Translation Industry in the Light of Complexity Science: A Case of Iranian Context

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1. Introduction

In line with the fact that multidisciplinary studies as a whole have gained momentum these days, it seems that translation studies as a relatively young discipline has recently tried to embrace new findings from other disciplines to enrich and deepen itself. For instance, researchers in translation studies have successfully applied ideas from sociology, field theory (Bourdieu and Wacquant 1992), actor-network theory (Latour 2005), applied mathematics, and game theory (von Neumann and Morgenstern 1944; Myerson 1997) to translation studies.

One of the new theories in physics that might help us to broaden and advance our understanding in sociological aspects of translation studies is chaos/complexity theory. Complexity theory is not a single coherent body of thought but embraces a range of different traditions and approaches. Complexity science or complex system theory originated from math semantics, economics, and biology (Schroeder 1991). This new theory, inspired by Prigogine and Stengers (1984) and Poincaré's (1854–1912) ideas, has refuted the main tenets of Newtonian mechanics, which is based on absolutism, linearity, and predictability, and focused instead on relativity, nonlinearity, unpredictability, feedback sensitivity, and co-evolution. It encompasses many different disciplines, models, and perspectives, including complexity theory, catastrophe theory, dissipative structure, chaos theory, fractal theory, and self-organized criticality. Therefore, Lissack and Letiche (2002) pointed out that the research of complex systems is not a science but a collection

of concepts, interpretations, and analytical tools. Morel and Ramanujam (1999) also believed that complex system theory does not yet fulfill the many requirements of a "theory" per se. Rather than a unified theory, it is more of a perspective of research. Therefore, it might be more suitable to call it the "complexity science perspective" (Tsai and Lai 2010).

This new theory has been successfully applied to different fields of study, such as philosophy (Cilliers 2005), psychology (Spivey 2007), linguistics (Meara 2004), cultural studies (Appadurai 1990), first-language acquisition, and second-language learning theories (Larsen-Freeman and Cameron 2008). Due to the nature of translation, which acts like a system, it seems that the application of this nonreductionist and post-positivist approach in translation studies may open new horizons for research, shedding more light on the process of translation.

Therefore, this study seeks to apply the major principles of chaos/complexity theory to translation studies. The complexity science perspective has been widely applied in the field of social sciences. Therefore, the present research will attempt to find the common core concepts of various theories by evaluating complexity science and deducing the strategic implications of conceptualizing translation production network as a dynamic complex system.

Our study is divided into three main parts. The first part explores the key properties of chaotic complex systems. The second makes a theoretical and metaphorical analogy in the conceptualization of translation studies in the light of complexity framework. The last part of this study is devoted to concluding remarks and general discussion. We hope this article brings fresh insights to the sociology of translation, becoming the starting point for future studies.

2. Chaos/Complexity Theory

There has been a radical shift from static and deterministic theories to more dynamic ones in various fields, from mathematics, physics, and economics to humanistic subjects. Modern physics, employing chaos/complexity theory, aims to show how simple interactions result in the emergence of a complex system and how such a system interacts with its environment. This theory reveals that not all phenomena are orderly, reducible, predictable, and determined. It examines the frequently occurring unpredictable behavior displayed by nonlinear systems (Prigogine and Stengers 1984). According to Larsen-Freeman and Cameron (2008), this theory is characterized by six key features: openness and dynamism, complexity, adaptability and feedback sensitivity,

self-organization and emergence, nonlinearity and unpredictability, and strange attractors, all of which are briefly discussed below.

2.1. OPENNESS AND DYNAMISM

In contrast to closed systems, in which there is no interaction between the environment and the system, in open systems there exists energy interaction between the system and the surrounding environment. This interaction induces ongoing change, making the system dynamic. In open systems, the major features of closed systems, which are static, fixed, and "being," are replaced with dynamic, flexible, and becoming features. A concrete example of the open dynamic system is language: English, for example, is open to all sorts of influences; it changes constantly yet somehow maintains an identity as the same language (Larsen-Freeman and Cameron 2008).

2.2. COMPLEXITY

Complexity comes from the diversity and heterogeneity of multiple interconnected elements shaping a complex system in which its evolution is very sensitive to initial conditions or to small perturbations, one in which there is large number of independent interacting components, or one in which there are multiple pathways by which the system can evolve (Whitesides and Ismagilov 1999). Complex systems are constantly in the process of evolving and unfolding (Arthur, Durlauf, and Lane 1997). Taking an ecosystem of a forest as a complex system, the component *agents* in this system are animals, birds, insects, and people, while component *elements* would include trees, winds, rainfall, sunshine, soil, river, and air. The complexity of this complex system arises from heterogeneous components being interdependent and in constant interaction with each other.

One important feature of complex systems is that the whole transcends the sum of its parts. One good example can be water: water is composed of hydrogen and oxygen. Adding hydrogen and oxygen separately to fire can sustain and build fire; mixing them, however, to create water and then adding that water to fire extinguishes the fire.

2.3. ADAPTABILITY AND FEEDBACK SENSITIVITY

Feedback is defined as a circular process of influence where action and actor affect each other. A complex system is feedback sensitive, mean-

ing that, during the mutual interactions between the agents, feedback—whether negative or positive, internal or external—can play a pivotal role in the agents' subsequent actions and ultimately in the whole system. Considering the received feedback, the system adapts itself accordingly to the new situation to ensure its survival. In other words, a complex adaptive system is flexible enough to maintain its stability through continuous adaptation. For example, in first-language acquisition, feedback can cause change in U-shaped learning: children while acquiring a first language go through different stages of learning the verb *go*. After learning the word *go* and the usual rule for the past tense form of the verbs (add *-ed*), they frequently form the false past-tense form "goed." At this stage, positive and negative feedback plays a significant role. Negative feedback in the form of correction by parents and positive feedback for producing "went" cause change, leading children to use the proper past-tense form of the verb.

2.4. SELF-ORGANIZATION AND EMERGENCE

Actors within a complex system self-organize themselves; that is, they form new structures and connections, networks, and systems to meet their needs. Self-organization can happen because the system can adapt in response to changes. Sometimes self-organization leads to new phenomena on a different scale in a process called "emergence." More generally it refers to how behavior at a larger scale of the system arises from the detailed structure, behavior, and relationships at a finer scale (Larsen-Freeman and Cameron 2008). "The full, or ultimate, positive exploitation of emergence is self-organization; a system aligns itself to a problem and is self-sustaining, even when the environment changes" (Müller-Schloer and Sick 2008, 86). Thus, the term *self-organization* refers to a specific form of emergence. One of the concrete examples of emergence through self-organization in a complex system can be a social structure emerging from and influencing individual agency and action. The relation between "habitus" and "practice" in Bourdieu's works would be a good example. Habitus, as people's "mental structures through which they apprehend the social world ... [are] essentially the product of the internalization of the structures of that social world" (Bourdieu 1989, 18), but those social structures are also emergent from action in the social world.

2.5. NONLINEARITY AND UNPREDICTABILITY

While predictability and linearity are the main properties of Newtonian determinism, chaos/complexity theory rooted in relativism challenges

this deterministic approach by highlighting nonlinear and unpredictable phenomena. Dynamic complex systems are unpredictable. Sensitivity to initial conditions is the main reason for the unpredictability of complex systems. One of the well-known instances exemplifying unpredictability and nonlinearity is Lorenz's "butterfly effect" (Gleick 1987). Lorenz postulated that weather systems are highly sensitive to tiny changes: even the flapping of a butterfly's wings may delay or change the direction of a tornado in one area of the world. This large effect arising from a tiny change (butterfly's flying) in initial condition of a complex system (e.g., a weather system) is referred to as the "butterfly effect." As Lorenz postulated, unless one can account for all the small changes that have an impact on a system, the prediction of the behavior of any chaotic complex system is impossible. In addition to pointing out the lack of proportionality between cause and effect, nonlinearity suggests that there is no exact cause for a particular phenomenon.

2.6. STRANGE ATTRACTORS

Attractors act as "magnetic" forces that draw complex adaptive systems toward given trajectories (Pascale, Millemann, and Gioja 2000; Wheatley 1994, cited in Gilstrap 2005), which can be considered as a focus of energies in the system. The attractors are called "strange" to distinguish them from stable attractors, states to which the system reliably returns if disturbed. A strange attractor requires high energy and information consumption, serving as a seemingly magnetic force (Stacey 2003; Wheatley 1994) that provides structure and coherence.

Attractors can produce order in a dynamic system, making it coherent by constraining the system into a small region of its state. In other words, systems tend to move toward attractors. For instance, in a "stable real-world system, long-term behaviors can be seen as attractors in the state space of that system" (Norton 1995, 56). A chaotic or strange attractor is a state of a system in which the system's behavior becomes quite wild and unstable, as even minute changes in conditions can cause it to move from one state to another, as in the previously described example of "butterfly effect."

Generally speaking, chaos/complexity theory is the study of systems that include large numbers of components constantly interacting. In a chaotic complex system, a very small change can have a large impact (nonlinearity and unpredictability) on the system's trajectory (attractors), and during this changing condition all the components influence

(feedback) each other (self-organization), leading ultimately to the rise of emergent behavior.

3. Chaos/Complexity in Translation

Looking at translation through the lens of chaos/complexity theory, we may observe some interesting shared grounds at the micro and macro levels. At the micro level, the process of translation involving the translator's own sociocognitive system, including the translator's culture and system of values, beliefs, and so on (Hatim and Munday 2004), might be regarded as a complex system. At the macro level, the translation industry involving various elements either human (publisher, translator, reader) or nonhuman (electronic tools, dictionaries, sociocultural features of literary system) can be conceptualized as a complex dynamic system. In what follows we try to apply chaos/complexity theory to the sociology of translation by discussing each of the features of the theory (as discussed above) in relation to different aspects of translation production in Iran.

3.1. Openness, Dynamism, and Complexity

Translation is not a closed, static system unaffected by its environment; it is the product of different factors, including editorial board members, publishers, sponsoring organizations, translators, readers, and even nonhuman participants, such as translational technological tools and other phenomena related to sociocultural or even political discourse termed *ideologems*: "the smallest intelligible units of the essentially antagonistic collective discourses of social classes" (Jameson 1981, 76). Translation is not done in isolation; these elements affect the whole translation production process: the text selection, the seeking for suitable translators, and the translation strategies employed by translators. In fact, the process of translation as a "dialogic event" (Bakhtin 1994) is an open process in which author, translator, text, and even sociocultural factors in both languages have an open-ended dialogue in the process and, ultimately, the product of translation. In fact, translation is a complex message in which several voices and perspectives intermingle.

At a sociological level, the process of translation production is a complex network of inter- and intrarelations (system) in which we can claim the whole exceeds the sum of its parts. That is, translators, readers, publishers, and technological tools work synergistically to produce

a translation product. Latour's Actor-Network Theory (1987), which has been applied to translation studies (Abdallah 2005; Buzelin 2005) provides a theoretical framework to examine how a network of relationships links different factors, producing a project. Various agents (e.g., translators, publishers, and patronage), along with different social powers, interact with each other to develop the network. As Jones points out, "[w]ho holds more or less power within the network is less important than whether the network forms and performs efficiently and effectively" (2009, 320).

Complexity theory (Cilliers 1998; Byrne 2005) is sometimes also referred to as dynamic systems theory (Haggis 2008; Valsiner 1998). Besides the systematicity of translation production, another important feature of translational network is its dynamic complexity, which arises in situations where cause and effect are subtle and where the effects over time of interventions are not obvious or when the same action has different effects in the short and long run; in all these instances there is dynamic complexity (Senge 1990). The dynamic complexity of a translation system lies in two distinct levels of analysis: the dynamic complexity resulting from a multitude of interactions between various elements (human or nonhuman) and the dynamic complexity of the emergent behavior of the system that is a translation product.

3.2. Feedback Sensitivity, Self-Organization, and Adaptation

The ontology of complexity thinking insists on a dynamic system's feedback sensitivity. As Stacey puts it, "positive feedback loops are fundamental properties of organizational life" (1992, 480). In a translational network, a translator can receive feedback, whether positive or negative, from different sources. Translation, as Wolf states (2002), is the result of cultural, political, and other habits of the social agents who participate in translation and of the various forms of capital involved.

As already mentioned, through feedback mechanisms involving positive or corrective (negative) reactions, new differentiated forms of behavior and systems emerge from the existing forms. Thus Hermans (2007) considers translation as a social system that may produce emergent phenomena.

Regarding feedback sensitivity, we can allude to the cognitive notion of *collaborative decision making* (Robinson 1997). In the same vein, Weick (1979) proposed a cognitive cycle for translation process, which is act–response–adjustment, in which the feedback from people on whom one's action as a translator has an impact causes a shift (adjust-

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ment) in one's action (the translation product). In fact, at the sociological level, this cognitive cycle may change to a sociological one as event–feedback–repercussions.

Self-organization as one of the key features of dynamic complex systems is the one that Luhmann (1995) called *autopoiesis* for social systems. Due to their openness, chaotic complex systems are in constant contact with their environment; however, this contact is regulated by the self-organizing system. It is the system that determines when, what, and through what channels matter is exchanged with the environment. Obviously, one cannot deny the role of external forces, but the point is that, despite these influences, it is the system that determines what should emerge.

3.3. NONLINEARITY AND UNPREDICTABILITY

Another aspect of complexity discourse worth examining in greater detail is the argument that the translational network as a complex phenomenon is intrinsically nonlinear and unpredictable in nature. Complexity science articulates a notion of causality that is multifactorial. It is impossible to talk about isolating *key* factors, because all of the factors work together, with no one factor being more important than any other. The causality implied by complexity theory is *decentered,* in the sense that in a dynamic system we cannot attribute a certain effect to a particular cause. Causation is too multidimensional, too fast, and in one sense too unpredictable to be a viable focus of attention (Haggis 2008). In the field of translation, Chesterman (2007) postulated the causal models that aim to show cause-and-effect relations. He also maintains that translations are seen as caused or influenced by various conditions, such as quality judgments by clients or readers.

Chesterman (2007) maintains three types of effects produced by translation. These effects ultimately impact the whole system of translation production. The first type of effect is labeled *reaction*, which is cognitive. When the effect moves beyond the cognitive sphere and becomes observable in different works such as criticisms and book reviews, it acts as feedback, affecting the public image of profession; Chesterman calls this second type *response*. The third type of effect is the one that shows the nonlinearity and unpredictability of the chain of effects in a translation network. Chesterman describes it as *translation repercussions*. The canonization of literary work, changes in the evolution of target language, and changes in norms and practices are examples of translation repercussions.

As mentioned in the butterfly effect metaphor, one of the important features of chaotic systems closely related to *unpredictability* is the disproportionality between causes and effects, such that "causation can indeed flow from contingent minor events to hugely powerful general processes" (Urry 2003, 7). In so far as this is a coherent notion, it suggests that small, apparently accidental or insignificant causes can have a major influence on the development of a system (Kemp 2009).

From the pragmatic point of view, translating is a decision process (Levy 1967/2000). Generally, the process of decision making is not a new concept in translation studies. Levy, inspired by and based on game theory (von Neumann and Morgenstern 1944; Myerson 1997), considers the process of translation as a "decision making process" (Levy 1967/2000). In a translational field, dynamic interactions and networks between publishers, translators, authors, critiques, and readers are influential in the decision-making process (Levy 1967/2000) and thus also in the final product. According to this view, at the micro level, translational "choices" are not linear and sequential but context-bound. Consequently, they are complex and unpredictable because they are motivated by dynamic factors, among which are aesthetics, cognition, knowledge, commission, and textual pragmatics. These factors are mainly subjective, depending on the translator's idiosyncrasies. Taking Peirce's pragmatic view (1903), during the problem-solving process the translator applies rules and theories (deduction), uses different lexical and grammatical sources (induction), and, finally, chooses the solution intuitively (abduction; Robinson 1997). With the application of Peirce's viewpoint in translation, when the translator reaches the solution it is not predictable even for himself. This solution comes abductively; it is "a mixture of conviction and doubt" (Robinson 1997, 260).

3.4. STRANGE ATTRACTORS

Strange attractors act as magnetic forces with a kind of unifying role that draw complex adaptive systems toward given trajectories (Wheatley 1994; Pascale, Millemann, and Gioja 2000, cited in Gilstrap 2005). At the micro level, in the translation process strange attractors can be metaphorically manifested in the domestication strategy employed by the translator. Although domestication is rejected by a number of translation scholars (Venuti 1995; Berman 1985/2000; Benjamin 1969/2000), it still has proponents who believe in the supremacy of meaning transference (Nida and Taber 1969; Jakobson 2000). When a translator tries to transfer the source message to the target reader, due to linguistic and

metalinguistic differences between the source language and the target language, on the one hand, and the source culture and target culture, on the other hand, the translator inevitably adapts himself or herself to the target language and its literary system, but simultaneously the translator is affected by his or her own schema.

At the macro level, Murphy (1996, 97) and Ströh (1998, 25) suggest that organizational ethics, culture, values, and communication are strange attractors that form the deep structure of any chaotic system and set the boundaries for the system's activities and transformations (Leonard 2005). Within the field of translation, strange attractors are at work in shared vision or, as Chesterman and Arrojo (2000) call it, "shared ground" among translators, translation scholars, publishers, and readers. Shared vision as a strange attractor metaphor is something that emerges from involving agents within the system; it cannot be determined by leaders and their exercise of power (Fullan 2001, cited in Gilstrap 2005; Pascale, Millemann, and Gioja 2000; Stacey 1992; Morgan 1997).

4. COMPLEXITY SCIENCE AND A SYSTEMIC APPROACH

The plurality of agents and elements found in a translation network necessitates a systemic-based approach as a basis to take a more holistic look at the process of translation manufacture. Despite the major drawbacks associated with the deterministic aspects of systemic models in translation studies mentioned by different scholars (see Lefevere 1992; Pym 1998, 2001), the growing significance of translation in international communication systems and its critical value in shaping national identities calls for "a proper sociological analysis which embraces the whole set of social relations within which translations are produced and circulated" (Heilbron and Sapiro 2007, 94). Despite the wide application of social systems theory to the translational field, it is time to go beyond mere words and concepts. There is a general consensus among translation scholars that translation either as an action (product) or as an event (the sociological aspect of producing a translation product) is a complex phenomenon (Chesterman 2008; Hermans 2007). We need an analytical tool not only to describe the complex interrelations but also to propose a research framework that focuses on the dynamism of inter- and intrarelations, a tool that presents preferred ways of thinking about the organization of the world and at the same time fosters reflection and thoughtfulness (Kuhn 2008).

It is not our aim here to present a thorough analysis of systemic changes in the process of translation production at the global level.

The structure of the translation industry and translational networks is not the same all over the world; therefore, in order to develop a more precise look at the process of translation production, we should avoid generalizations. Agorni's (2007) proposed solution for avoiding such a generalization is "localism," that is, focusing on the local contingent conditions of each particular case. Localism had been introduced to translation studies through Tymoczko's work (1999) in the postcolonial context of translation. She believed that moving beyond gross generalizations toward sufficient specificity was necessary for future advancement in translation studies. It is at the local level that cultural, political, and social discrepancies between different translational systems all over the world are articulated, negotiated, contested, and defended (Tymoczko 1999).

Agorni explains that the aim of localism is to reduce the distance between the descriptive and explanatory approaches. Furthermore, "taking account of the complexity of dynamics of translation that present themselves in specific contexts" (2007, 126) is of prime importance in the sociological analysis of the translation industry.

In this article we look at Iran's translational network through the lens of chaos/complexity science. It is worth mentioning that complexity thinking is a qualitative research methodology that focuses on the interactions within an open dynamic system. Rather than looking from the *outside*, the researcher looks from the *inside* at what is conceptualized as a dynamically interacting system of multiple elements (Haggis 2008). The translational network needs to be treated as a dynamic entity. By focusing on interactions rather than static categories, complexity theory also makes it possible to consider different aspects of the translation process. Therefore, in the following section we attempt to look at the translational system as a chaotic complex system from a localized view. To this end, Iran's translational network is analyzed from this new perspective.

4.1. IRAN'S TRANSLATION INDUSTRY AS A CHAOTIC COMPLEX SYSTEM

Iran's publication rules are different from those of Western countries, since all of the publishing houses are under the supervision of the Ministry of Culture and Islamic Guidance. The process of getting a publication license is quite complicated. The Iranian translation network is not an *autopoiesis* (self-organizing) system; it is governed and controlled by external forces. As discussed earlier, a self-organizing system is not governed by top-down rules, so in Iran the translation network

is not a self-organized system. Authors (or translators) and publishers must negotiate the preview process of the Book Council of the Ministry. The choice of foreign works for translation in Iran is greatly affected by the dominant narrative (usually the political tendency). No book, whether it is original or a translation, is allowed to be published without first obtaining the approval of this governmental authority. The study of translated literature in Iran reveals that there are determining forces at play serving to remove traces of foreign, postcolonial, ideological, or cultural issues from the dominant narrative of the day.

In fact, censorship for localization is one of the Ministry of Culture and Islamic Guidance's most important responsibilities. It appears on the surface that translators in Iran are free to choose any topic for translation and submit it to the authorities for publication approval. There is no clear agenda for the selection of the materials for translation; however, there are hidden and unwritten rules for translators to follow. In fact, the authorities control and curb translators by censoring some parts of their work or rejecting their work altogether if they do not meet the prescribed criteria. As Haddadian Moghaddam (2012) has shown, some Iranian translators must censor some parts of their work to receive permission for publication. He claims that, in order to get their works published, Iranian translators employ multiple strategies, such as meticulous selection of titles and being more adaptive to the situation. As a result, this act of censorship may make translators either self-censor themselves or quit translation and become deactivated for some time.

Taking a local look at the macro structure of the different roles and players in the process of Iranian translation production, especially literary translation, it seems that translation studies is concerned with the politics and the politicization of translation. The Ministry is responsible for setting rules and regulations (attractors) that work as "magnetic powers" that dictate publication moves. These rules and regulations are in accordance with the cultural preferences of the dominant policy. However, in Iran's literary system, governmental publishers act as centripetal forces in the sense that their publications move toward the *centers* and dominant narratives; the private publishers that are more effective than their governmental counterparts sometimes act as center-fleeing, or centrifugal, forces. The dynamism of opposition between these forces creates a competitive ground in the national literary domain.

If we analyze the system in terms of dynamic processes and emergent phenomena, whether it is the translation of texts or the impact of

Dominant Ideology
(political power)

Top-Down Approach

Ministry
of Culture

Publishers

Translators

Readers

Emergent
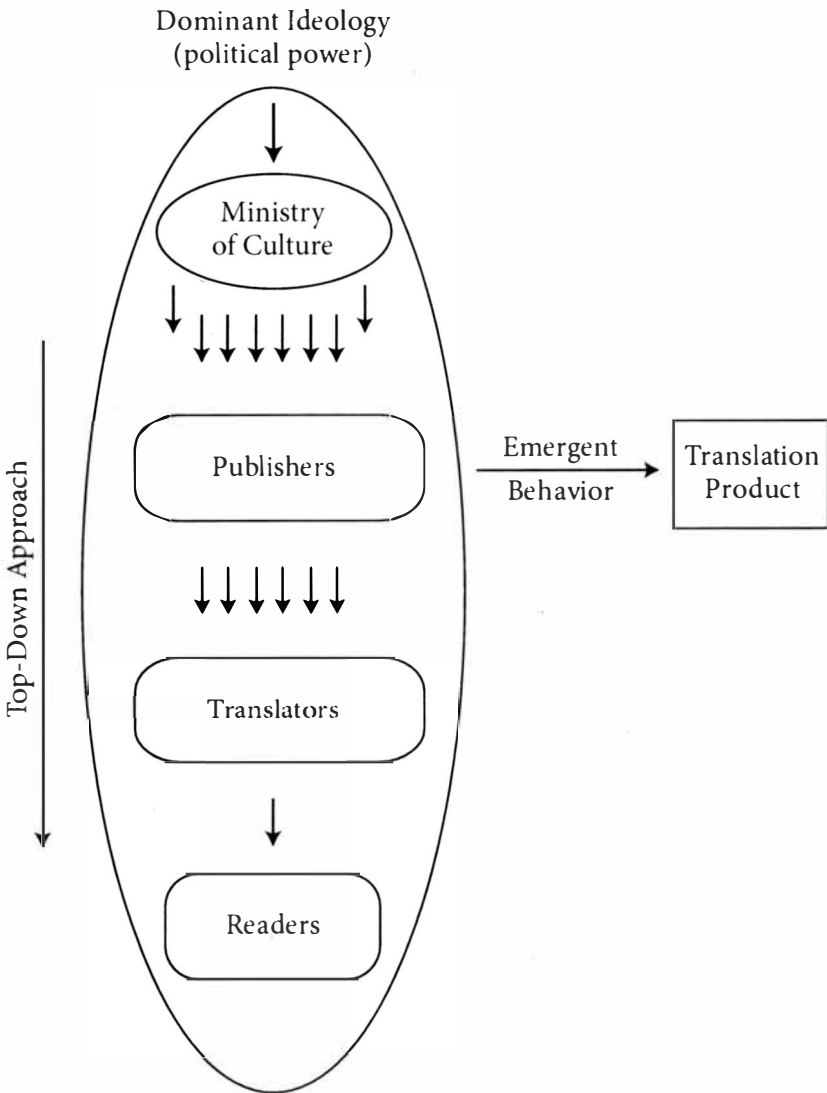Behavior

Translation
Product

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Figure 1. Iran's hierarchical translational network.

the translations, formal organizational hierarchy provides a starting point for identifying levels within the core translational system: publishers, editors, translators, readers, patronage, critics, and so on.

As figure 1 exhibits, Iran's translational network is not an autonomous and independent system; it suffers from instability in the general trend of the national literary system. This instability comes from dramatic change of the dominant ideology, that is, political orientations. Tyulenev's third paradigm, the "(γ) paradigm," viewed translation as an "autopoietic closure" (Tyulenev 2009, 155). According to his sociocritical (γ) approach, one of the critical aspects of the sociology of translation is the role of power relations in the process of translation from the very first step: the selection of works. The choice of the foreign works for translation, the changes, displacements, and censorship that the original texts undergo in the process of translation may form the emergent product of the system.

In this system publishers have some constraints in terms of text selection. Inevitably they impose these constraints on their translators. In Iran's translational network, the power relations are intertwined with political orientations. The governmental macro policy affects the ideological subsystem and ultimately the entire national literary system. Considering the hierarchical nature of Iran's translational network depicted in figure 1, all the involved *actants* (Latuor's term) are at the service of the dominant ideology, which is not necessarily the same as common sociocultural norms but is more associated with social and political orientations.

As already stated, the translation process is an open process in which the translator's own voice and idiosyncrasies intermingle with that of the publisher and reader. In a one-directional view, the Ministry of Culture dictates its preferences to publishers, publishers do the same with translators, and translators impose the final product on readers. This hierarchy follows a top-down approach (all the directions come from the top) in which authority bodies make decisions, providing guidelines for the whole system. Top-down network design is a traditional management style in which power is centralized in the hands of state policy makers. Complexity thinking prefers a participative bottom-up approach to an authoritative top-down approach. This preference lies in the fact that collaboration becomes much more efficient because team members within this approach work together more productively. In accord with chaos/complexity theory, order emerges from the self-organizing, bottom-up activity of a decentralized mixture of organisms (Bundy 2007). As Morrison maintains,

complexity theory can be, and has been, used prospectively, to pre-
scribe actions and situations that promote change and development,
e.g. one can promote the climate or conditions for emergence-
through-self-organization by fostering creativity, openness, diversity,
networking, relationships, order without control, co-evolution, feed-
back, bottom-up developments and distributed power. (Morrison
2006, 7)

Complex systems are in disequilibrium and have the potential to
evolve. A translational network (or system) must be far from stability
and equilibrium in order to break away from the restrictions of exist-
ing structures and to settle a new ordered structure. From a dissipative
structure perspective, an open dynamic system must be far from equi-
librium in order to receive negative entropy from its surrounding and
achieve self-organization and evaluation (Prigogine and Stengers 1984).
This disequilibrium can cause chaos and disorder among involved
agents and lead to a higher degree of freedom. The challenge of pro-
government publishers (as centripetal forces) and independent publish-
ers (as centrifugal forces) is very beneficial to Iran's translation industry.
It is a good challenge, provided that the external control and imposing
power are diminished. Iran's publishing field in general and translation
system in particular are under the direct control of the political power.
The government is supportive of writers who support their ideology
and provides monetary grants and better distribution facilities for them.
Under these circumstances, the system leads to equilibrium because
external control supports only pro-government publishers so that they
can compete with independent publishers, which are more influential in
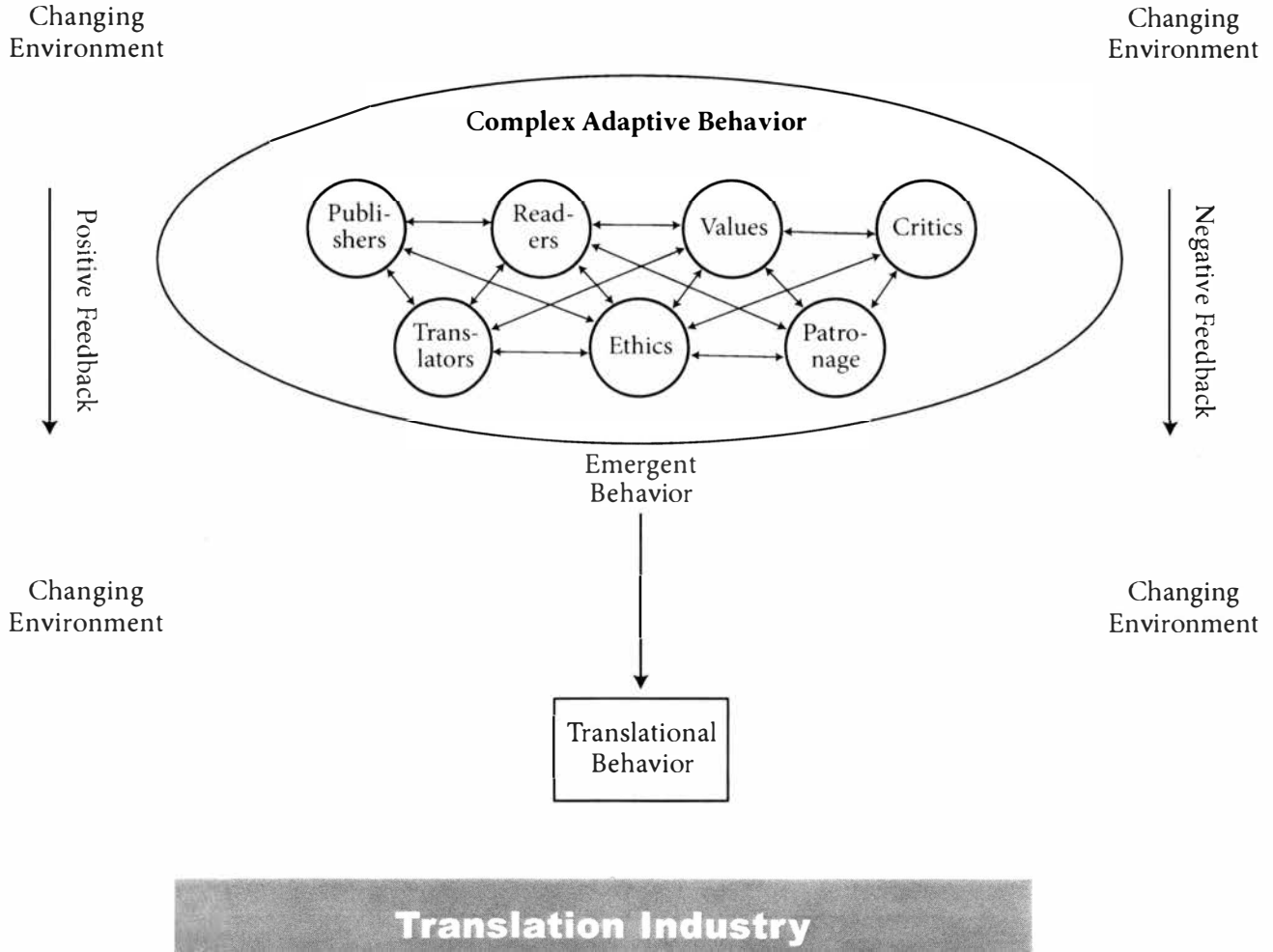Iran's literary field than their pro-governmental counterparts.

Taking up Even-Zohar's (1990) terminology, the institution as an
extra-literary power affects the repertoire, and the market provides the
consumer with an institutionally regulated repertoire (it can be a spe-
cific idea) in this top-down approach. Given the dynamic complexity
of the process of translation production, this one-dimensional scheme
seems naïve. In the Iranian translational network, the selection of novels
for translation has in general been made by translators themselves, so
the determining role of internal agents is undeniable.

Moreover, the Iranian readership is very intelligent. It has been
shown that, when the famous independent publishers are under pres-
sure and face harsh restrictions, readers do not welcome or appreci-
ate the products imposed on them. In fact, publishers and institutions
cannot make decisions without taking consumer tastes into consider-

ation. In the same vein, readers provide the translators with constructive and encouraging feedback (feedback sensitivity): publish more similar works or perish. Interestingly, some Iranian translators in the introduction section of the new editions of their works have alluded to the feedback the readers have provided them to improve the quality of their works in the upcoming editions/versions. For instance, the translator of *Pride and Prejudice* in his fourth edition of the translation added a short note to his introduction: "Now that the book has been reprinted due to readership's wide warm reception, it is necessary to thank all those who have enhanced the [quality] of the translation with their reminders, expressing opinions, encouragement, and denials directly or indirectly" (cited in Haddadian Moghaddam 2012, 171). According to chaos/complexity theory, the essence of chaotic complex systems lies in viewing them not in a hierarchical order but in a more horizontal, "chaotic way," where the individuals driven by simple rules are the basis of these chaotic complex systems. Complexity theory's frame of thought rejects the hierarchical organizations; instead, this system prefers the co-evolutionary framework of system dynamics. Relying on the basics of chaos/complexity theory, the scheme (see fig. 1) should change into the model shown in figure 2.

In this newly proposed model, the complex adaptive system of the translation industry encompasses various elements, such as publishers, translators, readers, critics, ethics, and values, as well as other related actants, such as economic, cultural, and political elements. The double arrows in the figure indicate the interaction between involving elements and the role of feedback regulation. Chaos theory explores how small disturbances multiply over time because of nonlinear relationships and feedback effects. As depicted in figure 2, low reception from readers affects the whole system. When the translator and publisher receive this negative feedback from readers, they try to avoid the loss of a considerable amount of time and money by adapting themselves to readers' tastes. The ultimate product of this mutual feedback is the emergent behavior of the whole system. Translations are not just the consequences of the causal discourse of translation; they also act as causes that produce effects. Complexity therefore suggests a shift from the habitual preoccupation with causes to a focus on effects (Byrne 2005). The translational behavior in figure 2 is not merely the translated literature but all the effects of translations on the literary system and ultimately on society.

Figure 2. Iran's translational network based on chaos/complexity theory.

Complex Adaptive Behavior

Publi-shers   Read-ers   Values   Critics

Trans-lators   Ethics   Patro-nage

Changing Environment

Changing Environment

Positive Feedback

Negative Feedback

Emergent Behavior

Changing Environment

Changing Environment

Translational Behavior

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According to Vygotsky (1978), society can shape people's cognition and mindset. People in different cultures act according to the norms of their own culture (attractor) such that after some time their behavior is shaped by the *habitus* they have already formed (Bourdieu 1989). Undoubtedly, chaotic systems emerge in places where the necessary infrastructure is well-prepared. This means that culture, as an overarching system, can let systems become open or closed. For instance, in a culture in which people have zero or low tolerance for uncertainty, systems become monologic, static, and closed.

As already indicated, ambiguities and uncertainties are indispensable elements of chaotic systems, implying that any system that is chaotic must have the mechanism to deal with these elements. Considering the Iranian culture in which people cannot stand complexity and ambiguity (Hofstede 1980), it is fair to say that Iranian translators unconsciously transfer these features to their translation, striving hard to find the exact and absolute translation. As Haddadian Moghaddam (2012) has noted, Iranian literary translators generally favor literal translation to avoid any likely misunderstanding, hoping to produce perfect and exact translations. Since translators in this culture seek the exact meaning of a text, they may easily become bored and demotivated when any obstacle in deciphering meaning arises.

In the same vein, this type of culture leads to linear thinking, which affects the way Iranian translators deal with the craft of translation at the text level. It seems that generally Iranian translators work through the text in a linear manner from the beginning to the end. This type of translation may impede the full interpretation of a text, distorting the message that is to be conveyed. It implies that Iranian translators may avoid the nonlinear strategies (e.g., sporadic translation of a text) of translation that are sometimes more effective, creative, and illuminating.

Moreover, since the publication process in Iran is so lengthy and burdensome, involving a great deal of prescriptions and proscriptions, translators who want to be paid must translate in a way that is more accessible and adaptive to meet the required standards; hence at the textual level their agency is constrained (Haddadian Moghaddam 2012).

In the end, it should be emphasized that open systems cannot be dynamic and effective under all circumstances. For instance, in a country such as Iran with a collective culture and an educational system still in the modern era, open and interactive systems might not work effectively. In this type of context, centralization, transmission, and behaviorism are

prevalent from the primary years of education through the tertiary level, with students accustomed to didactic teaching and learning. The modern educational system of Iran seeks uniformity to find the best ideas and ideals (Pishghadam and Mirzaee 2008). The prevalent dominance of absolutism in Iranian culture impedes interaction and dialogue between various agents and elements.

In such a closed, centripetal, and collective context, translators do not see themselves as individual entities; they feel themselves to be members of a larger group who should be faithful to the upper-level power. It seems that, since the required infrastructure is not ready, even if the system becomes open for translators, they may not be able to adapt themselves easily with the interactive, dynamic, and autonomous nature of the system. Thus in this kind of system culture should change toward being more individual and interactive to get full use of chaos/complexity principles.

5. Conclusion

There is a general consensus among scholars that translation either as an action (product) or an event (the sociological aspect of producing a translation product) is a complex phenomenon (Hermans 2007; Chesterman 2008). We need an analytical tool not only to describe the complex interrelations but also to propose a research framework that focuses on the dynamism of inter- and intrarelations (Kuhn 2008).

Utilizing chaos/complexity theory as an analytical tool, this study takes a new look at the process of translation. Despite the limitations of a systemic approach, the plurality of involving elements, on the one hand, and the growing significance of translation phenomena, on the other, may call for a more holistic analytical framework. We seek to begin to define possible agendas for further research toward such a framework.

In this study Iran's translational network is conceptualized as a chaotic complex system in which the authorities in charge play the policy-making role. Regarding the large amount of literary translation publication (nearly 60 percent of all publication), literary translation is of paramount importance for Iran's publishing field. The translation industry as a complex system includes a large number of components that need an attractor to play a pattern-making role for subsequent actions. A competitive top-down approach in the translational system is no longer at work; it should be substituted by a participative bottom-up approach.

In the past, political policy makers dictated some rules and regulations on publishers and translators, but nowadays readers' preferences

influence higher agents such as publishers. In fact, if we look at translation through a lens of chaos/complexity theory, the role of the translator is more emphasized than in the previous systemic-like theories such as translatorial action (Holz-Mänttäri 1984).

This study provides us with some implications. First, according to chaos/complexity theory, researchers and theorizers in translation studies should avoid either/or notions, focusing more on complementarities. This means that we cannot find the "best" type of translation; in fact, translation is something relative that is context-bound, changing from time to time and place to place. Therefore, translators are expected to be bias-free, allowing more room for criticism of their own works. Second, it should be emphasized that translation is not just the product of a translator; it is a teamwork in which many people cooperate to achieve the final result. Third, according to chaos/complexity theory, translation is a dynamic system in which the translator self-organizes himself or herself. Translation should not be considered a static entity that cannot be changed to a better one. Fourth, based on the findings of chaos/complexity theory, we can claim that the process of translation moves from disorder to order, meaning that, while translating a work, order is not something to be imposed; it emerges in the course of time. The translational system is not only a subsystem but also what Hermans (2007) called a self-referential (self-organizing) system. The powers at the top of the hierarchy of a literary system should respect the self-organizing dynamic system of translation and not restrict the scope of this communicative event with some counterstrategies, such as censorship. When we examine the case of Iran's translational system, we come to this point that, despite all the privileges of open systems, the essential prerequisite should be fulfilled before this transformation.

In the end, it should be mentioned that, since this is the first attempt to apply chaos/complexity theory to the field of translation, we hope that other researchers employing this new theory can provide a good ground for further research in this area.

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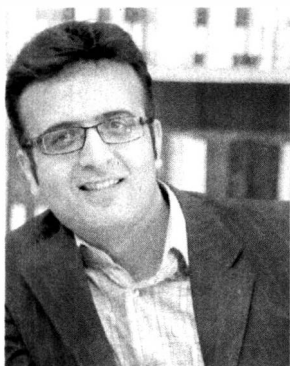
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