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The Emergence of English as a Lingua Digital Within Chaos/Complexity Theory Framework

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Abstract

English has now become a digital language with the rise of the digital age, especially with Facebook, Instagram, Snapchat, and now due to COVID-19. Individuals' interaction with the digital beings such as front camera, social media, and keyboards has allowed new words to emerge or caused some changes in the existing words. Regarding these dynamic changes, Chaos/Complexity Theory brought to English language teaching (ELT) field by Diane Larsen-Freeman (1997) might provide explanations while shedding light on the construction or emergence of new words. In this article, Chaos/Complexity Theory is revisited first as a transdisciplinary theory and then along with its main features in the language learning field. Then, English as a Lingua Digital is proposed as a new concept to be studied by future empirical studies. In this sense, this article is the first to propose English as a Lingua Digital within Chaos/Complexity Theory. The ideas in this paper may be the leading topics ELT research in a very near future considering the fact that there are not enough empirical studies utilizing Chaos/Complexity Theory.

Keywords: English as a Lingua Digital; Chaos/Complexity Theory; Language learning; COVID-19; coronavirus

Introduction

English language has continuously been associated with such words as *archaic*, *old*, *local*, *British*, *American*, *global*, *world*, *academic*, and with many others. These adjectives have been attributed to English when individuals interact with one another in one of these Englishes. However, one of the interacting parties may be non-human, such as a digital or technological product, especially in the era of COVID-19 and technology. COVID-19 is an infectious disease caused by coronavirus and is transmitted mainly through contact with infectious droplets, objects or surfaces. It is now seen as a global pandemic that has affected many countries since the outbreak began in Wuhan, China, in December 2019 (WHO, 2020). Due to the effect of this pandemic, many countries have utilized technology to maintain their systems, such as education and health systems. In this article, we first review Chaos/Complexity Theory (Larsen-Freeman, 1997) and propose English as a Lingua Digital in light of this theory; however, it should be noted that there is no explicit empirical evidence that may connect the theory to English as a

Lingua Digital yet, and this article is the platform that English as a Lingua Digital is proposed and coined for the first time. Thus, for the purpose of this article, English as a Lingua Digital is defined as the use of English language as a global communication language that has arisen as a result of technology. English as a Lingua Digital is a contact language among people all around the world who may not share a common native or national language but do share a series of digitally originated set of vocabulary at its basic definition. This language is prone to evolve with technology. Some examples that will be provided and detailed in the current article include such words as *selfie, google up, duck face*, and *feed* (e.g., *Facebook feed*).

To begin, the Chaos/Complexity Theory is transdisciplinary, as it is used in a variety of disciplines such as physical sciences and biology, while it has also been adopted by language professionals such as Diane Larsen-Freeman (1997, 2002, 2015, 2018). According to Larsen-Freeman (2015), Chaos/Complexity Theory is transdisciplinary in two aspects. First, it informs a wide variety of disciplines, including epidemiology in the fields of biology, chemistry, business administration, and language (Larsen-Freeman, 2015). Second, it informs us about "a new cross-cutting theme to theory development, comparable to prior revolutionary transdisciplinary themes" (Larsen-Freeman, 2015, p. 227), including structuralism and evolution (Halliday & Burns, 2006).

In general, Chaos/Complexity Theory provides explanation on how systems develop, expand, are adapted and adopted, and how they evolve. It is easy to see this evolving nature of the systems especially in the telecommunications industry, technology, stock markets, Internet, and global corporations nowadays. These growing systems technically bring up collective behaviors such as individuals' adopting changes all over the world. We have been performing similar behaviors because complexity and dynamicity lead us to interact with our environment in a digital world more than ever now and affect the behavior of the whole system. The COVID-19 situation has been a great example of how such an organized system emerged out of a chaotic situation.

Complicated vs. Complex Systems Within Chaos / Complexity Theory

Chaos/Complexity Theory may sound complicated or may look like it has a complex explanation due to its name referring to complexity. However, it would be misleading to think Chaos/Complexity Theory as a complicated theory. Therefore, the distinction between *complicated* and *complex* has to be clarified.

Complexity indicates the system's behavior as a whole, while *complicated* refers to the details of a system. For instance, a handbook of English Language Teaching (ELT) or any field is rich in detail and it may be called *complicated*; however, international organizations, such as TESOL International Association, are rich in structure, and it makes the organizations complex systems. A problem that an organization may face may be complicated, and it may be taken down into pieces or details to solve it, while the rules may keep changing as the organization changes rules based on the changes in the environment. In the latter, a change or an action in an environment or in the world affects the behavior of this organization.

To further exemplify, TESOL International Association has been affected by COVID-19, as with the case of other organizations all over the world, and the organization may shift "into a complex web of interactions and activities that shift and adapt according to the situation at hand. At this point, the organization moves from a complicated mode of handling day-to-day matters to a more complex mode of operation" (Sammut-Bonnici, 2015, p. 1). Thus, the internal system changes as a result of the changes, shifts, and dynamicity of the external system. As seen from the COVID-19 example, new systems emerge out of a chaotic situation. Switching to a

completely online education system all over the world all at the same time was also initiated as a result of chaotic COVID-19 situations. Therefore, Chaos/Complexity Theory perfectly becomes a means to explain today's self-organizing, adaptive, open, emerging, and nonlinear systems in almost every aspect of our lives.

Key Components of Chaos/Complexity Theory

The 21st century is an era of uncertainty, instability, and unpredictability, especially with the emergence of telecommunication and Internet technologies as well as the outbreak of COVID-19 (Alfaro, 2020; Goh & Sandars, 2020; Ting, Carin, Dzau, & Wong, 2020). Considering these emergence and outbreak situations in which we live in and the nonlinearity we are exposed to every day, we will focus on the key components of Chaos/Complexity Theory through daily life examples so that the readers can personalize their understanding of the complexity, not the complicatedness.

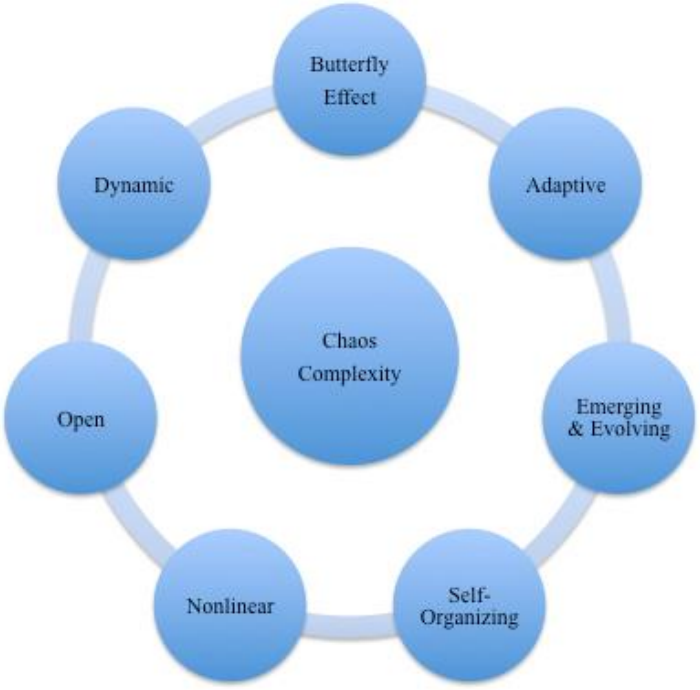

Figure 1. Key Components of Chaos/Complexity Theory

From a Chaos/Complexity point of view, McAndrew (1997) identified several features of chaos. A sensitive dependence on initial cases or a butterfly effect is one of the characteristics of chaos (see Figure 1). In addition, values are not repeated over and over again in a chaotic system, but they evolve continuously leading to self-organized situations. Regarding these features, it is undeniable to accept that the emergence of technologies and the COVID-19 outbreak have changed our lives drastically. For instance, the beginning of COVID-19 in December 2019 created a butterfly effect causing so many self-organized changes in a lot of fields. Reimers and Schleicher (2020) reported the following in a report they published:

> The Center for Systems Science and Engineering at John Hopkins University reports 788,522 confirmed cases globally, and 37,878 deaths, as of March 30, 2020. Researchers at Imperial College in London, estimate the global impact in the year 2020 to range between 20 million deaths, with effective non-pharmaceutical interventions in place, and 40 million deaths, without such interventions .4 In the United States alone,

> Dr. Anthony Fauci, Director of the National Institute of Allergy and Infectious Diseases, estimates that the Pandemic will cause between 100,000 and 200,000 deaths. (p. 3)

The situation above has such a big butterfly effect that many throughout the world lived under lockdown conditions while trying to maintain physical and mental health as well as continue education in any field. Under these difficult conditions, educational systems throughout many countries switched to online instruction as much as possible, and they evolved during the process. This switch was self-organized, meaning that a self-order emerged as a result of being confined to an online delivery system. It is still unknown and unpredictable as to the extent or degree this evolving and emerging process will be, but we are certain that all of these changes were taking place without any plan (i.e., self-organized) and we are adapting to these changes as they evolve (see Figure 1).

This butterfly effect causing the unpredictable, self-organized, and evolving complex systems also brought nonlinearity, openness, and dynamicity. Dynamic systems are capable of changing with and through time (Baranger, 2002). They are open to changes, and these changes do not take place by following a fixed pattern. A good example for the nonlinearity, openness, and dynamicity of the systems would be the online education that many countries throughout the world switched to in a short time as a result of COVID-19. Since the Internet was not stable and not every student had the same opportunities within an online educational system, the process took place nonlinearly throughout the world. Some schools adapted well to the new changes, but some were following the process slowly. Thus, most of the occurrences were nonlinear under the pandemic. However, all these changes were self-organized and they affected the corpus or the jargon we used while discoursing online.

Overall, Chaos/Complexity is sensitive to initial conditions (i.e., butterfly effect), is adaptive, self-organized, emerging and evolving, nonlinear, open, and dynamic, as visualized in Figure 1. These are the key components of Chaos/Complexity Theory, but there could be many others, as our lives keep evolving. Given the examples above, it is understood that health, educational, and industrial systems, along with many others in our daily lives, are confined to the self-organized and emerging changes, and we adapt to those changes. Language learning is no different than any other system. Indeed, it is hard to think of any other system being more complex, dynamic, adaptive, and nonlinear systems than that of language (Larsen-Freeman, 1997, 2002, 2015), which we will focus on in the next section.

Language Learning and Chaos/Complexity Theory

As the name of the theory suggests, Chaos/Complexity Theory emphasizes the multifaceted aspect of acquiring languages rather than how complicated learning a new language is. Chaos/Complexity Theory is mainly concerned with explaining growth and change by examining emerging patterns in dynamic systems such as learning languages (VanPatten & Williams, 2015). This assumption or proposition of the theory is quite relevant to explaining language learning because language learning is a complex process which is composed of an almost infinite number of emerging patterns, and by nature, language is an ever-changing, fluid and dynamic system, which is composed of different sub-systems.

Chaos/Complexity Theory aims to offer an alternative view to second language acquisition by comparing it to complex systems in a way that shows how disorder causes order through self-organizing and naturally constructed systems. The word *complex* does not necessarily mean that the theory is complicated. On the contrary, it refers to a *whole* made up of interrelated parts, as clarified in the second section of this manuscript. The theory was first introduced to the field of second language acquisition by Diane Larsen-Freeman (1997). She identified the features of

complex nonlinear systems aligning those with language learning and also called "attention to the similarities among complex nonlinear systems occurring in nature and language and language acquisition'' (Larsen-Freeman, 1997, p. 142).

Chaos/Complexity Theory, linked with emerging patterns in dynamic and complex systems, describes and traces these emerging patterns to explain change and growth. Interlanguage might constitute a good example for emerging patterns in language learning. When language learners acquire or learn a language, they continuously adopt new patterns. For example, when learners move to a target language country, they start adapting to that environment and adopting the new lexical items. After they learn these new lexical items, functions, or structures, these emerging patterns change as learners are involved in languages even more and new patterns emerge. Similarly, Alemi, Daftarifard, and Patrut (2011) ground this understanding on Chaos/Complexity Theory and state, "language is a phenomenon which faces continually growth and change" (p. 37). Emergence of new words, hereby, can be explained with growth in language since it grows with the help of such emerging and evolving patterns. In short, as learners are exposed to and experiment with new patterns in the language system as a result of their interaction with the systems in their environment, they keep creating new interlanguage patterns, which could be regarded as emerging patterns. Emergence can be defined as spontaneous occurrence of incidents or anything novel as a result of the interaction of the components of complex systems as we previously exemplified under COVID-19.

Another important characteristic of complex systems, in terms of language learning, is their dynamic nature allowing complexity theorists to study change through time. Regarding the dynamic nature of language learning, Hadidi Tamjid (2008) states, "language is a collection of static units but their use in actual speech involves an active process" (p. 11). Language learners sometimes lower their language proficiency level to communicate with a lower proficiency person, but sometimes the opposite happens. This is mainly because communication is necessary and by looking at one's language proficiency at one instance or several instances does not lead us to make definite conclusions about a learner's language learning development. Larsen-Freeman (2015) claims, "the language of the environment or ambient language … does not determine them [language learners' resources], nor does it define the learning trajectory" (p. 235). Thus, learning and using languages are dynamic as well as emergent.

Furthermore, language learning as a complex system is open. In other words, learners interact with their environment while exchanging information. According to Larsen-Freeman (2015), "learner's language resources develop from experience, afforded by the learner's perception of the environment" (p. 235). Thus, learners are open to changes in the system (e.g., interlanguage) and this openness brings nonlinearity. From a nonlinearity aspect, in learning languages, cause and effect do not have to match in their impact or when effect is not commensurate to a cause (VanPatten & Williams, 2015). For instance, Elman (2003) states, "the processing mechanisms that underlie [language development] . . . are fundamentally nonlinear. This means that development itself will frequently have phase-like characteristics, that there may be periods of extreme sensitivity to input ('critical periods')" (p. 431). Another example would be word frequency in language teaching. Since leaner or individual differences may interfere with word frequency (e.g., affective filter, motivation, attitude, etc.), one cannot assume that increasing frequency will result in better learning (Larsen-Freeman, 2015). Even though frequency is a linear measure in nature, increasing the frequency of new words that learners are exposed to may sometimes result in an increase in learning or may not result in anything due to individual differences, which indicates nonlinearity.

Furthermore, Larsen-Freeman (2018) suggests that learning strategies emerge from the environment in which learners live, and the environment, with all of its components,

dynamically affects strategies that learners use. Teachers and learners continuously interact with each other and with their background, while learners create their own unique way of learning. According to Amerstorfer (2020), while learning a second language (L2), learners may follow a variety of L2 learning strategies, and these strategies may vary depending on the factors affecting learners' contextual and psychological situations. They may change as the learners' conditions change. In her study, Amerstorfer (2020) reanalyzed the data she had collected in her previous study she conducted in 2016, and she explored a learner's strategy use. Indeed, her 2016 study included six learners; however, she examined one randomly selected learner among the six because individual behaviors or individual cases are methodologically more important than the whole in Chaos/Complexity Theory (Hiver & Larsen-Freeman, 2020). Therefore, she focused on the strategies the learner chose and the degree to which the complex and dynamic nature of language learning strategies was observable. Results indicated that the learner chose the strategies she was going to make use of depending on the situation and the purpose. The learner was influenced both by contextual and psychological factors while deciding on the strategies she would use, which was in line with the components of Chaos/Complexity Theory.

Furthermore, as a socio-cognitive view is also employed towards language learning, iteration is considered to be paramount to cognitive processing in Chaos/Complexity Theory. In other words, learners make use of recursion and innovation in the process of meaning making and also in order to achieve a goal using the language as a tool. Co-adaptation is another important tenet of the theory; learners interact with others through imitation to construct their languages. Creativity is usually thought to reside in the linguistic system, but according to Chaos/Complexity Theory, it is in the learners' relationship with the environment. To this end, Safari and Rashidi (2015) assert that unpredictable language patterns inevitably exist in language learning and refer to such emergences as "emergent properties" (p. 45). In their study, it has also been highlighted that complex systems should be available since they are creative systems to bring about such emergent properties (Safari & Rashidi, 2015). Likewise, a learner uses this creativity during his/her interaction with the environment and constructing languages.

Furthermore, Nelson (2011) investigated language learners' adaptation to and interaction with people and their environment within the Chaos/Complexity Theory framework. He conducted interviews with four graduate students in order to gain an insight into the situatedness of language learning as well as commonalities across contexts. Specifically, the researcher investigated the reasons why one of the graduate students did not pick up slang and colloquialisms from email while the other two did and why one of the graduate students expressed her anger via email rather than face-to-face. Thus, he looked into the participating students' overall writing and language learning in relation to the concepts of emergence, distribution, and embodiment in Chaos/Complexity Theory throughout the interviews he conducted with the students. With respect to distribution, he found that the four graduate students' writing knowledge and skills were widely distributed across various tools, media, and individuals. Related to embodiment, Nelson concluded that the bodies, emotions, and physical environment affect a person's choices and writing. Regarding emergence, Nelson (2011) stated that it was hard to "determine how these students' interactions, coordinations, and adaptations had affected the writing ecologies within which they were embedded," as there was limited amount of information obtained during the interview (p. 106).

In addition, adaptation, another component of Chaos/Complexity Theory, involves the link between the environment and patterns. In Chaos/Complexity Theory, transfer is not regarded as unidirectional; yet, it is adopted in a multilingual system because the context decides the bidirectional influence of languages (VanPatten & Williams, 2015). Chaos/Complexity Theory prospects an adaptive system and it means that the reciprocal relationships help learners make

meaning. Here, an interesting point would be on feedback because learners are capable of using predictive error, which means that they respond to their mistakes through building acceptable uses by strengthening connections in their neural network. Therefore, they are informed when the utterance includes non-existing elements. As change is prioritized in Chaos/Complexity Theory, longitudinal studies would be useful tools while gathering data. Although true experiments do not seem appropriate, case studies or computer simulations of complex systems are other methods of data collection.

An interesting point in the observations is that linguistic input is essential for the theory, yet it fails to represent the learner's agency. However, in Chaos/Complexity Theory, the learner constantly adapts to the context of the conversation taking place instead of simply copying or transferring the input. For example, an infant has been claimed to start communicating with its environment by trying to match the language uttered by its caregivers or guardians (Hashamdar, 2012). Hashamdar (2012) describes this endeavor for adaptation as "adjusting capabilities" of a learner (p. 1506). This adaptation leads to creativity/generativity in language use. For Chaos/Complexity Theory, creativity does not stem from the language system but from interaction, as explained earlier. There may be predictable paths in someone's learning. To illustrate, patterns that are both semantically redundant and non-salient are likely to develop later. Thus, functional load matters as well. Yet, this dynamic interactive environment and individual differences cause a non-linear learning trajectory as in the case of word frequency example. An interaction may cause different affordances for different learners.

In Chaos/Complexity Theory, *affordance* or *opportunity* is used instead of *input*, meaning that input dehumanizes the learner or denies human agency in the process (Larsen-Freeman, 2015). In addition, the limits on the effects of frequency are explained convincingly (e.g., *the* and *of* in VanPatten & Williams, 2015). Learning can only occur when the learner becomes aware of that new form, regardless of its high frequency. With interaction and affordance, the learner becomes an active participant rather than a passive receiver, even in online environments. Regarding this point, Chaos/Complexity Theory could also be considered a background theory for English as a Lingua Digital, especially in today's age.

Even though Larsen-Freeman mentions this theory in relation to second language acquisition, English as a Lingua Digital can easily be destined to obtain a new identity as a result of human-front camera interaction, human-social media interaction, and human-keyboard interaction. All of these interactions do bring in certain changes to *English language*, forming a new identity for it. These changes may be exemplified as the new words emerge as a result of the system changes (e.g., words focusing on online discourse, especially after the effect of COVID-19 in online teaching). Words change either morphologically or semantically, and new abbreviations also emerge, which could pertain to the key characteristics of Chaos/Complexity Theory.

English as a Lingua Digital with a Chaos/Complexity Theory Lens

New words in English have emerged as a result of human and front camera interaction. Front-facing cameras have come into existence in the very first years of the 21st century, invented by certain pioneering phone companies (CNN, 1999). Traces of this interaction can be followed Chaos/Complexity Theory in relation to its two distinctive characteristics. According to Larsen-Freeman (2015), complex systems are self-organizing, and they emerge in between interacting components. When a human interacts with other individuals, the language between the interacting parties can be explained by any prevailing theories that have received sufficient applause thus far. However, Larsen-Freeman's choice of words *interacting components* liberates English from merely occurring among human beings. A human can interact with an inanimate being and a new kind of digital language can arise as a result of this interaction.

Likewise, Van Geert (2008) defines *self-organization* as the spontaneous construction of some patterns while mentioning dynamic systems in language. Patterns in a language do not require planned or practiced emergence. One of the best examples for the emergence of patterns and their self-organization is the word *selfie* that emerged as a result of technology integration into our daily lives. For instance, a group of celebrities, including Ellen DeGeneres, Julia Roberts, Brad Pitt, and Bradley Cooper, gathered in front of a front-facing camera. Cooper took the "selfie" which would later be retweeted 750.000 times in 45 minutes. According to Cambridge Dictionary, "selfie (n.d.)" refers to "a photograph that you take of yourself, usually with a mobile phone." Neither lexicologists nor professors coined the term *selfie* in a planned way; on the contrary, the interaction between a group of celebrities and a front camera gave rise to the emergence of this phenomenal word in a spontaneous way. It also applies to another characteristic of Chaos/Complexity Theory, which is nonlinearity.

Larsen-Freeman (2015) defines *nonlinearity* as an effect not being proportionate to a cause, as mentioned earlier. She even elaborates on this and adds that a small change might have a wider influence just like the butterfly effect. *Selfie* became viral in 45 minutes causing millions of people to adopt this new word. Even though Cooper took that selfie with the aim of keeping a souvenir from that night, which is definitely quite a small activity or action, it created an influence on a larger scale than one might expect. Once a pattern emerges in its own way, another pattern is likely to copy the same behavior, and this behavior may vary among the users. Another example would be the word "covidiot" (n.d.), which is a combination of the words *COVID-19* (also known as the novel coronavirus) and *idiot*. We use this example not to offend any individual but rather, to exemplify the impact of English as a Digital Language within the framework of Choas/Complexity Theory. *Covidiot* was coined during the COVID-19 outbreak, and it has started to be used widely in social media in order to refer to a person "who ignores health advice about COVID-19 and hoards food unnecessarily" as defined by Macmillan Dictionary. Another definition, offered by Oxford Learner's Dictionary, of "covidiot" (n.d.) refers to "a person who annoys other people by refusing to obey the social distancing rules designed to prevent the spread of COVID-19". The word *covidient*, which is a combination of the words *COVID-19* and *obedient*, has also started to be used in social media despite it not yet appearing in dictionaries at the time this article was written. It refers to a person who follows the directives of top medical experts, such as the World Health Organization and the Center for Disease Control, such as social distancing. Furthermore, the word *covidate* is used to refer to a person who acts moderately, as opposed to *covidiot* and *covidient*, yet the word *coronextra* is used to describe a person who takes extra and/or extreme precautions against COVID-19 spread creating an unintentional extreme effect in society. In addition, *coronacoaster* refers to the ups and downs of quarantine life during the COVID-19 era. Although these words, *covidient, covidate*, *coronextra*, and *coronacoaster*, have not yet appeared in dictionaries at the time this article was written, they may make an official entry in the near future. These instances are credited to the butterfly effect and the emerging power of chaotic and complex situations.

Another example for such emergence is "duck face" (n.d.), which has been defined as "someone's face when their lips are pushed outwards, especially in photographs" by Cambridge Dictionary. It also became viral among Instagram and Facebook users that aimed to intensify the attraction of their face. Larsen-Freeman would probably explain the emergence of "duck face" with the following characteristics of Chaos/Complexity Theory: *butterfly effect* and *self-organizing* because the word was produced through the interacting components. All in all, there is no need for a new word to emerge solely from human-to-human interactions; it can also arise from the interaction between a human and an inanimate piece of technology, such as a front camera, as long as the dynamicity of this interaction continues.

Furthermore, certain words go through a morphological and/or semantic transition as a result of the interaction between human beings and social media. Social media has been a sensational concept occupying a great deal of individuals' time. Therefore, it can be claimed to be one of the most widespread collection of platforms that human beings interact with in the 21st century. This interaction has recently peaked with individuals' working from home in front of their computers all day as a consequence of COVID-19. This interaction brings about a lot of changes in words either morphologically or semantically, which can be regarded as a solid application of Chaos/Complexity Theory in the absence of empirical studies within this theoretical framework.

Larsen-Freeman (2015) states that phase transitions can occur within systems, proving the systems to be open. Supposing that English is the system that is used online in between humans and social media, the words embedded in this language might be expected to go through transitions. For instance, according to Cambridge Dictionary, the word "viral" (n.d.) literally means "caused by a virus". On the other hand, it has recently been defined, in Cambridge Dictionary, as "spreading or becoming popular very quickly through communication from one person to another, especially on the internet." Once it was merely used for the former meaning defined above while talking about contagious diseases. However, social media posts that attract a huge amount of attention and become popular in a very short time can also be modified by this adjective. The word hereby gains a new meaning; in other words, it goes through a semantic transition.

Another example would be the word "feed" (n.d.). According to the Cambridge Dictionary, it means "a web page, screen, etc. that updates often to show the latest information" with the rise of social media platforms, such as Twitter and Facebook. The original meaning still remains in both of these examples; however; these words go through a semantic transition and gain additional meanings as a result of human-social media interaction, making the English as a Lingua Digital to be open to changes through online interactions.

As for the morphological transitions, the interaction between human and social media brings about new derivations. Larsen-Freeman (2015) claims complex systems to be "adaptive" and adds, "an adaptive system changes in response to changes in its environment" (p. 228). An example for this characteristic of Chaos/Complexity Theory can be the word "defriend" (n.d.). Normally, the noun "friend" has been morphologically changed with the prefix "de" to make it a verb. In Cambridge Dictionary, it is defined as "to remove someone from your list of friends on a social networking website" (n.d.). As another example, "unlike" (n.d.) has been defined as "on a social networking website to show that you no longer think that something is good, by clicking a button" in the same dictionary. Even though "unlike" existed in English long before we talk about a contrast and use it as a preposition, the new meaning turns this word into a verb with the meaning close to *dislike* within a social media context. Thus, the whole social media system is emerging, adaptive, and self-organizing.

Furthermore, human-keyboard interaction leads to the emergence of abbreviations. Keyboards have been a relatively older component when compared to front cameras and social media, making their interactions with human beings a lot more essential and long-lasting. While mentioning the characteristics of Chaos/Complexity Theory, Larsen-Freeman (2015) brings up the term "affordance" differentiating it from any other type of input that places learners in a passive position as mentioned earlier. Van Lier (2000) states that affordance is a user-centric input occurring in relation to what the user wants and finds useful. Abbreviations can easily be linked to Chaos/Complexity Theory in that users may use some abbreviations depending on their practicality or usefulness. For instance, a four-letter abbreviation "YOLO" (Cambridge Dictionary, n.d.) may save a lot of time on a rapid platform, such as Facebook or Instagram,

meaning "You Only Live Once" to highlight the importance of seizing the day and enjoying the life. This abbreviation is quite time-saving and becomes an affordance mainly because other users may easily understand it and find it quite useful. Another abbreviation example that could be linked to Covid-19 era and Chaos/Complexity Theory is "WFH" (n.d.), and according to Cambridge Dictionary it is an abbreviated from of "working from home" and it refers to "a person doing their job in their home rather than travelling to an office, etc." (n.d.).

Some abbreviations through human-keyboard interaction may even step out of its own context and may exist in a non-keyboard environment such as "NIMBY" (Cambridge Dictionary, n.d.). This word is the short version of "Not In My Back Yard" meaning more than it sounds. It refers to any person who wants some change but does not want to take on any responsibility related to that change. As the final example of such abbreviations emerging, "TL: DR" (Cambridge Dictionary, n.d.) stands for "Too Long: Didn't Read", which can be used anywhere on the Internet where there are far long texts even for perusing. English becomes again "open" and even dynamic because of experiencing the birth of such words and gaining a new identity "Lingua Digital." Thus, as seen from the examples above, English as a Lingua Digital a global communication tool used by people who do not share a common native language but share a language that is touched by the digital era.

Conclusion

Overall, Larsen-Freeman (2015) presents the key characteristics of Chaos/Complexity Theory as being self-organizing, adaptive, open, nonlinear, and having affordances. These characteristics can be linked with use of English in the digital world and English as a Lingua Digital could be the new language that emerges as a result of the complex systems. Language hereby is a dynamic and complex system that is open, adaptive and self-organizing and it even produces its own affordances. Language does not necessarily require two or more humans to arise; on the contrary, it might occasionally occur between human and inanimate objects. As exemplified earlier, when humans interact with front cameras, new words may spontaneously emerge, such as *covidiot*, as a result of COVID-19. These words become known all around the world thanks to social media. New word constructions are produced in a nonlinear and self-organizing way. In addition, when humans interact with social media networks, existing words may even go through some semantical or morphological transitions (e.g., unlike). Last but not least, when humans interact with keyboards, abbreviations might arise to promote practicality or usefulness depending on users' needs. Considering the components mentioned here, Chaos/Complexity Theory may shed light on English as a Lingua Digital, and future studies may focus on this area more. When we look at the history of Chaos/Complexity Theory in language learning field, it is still hard to find empirical studies using it as a framework. Therefore, in this paper, even if our examples on English as a Lingua Digital may seem casual ideas from real life, we believe that we opened a doorway to conduct studies to investigate English as a Lingua Digital within Chaos/Complexity Theory. Aren't big discoveries born with small ideas? This could well be out two cents for the language learning field.

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