing is completely unknown to them. In the ocean, they spend significant time [...] dancing with the rhythm of the water. In this dance, the surfers learn to distinguish between the different ripples of the water and read which one is likely to be an ‘ankle buster’ (a small wave), an ‘awesome’ (a nearly perfect wave), a ‘cruncher’ (an impossible to ride wave) and so on. [...]. Their fitness, in terms of adaptation to the movements of the water, allows surfers to make decisions which are crucial to their ability to catch and ride the wave [32: 146].

As can be inferred from this quote, policymaking in a complex world necessitates an intuitive understanding about the intricacies of international events, coupled with skills such as resilience, adaptability and flexibility. Just like surfers’ inability to foreknow how the waves will pan out, international actors are equally helpless in the face of the dynamic flow of world affairs. But this should not be understood as implying despair. It is important to note in this regard that, rather than seeking to bring things under control, policymakers should assimilate the basic understanding that complexity cannot be controlled and can only be “managed”. To be able to ride the wave of complexity, it is imperative for leaders and policymakers to gain the ability to operate with strategic foresight. As Kavalski’s quote implies, developing one’s intuitive and analytical skills is the key to making optimum decisions in a complex world.

Conclusion

This article has aimed to provide an overview of the implications of complexity thinking’s incorporation into IR discipline. To sum up the main arguments, complexity-oriented approaches offer fresh epistemological and methodological perspectives in analyses of world affairs. When it became clear that orthodox IR

approaches proved insufficient to predict and explain international phenomena such as the end of the Cold War, IR experts began to turn increasingly towards alternative approaches, which also include the complexity thinking. As this article aimed to show, although theoretical perspectives that precede complexity theory within IR do not disregard the fact that international arena possesses complex features, they fail to provide an insight into the essence of complexity as such and how it bears upon international processes.

With the emphasis it places on factors such as contingency, surprise and unpredictability, complexity thinking provides a useful prism to comprehend a wide range of international phenomena such as systemic or sub-systemic shocks. This was illustrated in this article by discussing the reasons that led to the occurrence of a migration crisis in Europe. As shown in this article, this phenomenon offers a perfect example that demonstrates the necessity of employing multidimensional causal models. For, factors as diverse as climate conditions, food security, internal political shocks and geopolitical instabilities interacted with each other in the lead up to and during Europe's migration crisis. This case offers a useful context within which to understand how complexity's basic parameters such as far-from equilibrium conditions and disproportionality may come to characterize international events and processes.

In this next section, I have assessed complexity thinking's implications for international security by taking radical groups al-Qaeda and ISIS as my second case study. The discussion advanced in this section demonstrated that risks and dangers in the international realm increasingly take the form of emergent threats. Al-Qaeda with its organizational and operational model provides a perfect example of how an entity behaves in a network-oriented fashion. As for ISIS, despite its ideological similarity with Al-Qaeda, as described in this work, this group chose to adopt a relatively rigid operational and organizational model, thus differentiating itself from Al-Qaeda which operated in a complex adaptive manner. However, ISIS's decision to adopt a hierarchical and, more importantly, territorial character caused it to become a conventional threat for its enemies, which could easily pin down and target the group. A comparative analysis of the cases of al-Qaeda and ISIS through the prism of complexity thinking indicates the need for policymakers to be vigilant against emergent threats, which may come in different forms—conventional or unconventional.

The policy advice put forward in this article emphasizes the necessity of modifying policymakers' mental and analytical instruments so that international problems that display non-linear characteristics can be more effectively dealt with. The main requirement for devising effective policy responses lies in internalizing the inevitability of the complexity of world affairs. Rather than trying to fit facts into pre-existing policymaking mechanisms, such mechanisms must be modified and updated in accordance with the complex features of international life. By embracing this understanding, one would be able to gain skills such as resilience, adaptability and self-organization and therefore be better equipped to respond to unanticipated shocks such as the end of the Cold War or the Arab Spring.

Mainstream approaches have not lost their relevance in explaining certain international phenomena such as military competition between states or great power rivalry. Thus, Newtonian IR still maintains its relevance in certain respects. This implies that

IR discipline requires a holistic approach, one that takes account of the possibility that international events may entail both linear and non-linear modalities. But given the fast pace with which the world evolves, complexity thinking is likely to acquire more prominence within the IR discipline in the time to come.

References

1. Ablowitz, R. (1939). The theory of emergence. *Philosophy of Science*, 6(1), 1–16.
2. Ahmed, A. U., Bouis, H. E., Gutner, T., & Löfgren, H. (2011). The Egyptian food subsidy system structure, performance, and options for reform. *International Food Policy Research Institute. Research Report*, 119. <https://ebrary.ifpri.org/utils/getfile/collection/p15738coll2/id/125318/filename/125319.pdf>. Accessed 01 Nov 2020.
3. Anadolu Ajansı. (2020). Erdoğan: Tüm AB ülkelerini insan hakları evrensel beyanname-sine uygun şekilde davranmaya davet ediyoruz. <https://www.aa.com.tr/tr/bahar-kalkani-har-ekati/erdogan-tum-ab-ulkelerini-insan-haklari-evrensel-beyanname-sine-uygun-sekilde-dav-ranmaya-davet-ediyoruz/1753942>. Accessed 18 Oct 2020.
4. Aradau, C., & Tazzioli, M. (2020). Biopolitics multiple: Migration, extraction, subtraction. *Millennium: Journal of International Studies*, 48(2), 198–220. <https://doi.org/10.1177/0305829819889139>.
5. Astrada, M. L., & Martín, F. E. (2013). *Russia and latin america: from nation-state to society of states*. Basingstoke: Palgrave Macmillan.
6. Açıkalın, Ş. N., & Bölücek, C. A. (2014). Understanding of arab spring with chaos theory-uprising or revolution. In S. Banerjee, Ş. Ş. Erçetin, & A. Tekin (Eds.), *Chaos theory in politics* (pp. 29–47). New York: Springer Understanding Complex Systems Series.
7. Açıkalın, Ş. N., & Artun, E. C. (2019). The concept of self-organized criticality: The case study of the Arab uprising. In S. Erçetin, & N. Potas (Eds.), *Chaos, complexity and leadership 2017* (pp. 73–85). Cham: Springer.
8. Banzhaf, W. (2009). Self-organizing systems. In E. A. Meyers (Ed.), *Encyclopedia of complexity and systems science*. (pp. 8040–8049). New York: Springer.
9. Bargh, J. (2017). *Before you know it: The unconscious reasons we do what we do*. New York: Touchstone (Kindle Edition).
10. Bousquet, A. (2009). *The scientific way of warfare: Order and chaos on the battlefields of modernity*. New York: Columbia University Press.
11. Bousquet, A. (2012). Complexity theory and the War on Terror: Understanding the self-organising dynamics of leaderless jihad. *Journal of International Relations and Development*, 15, 345–369. <https://doi.org/10.1057/jird.2011.24>.
12. Bousquet, A., & Curtis, S. (2011). Beyond models and metaphors: Complexity theory, systems thinking and international relations. *Cambridge Review of International Affairs*, 24(01), 43–62. <https://doi.org/10.1080/09557571.2011.558054>.
13. Burchard, H. V. (2016). Sweden challenges Germany on refugees. *Politico*. <https://www.politico.eu/article/sweden-challenges-germany-on-refugees/>. Accessed 18 Oct 2020.
14. Burke, J. (2007). *Al-Qaeda: The true story of radical Islam*. London: Penguin Books (Kindle Edition).
15. Buzan, B., & Little, R. (2001). Why International Relations has failed as an intellectual project and what to do about it. *Millennium: Journal of International Studies*, 30(1), 19–39. <https://doi.org/10.1177/03058298010300010401>.
16. Clemens, W. C., Jr. (2013). *Complexity science and world politics*. Albany: State University of New York Press.
17. ECC Platform. Food Price Shocks in Egypt. [https://library.ecc-platform.org/fop/pdf/export?nid\[\]=23281](https://library.ecc-platform.org/fop/pdf/export?nid[]=23281). Accessed 19 Oct 2020.

18. Edelstein, D. M. (2017). *Over the horizon: Time, uncertainty, and the rise of great powers*. Ithaca: Cornell University Press.
19. EuroMemo Group. (2017). The European Union: The Threat of Disintegration. https://www2.euromemorandum.eu/uploads/euromemorandum_2017.pdf. Accessed 17 Oct 2020.
20. Eurostat. (2016). Asylum applicants in the EU. <https://ec.europa.eu/eurostat/news/themes-in-the-spotlight/asylum2015>. Accessed 17 Oct 2020.
21. Eurostat. (2020). Asylum statistics. https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Asylum_statistics#Citizenship_of_first-time_applicants:_largest_numbers_from_Syria.2C_Afghanistan_and_Venezuela. Accessed 18 Oct 2020.
22. Finnemore, M., & Sikkink, K. (1998). International norm dynamics and political change. *International Organization*, 52(4), 887–917. <https://doi.org/10.1162/002081898550789>.
23. Ford, C. A. (2015). Musings on complexity, policy, and ideology. In E. Kavalski (Ed.), *World politics at the edge of chaos: Reflections on complexity and global life* (pp. 79–109). Albany: State University of New York Press.
24. France 24. (2020). Syria death toll tops 380,000 in almost nine-year war: monitor. *France 24*. <https://www.france24.com/en/20200104-syria-death-toll-tops-380-000-in-almost-nine-year-war-monitor>. Accessed 18 Oct 2020.
25. Gard-Murray, A. S., & Bar-Yam, Y. (2015). Complexity and the limits of revolution: What will happen to the Arab Spring? In P. V. Fellman, Y. Bar-Yam, & A. A. Minai (Eds.), *Conflict and complexity: Countering terrorism, insurgency, ethnic and regional violence* (pp. 281–292). New York: Springer.
26. Geller, A. (2011). The use of complexity-based models in International Relations: A technical overview and discussion of prospects and challenges. *Cambridge Review of International Affairs*, 24(01), 63–80. <https://doi.org/10.1080/09557571.2011.559191>.
27. Goddard, S. E. (2018). *When right makes might: Rising powers and world order*. Ithaca: Cornell University Press.
28. Jervis, R. (1997). *System effects: Complexity in political and social life*. Princeton: Princeton University Press.
29. Jordan, J. (2014). Attacking the leader, missing the mark: Why terrorist groups survive decapitation strikes. *International Security*, 38(4), 7–38.
30. Kavalski, E. (2007). The fifth debate and the emergence of complex International Relations theory: Notes on the application of complexity theory to the study of international life. *Cambridge Review of International Affairs*, 20(3), 435–454. <https://doi.org/10.1080/09557570701574154>.
31. Kavalski, E. (2015). Inside/Outside and around observing the complexity of global life. In E. Kavalski (Ed.), *World politics at the edge of chaos: Reflections on complexity and global life* (pp. 1–27). Albany: State University of New York Press.
32. Kavalski, E. (2012). Waking IR up from its Deep Newtonian Slumber. *Millennium: Journal of International Studies*, 41(1), 137–150. <https://doi.org/10.1177/0305829812451717>.
33. Kirchick, J. (2017). *The end of Europe: Dictators, demagogues, and the coming dark age*. New Haven: Yale University Press.
34. Lagi, M., Bertrand, K. Z., & Bar-Yam, Y. (2011). The food crises and political instability in North Africa and the Middle East. <https://ssrn.com/abstract=1910031>. Accessed 05 Nov 2020.
35. Lebow, R. N. (1994). The long peace, the end of the Cold War, and the failure of Realism. *International Organization*, 48(2), 249–277.
36. Lebow, R. N. (2010). *Forbidden fruit: Counterfactuals and international relations*. Princeton: Princeton University Press.
37. Maystadt, J., Tan, J. T., & Breisinger, C. (2014). Does food security matter for transition in Arab countries? *Food Policy*, 46, 106–115.
38. McLaughlin, E. (2019). US-led coalition hits ISIS ‘infested’ island in Iraq with 80,000 pounds of munitions. *ABC News*. <https://abcnews.go.com/Politics/us-led-coalition-hits-isis-infested-island-iraq/story?id=65510568>. Accessed 23 Oct 2020.
39. Mearsheimer, J. J. (2014a). *The tragedy of great power politics*. New York: W. W Norton & Company.

40. Mearsheimer, J. J. (2014b). Can China Rise Peacefully?. *The National Interest*. <https://nationalinterest.org/commentary/can-china-rise-peacefully-10204>. Accessed 20 Oct 2020.
41. Murdock, C. A., & Weitz, R. (2004). Beyond Goldwater-Nichols: New proposals for defense reform. <https://apps.dtic.mil/dtic/tr/fulltext/u2/a522000.pdf>. Accessed 02 Nov 2020.
42. Münchau, W. (2016). Europe enters the age of disintegration. *Financial Times*. <https://www.ft.com/content/f9c8bb52-dcac-11e5-8541-00fb33bdf038>. Accessed 17 Oct. 2016.
43. Pettyjohn, S. L. (2012). *U.S. global defense posture, 1783–2011*. Santa Monica, CA: RAND Corporation.
44. Rosenau, J. N. (1997). Many damn things simultaneously: Complexity theory and world affairs. In D. S. Alberts & T. J. Czerwinski (Eds.), *Complexity, global politics, and national security* (pp. 32–43). Washington, D.C.: National Defense University.
45. Selvarajoo, K. (2015). Can the second law of thermodynamics hold in cell cultures? *Frontiers in Genetics*, 6(262), 1–3.
46. Smith, S. (2000). The discipline of International Relations: Still an American social science? *The British Journal of Politics and International Relations*, 2(3), 374–402. <https://doi.org/10.1111/1467-856X.00042>.
47. Taleb, N. N. (2018). *Skin in the game: Hidden asymmetries in daily life*. New York: Random House (Kindle Edition).
48. The Editors of Encyclopaedia Britannica. (2020). Newton's laws of motion. *Encyclopaedia Britannica*. <https://www.britannica.com/science/Newtons-laws-of-motion>, ACCESS DATE. Accessed 23 Oct 2020.
49. Tomé, L., & Açıklın, S. N. (2017). Complexity theory as a new Lens in IR: System and change. In Ş. Ş. Erçetin, & N. Potas (Eds.), *Chaos, complexity and leadership 2017* (pp. 621–646). Cham: Springer.
50. Tripp, C. (2015). IS: The rentier caliphate with no new ideas. <https://english.alaraby.co.uk/english/politics/2015/2/8/is-the-rentier-caliphate-with-no-new-ideas>. Accessed 20 Oct 2020.
51. Waltz, K. N. (1979). *Theory of international politics*. Massachusetts: Addison-Wesley Publishing Company.
52. Waltz, K. N. (1988). The origins of war in Neorealist Theory. *The Journal of Interdisciplinary History*, 18(4), 615–628.
53. Wight, C. (2015). Theorizing international relations: Emergence, organized complexity, and Integrative pluralism. In E. Kavalski (Ed.), *World politics at the edge of chaos: Reflections on complexity and global life* (pp. 53–77). Albany: State University of New York Press.