From Adaptation to Survival: Metaphoric Ecology in Translation and Language Systems

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Abstract: This study investigates how ecological ideas can be translated into language and translation depending on the interrelation between linguistic and cultural systems. The aim is to investigate how metaphoric eco-translation and ecolinguistics help in comprehending the complexity of translation and language sustainability. The study concerns the metaphorical extension of ecological principles such as adaptation, selection, and survival to translation and Haugenian ecolinguistics that theorizes languages as dynamic beings crafted by social, cultural, and political environments. By adopting the narrative review approach, the current research incorporates theory and literature from authors including Michael Cronin, Gengshen Hu, and Einar Haugen to analyze how translation contributes to linguistic diversity, language-environment relations, and parallelism between linguistic and ecological systems. The results indicate that metaphoric ecology provides understanding on minority language maintenance, linguistic diversity, and intercultural communication by means of translation. While metaphorical in essence, these approaches also have implications for ecological challenges. As an initial intersection between natural science and humanities, metaphoric ecology emphasizes the need for interdisciplinary approaches in tackling contemporary issues of language and cultural sustainability.

1. Introduction

While the term ecology is common in environmental discourses, its roots are in biology, where it still refers to the studies of researchers on organisms (including animals and plants) residing in their natural environments (Bennett, 2017). Such biological basis tends to emphasize the intricate relationships and systems that sustain life, therefore focusing on how living beings adapt to their environments and interact within it.

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Said that, one cannot help but notice that through the ages ecology has, even beyond its biological origins, found fruitful applications in a multiple of other disciplines outside the natural sciences. It is no exaggeration to say that almost every other field of inquiry has at some point in time adopted an approach or perspective prefixed with *eco-* or rooted in ecological angle. From the hard sciences to the social sciences, humanities, arts, and technology, *eco* is one of the most flexible and popularly applied conceptual devices. The universal reception of *eco*, in terms of vocabulary, underscores the universality of ecological principles in coming to terms with, and addressing, the challenges of our edgy, interconnected world. It depicts a shift toward collective synthesis in which the boundaries between fields blur, and an ecological basis for thinking serves as a common framework for addressing complex, global issues such as climate change, biodiversity loss, and social inequality. Hence, it would be indeed daring—but not inaccurate—to claim that, today, hardly any other discipline has not been touched by the influence of ecological thought.

Indeed, metaphor is, perhaps, the most simple and effective way for ecological concepts to travel across disciplines. Metaphors are bridges that facilitate translating complex ideas based in natural sciences into accessible and interesting frameworks for all fields of study. The power of metaphor lies in its ability to make the unfamiliar familiar, and so ecological thinking, in metaphoric terms, could infiltrate fields as far apart as literature, economics, education, and technology. When framed in metaphorical terms, ecological ideas become not only more understandable but also adaptable and, in turn, a means for interdisciplinary conversation and innovation.

The intersection between ecology and language has, in most cases, begun very metaphorically and has gradually evolved towards the structuring of a more interdisciplinary approach. This current study, then, aims to explore metaphorical permutations within the concept of ecology in modern linguistics and translation studies, how these metaphorical innovations have evolved, and if any of them, somehow, have become structured, nonmetaphorical frameworks over time. By adopting the narrative review approach, the current research incorporates theory and literature from authors including Michael Cronin, Gengshen Hu, and Einar Haugen to analyze how metaphoric ecology contributes to linguistic diversity, language-environment relations, and parallelism between linguistic and ecological systems.

2. Metaphoric Ecology
2.1. Metaphoric Ecolinguistics

The major intersection of language and ecology is, no doubt, indebted to Einar Haugen's (1971) seminal work, in which he first introduced the concept of *language ecology* as a metaphorical framework. Haugen defined the ecology of language as "the interactions between any given language and its environment" (p. 325), and with this definition, he was able to connect the two points: environment and language, through an extremely powerful metaphor. The framework constructed by him in the 1970s saw languages in the light of living organisms, similar to biological organisms, which interact with one another in ecosystems. Just as plants and animals adapt to their ecological niches, languages evolve, thrive, decline, or even perish depending on the social, cultural, and political environments in which they are embedded.

The ecology of language contact in its widest sense addresses the diversity of languages, how this diversity has been formed, the development of minority and majority languages and the relationship between them, contact languages (pidgins and creoles), language continuity, change (language shift), extinction and revitalization, language planning. Questions such as why speakers adopt or even develop new languages and what contextual factors play a role in this process are part of the research in this field. (Penz & Fill, 2022, p. 235)

The metaphor of language ecology, given by Haugen, emphasizes the dynamic and interdependent relationship between languages and their surroundings. It stresses, more than anything else, how external factors such as language contact, multilingualism, power relations, and social attitudes profoundly affect the vitality, sustainability, and evolution of linguistic systems. So, languages in multilingual contexts may compete for supremacy, coexist with complementary functions, or even coalesce in the manner in which species relate within an ecosystem. Likewise, the survival or decline of a language comes about through political policies, cultural prestige, and the societal attitude toward linguistic diversity, mirroring environmental changes affecting the survival of biological species.

Early work on metaphorical implications has set the stage for some crucial understanding of the complex dynamics between languages and their environments. For instance, Mühlhäusler (1997), in his book *Linguistic Ecology: Language Change and Linguistic Imperialism in the Pacific Region*, explored the ecology of languages in the Pacific and drew attention to unique problems faced by indigenous languages in these regions. His work highlighted how factors such as colonization,

globalization, and linguistic imperialism have disrupted traditional language ecosystems, leading to language endangerment and loss. Through the metaphoric lens of ecology, Mühlhäusler (1997) demonstrated just how interconnected Pacific languages are with their environments and how various external impacts can threaten their vitality and sustainability. As such, Mühlhäusler (2011, 2000, 2003) further advanced Haugen's insights by looking at the paradigmatic structural similarities between linguistic diversity and biodiversity: just as biodiversity is essential for the health of ecosystems, linguistic diversity is central to the resilience and adaptability of human cultures.

Similarly, Haarmann (1986), in *Language in Ethnicity: A View of Basic Ecological Relations*, explores the relationship between language practices and group identity. Language is considered a basic marker of ethnic identity, with its continuity or decline being closely tied to social and cultural processes of the communities involved. Haarmann's ecological viewpoint demonstrated the interdependence of language and identity, illustrating the fact that linguistic diversity actually extends beyond mere communication to deeper cultural and social ecosystems.

Denison (1982) went a step further in explicating the ecological metaphor for multilingualism in Europe, showing how languages coexist, compete, and interact within a common geographic and cultural space. His work puts to light the competing complexities of language contact, policy, and power dynamics in constructing the linguistic ecology of Europe. In framing multilingualism as an ecological phenomenon, Denison illustrated how species of language, just like species of animal in a given habitat, either adapt to or influence one another.

The sum of these studies, taken together, traces a clear path toward demonstrating that languages are, in fact, living entities, closely and intimately related to all of their environments. Also, these findings argue convincingly that linguistic systems cannot be analyzed and interpreted in isolation, but must, rather, be positioned into large contexts of their social, cultural, and political ecosystems. This perspective was what created the shift in the language study, as it contemplated the language endangerment and language revitalization problems, putting it under consideration as a means for identity construction, and establishment of power relations. Such earlier works revealed the concept of languages being living systems composed into ecosystems and opened the field to better nuanced and interdisciplinary linguistic research, where ties and connections between language and environment hold center stage. This perspective has indeed laid the ground for more holistic and inclusive approaches to language research, synthesizing some insights from ecology, anthropology,

sociology, and political science, and inspiring the researchers to investigate certain parameters describing interaction, giving rise to the multiple studies such as *ecolinguistics* and *sociolinguistics*.

2.2. Ecolinguistics beyond Metaphor

Building on Einar Haugen's metaphorical work in language ecology, a number of well-known linguists have further explored the interrelationship between language, ecology, and society. They have expanded upon his ideas and continued to explore how the language reflects but also forms our understanding of the environment, biodiversity, and human-nature interaction.

Fill (2001), for instance, drew attention to the role of language in creating discourse surrounding the environment-how it frames perception and interaction with the natural world. The work of Fill suggests that language is rendering powerful environmental issues—which are now being shaped inside the public domain and are hangups against the policymaking process. By scrutinizing environmental discourse, he furnished grounds for either facilitating or obstructing ecological sensing through language or continuing to endorse harmful anthropocentric perspectives.

Halliday (2012) took that non-metaphoric road further by investigating how language constructs and sustains anthropocentric assumptions—a way of perceiving the world that favors humanity above and apart from nature. Halliday critiqued the linguistic patterns that reinforce the idea of Humankind as superior to the non-human, claiming that such languages allow for environmental exploitation and degradation. He advocated for alternative linguistic practices that would encompass more ecocentric perspectives, allowing for the positioning of humans as equal to and not above nature. Halliday's work laid the groundwork for critical ecolinguistics, a subfield that examines the role of language in shaping ecological attitudes and behaviors (for more information about critical ecolinguistics see Alexander & Stibbe, 2014; Penz & Fill, 2022; Steffensen & Fill, 2014; Stibbe, 2014, 2015, 2021).

2.3. Metaphoric Eco-translation

Similar to *language ecology* in linguistics, a metaphorical application to ecology has arisen in translation studies, namely, the notion of *translation ecology*. This concept was first introduced by Michael Cronin (2013) in his book *Translation and Globalization*, where he explored the role of translation in the context of globalization and its impact on minority languages. What was put forward by Cronin is that

translation serves the role of a valuable mechanism for the protection of the linguistic diversity of minority language communities. He reflects on "the role of translation in giving minority language speakers control over what, when, and how texts might be translated into or out of their languages" (Cronin, 2017, p. 2), framing translation as an ecological process that sustains and nurtures linguistic and cultural ecosystems.

In this line of thought, Cronin's metaphor of *translation ecology* draws parallels between the ecological principles of balance, interdependence, and sustainability and the dynamics of translation practices. Just as biodiversity is essential for the flourishing of ecosystems, in similar fashion, the vitality of linguistic and cultural ecosystems is sustained through the circulation and exchange of texts via translation. Contrary to the conventional stance equating translation merely with a linguistic activity, it thus becomes a cultural and political act affecting the very essence of the survival and development of languages, especially with regard to those minor or marginalized communities.

Bringing ecological metaphors into translation elucidates unequal relations of power operative in global translational practices. In other words, dominant languages put pressure on minority languages and their speakers, thus creating an imbalance in what gets translated and who makes the decisions about the processes of translating. As a result, translation ecology advocates for an equitable and sustainable practice of translation in which speakers of minority languages can be empowered to control their languages and cultures' representations and the dissemination thereof.

Notably, this metaphorical framework has opened new avenues for research in translation studies, encouraging scholars to apply ecological metaphors to the study of translation processes and practices. A duly recognized great milestone is the birth of Eco-translatology in China, pioneered by Hu Gengshen (2020). This approach integrates ecological principles into translation studies, offering a fresh perspective that views translation as an adaptive process within a complex ecosystem. By adopting ecological metaphors, Eco-translatology draws on Darwinian terminology such as *adaptation*, *selection*, and *survival of the fittest* to analyze the translational environment and the dynamics of translation. In doing so, it provides an alternative framework to theories like Polysystem theory (Shread, 2023), emphasizing the interplay between the translated text and its surrounding environment.

Eco-translatology treats translation as a holistic, inclusive process that embraces aspects such as the source and target texts and the greater linguistic, cultural, and social contexts upon which translation touches.

One prime strength of Eco-translatology, thus, consists in its capacity to capture the complexity of translation by providing an appropriate *translational environment*. It explores how translators adapt texts to the new environments so that they may survive and be relevant in the target culture. This approach considers translation not as mere linguistic transportation but as the dynamic interaction of many elements, i.e., the source text, target audience, cultural, and social condition of both source and target environment.

What is more, Eco-translatology considers the roles and positions of different agents involved in translation: the author of the original text, the translator, the commissioning client or institution, and the readers or audience engaging with the translated text. Eco-translatology offers more insights into how any translation comes into production and how it gets circulated and received by bringing in an analysis of the relationships and negotiations of these agents.

The exploration of metaphoric eco-translation in China has indeed seen significant advancements, with scholars such as Xu Jianzhong (2009), Wang Ning (2011), and Xiaohung Jiang (2015) making substantial contributions to the field. Xu, for instance, attempted to encompass all variables of the translation environment by dividing it into natural, social, normative, and interior environments (Farahzad & Ehteshami, 2018). Therein, Jianzhong Xu proposes a structured way of viewing the static and dynamic variables of translation. He stresses the web of relations between external and internal variables, approaching translation as, ecologically speaking, an integrated process.

That said, the metaphorical exploration of translation ecology is in fact wide in nature and, besides from China, it attracts numerous scholars worldwide to apply similar conceptual frameworks in their analysis of translation complexity. For instance, Clive Scott (2015) was the first to use the very term *eco-translation*. In so doing he highlighted the open-ended, foraging nature of the translator's task, the sense of reading as an act of inhabiting the source text, and the treatment of the target text as a material object in the real world of reading (Cronin, 2018). This type of eco-translation reflects the translators' activity in terms of searching or going for what exists and what they bring along from their home to an outside territory: their source texts and the target texts live inside the physical and cultural world of the readers. This conceptual view matches the ecological approach that highlights interplay among the translator, text, and the environment through which translation travels.

Arturo Tosi's (2013) work, *Translation as a Test of Language Vitality*, as another metaphorical appeal, frames translation practices within the

European Union as a "linguistic ecosystem" (p. 13). Through this conceptualization, the author puts his interest in investigating translation as a mode of linguistic diversity maintenance and vitality in a multilingual setting. By his metaphoric approach, Tosi explains the interplay of translation in balancing and interacting with languages in a shared cultural and political space, like species living together in a ecosystem.

Just like the previous case, Beebee et al. (2017) have applied general ecological concepts to examine the cultural environments surrounding literary translation. Their work explores how translations are shaped by and contribute to the cultural ecosystems in which they originate and are eventually received. By focusing on the interplay between literary texts, translators, and cultural contexts, they demonstrate how translation functions as a dynamic process of cultural exchange and adaptation.

In a more recent contribution, *The Ecology of Translation, or The Translator as World Author*, Alex Ciorogar (2021) argues that "Translatorship—understood, here, in terms of an ecosystem—connects the imaginary and fictional world of a text with the real worlds through which it voyages" (p. 317). Within Ciorogar's conceptualization, the translator functions as an agent within an extensive ecology, mediating between the imaginative universe of the original text and the real worlds into which the text travels. This perspective stresses how the translator mediates between the cultural and linguistic divisions of source and target, thus ensuring that the texts stay relevant and meaningful in other environments.

Taken together, these scholars reveal the versatility and global appeal of ecological metaphors in translation studies. Putting forth translation as an ecological process, they point out the interrelation of linguistic, cultural, and social parameters which influence translation practices and outcomes. Such explorations of metaphors serve not only in clarifying the process of translation, but also affirm the role translation can have in conserving cultural diversity, encouraging intercultural dialogue, and coping with the dilemmas of globalization. This way they support the importance of ecological thought as a valuable perspective on understanding the ever-changing nature of translation.

2.4. Eco-translation beyond Metaphor

Beyond the metaphorical applications of ecology in translation studies, the concept of ecology has also been employed in a more literal sense, where ecology itself becomes the object of study within the context of translation (Shread, 2023). Such inclusion of ecology in academic discussions of translation can be traced back to 1988. At that time, Peter Newmark (1988) brought to light the fact that translators were faced with challenges arising from the variety of natural environments and regional landscapes. Herein, it can reasonably be inferred that eco-translation might be interpreted "as a translation that recognizes and retains ecological themes from the source text" (Bradley, 2021, p. 1). Seen in this light, Josefina Coisson and Guillermo Badenes (2015) defined three contexts within which eco-translation operates: rereading and retranslating works where nature's voice in the source text was silenced in translation; translating works that present an ecological awareness and have not yet been translated; and translating by manipulating works that originally lack an ecological awareness to create a new, ecologically inspired text.

Ecology, which is becoming an important field in translation with the increase in scholarly work, reflects a growing awareness of the role of environmental themes and problems in literary and cultural translation. Such researches study how different aspects such as landscapes, flora, and fauna, and indigenous knowledge are expressed, maintained, and conveyed in languages and cultures, which, in turn, emphasizes translation as an instrument to raise ecological consciousness and sustainability.

As described by Arjmandi and Ehteshami (2025) in their recent paper, *The Role of Paratexts in Raising Ecological Awareness: A Case Study of the Persian Translation of Animal Farm*, translation could potentially create a whole new perception among readers regarding the ecological messages by strategically using paratextual elements. The idea suggested in this study is that while making changes to the text itself could potentially bring along many challenges like the translators having ethical problems to confront along with translation inaccuracy, paratexts would present itself in a more fluid and less invasive form that would guide the reader toward ecological awareness.

Said that, Michael Cronin's (2017) take on the subject of eco-translation is an important leap in the domain, going far beyond thematic issues concerning ecology, encompassing a wider and more general view of translation itself as a means of making sense of both humans and non-human interactions. His approach is deeply rooted in the framework

of *political ecology* (Robbins, 2019), which encompasses the social, cultural, political, and economic factors that affect human relationships with each other, other organisms, and the physical environment (Cronin, 2017). He considers these relationships as inherently translational, seeking to integrate "all forms of translation thinking and practice" (Cronin, 2017, p. 2) into a unified vision that addresses the ecological crisis and promotes a planetary democracy (Cronin, 2020).

Cronin's bigger picture encompasses the concept of the *tradosphere*, which he defines as the collective sum of all translation systems on the Earth (Cronin, 2017, 2022). He elaborates that this encompasses "all the ways in which information circulates between living and non-living organisms and is translated into a language or a code that can be processed or understood by receiving entity" (Cronin, 2017, p. 71; 2020, p. 89). Hence, translation does not stop with human languages, but includes the many semiotic processes by means of which all communication and interaction among living things occurs in nature. Cronin's concept of eco-translation aligns closely with *biosemiotics* (Arjmandi & Ehteshami, 2025), a field that studies the production, transmission, and interpretation of signs and codes in living systems (for more information about biosemiotics see Kull, 2023; Kull & Torop, 2011; Marais, 2018; Marais & Kull, 2016; Marais et al., 2024).

3. Ecological Metaphor

It is primarily with metaphors that scholars were able to relate the nature of the ecological systems to those of linguistic or translational processes. However, over time, the initial metaphors were refined and greatly enlarged in structure to give birth to more systematic approaches.

At first glance, the idea that metaphorical ways of language and translation might appear separated from the present ecological and environmental urgencies is misleading. Having said that, they are intertwined fascinatingly in their linkages to actual ecological issues. What makes this connection particularly compelling is how it encourages us to think about language in terms of sustainability. Language ecology metaphor suggested by Haugen draws attention to the fact that languages function like ecosystems through diversity and balance. "The normative orientation" in this approach, as Alexander and Stibbe (2014) state, "is towards protecting and enhancing the status of minority or endangered languages" (p. 108). Efforts to revive endangered languages are akin to conservation projects, aiming to protect and nurture something precious before it is lost forever. This parallel is elaborated on terms of *sustaining language* in Fill and Penz's (2007) collection of essays, where they place

language diversity as a form of ecological sustainability. Every language indeed carries unique ways of seeing and understanding the world, and losing a language is akin to losing a piece of humanity's collective wisdom. To this end, as Alexander and Stibbe points out (2014),

> there is language which encourages people to behave in ways which preserve the physical ecosystems that support life, 'language which is life sustaining'. … Fill and Penz's (2007) collection contains essays both about the influence of specific forms of language on (real) ecosystems, and on 'language ecology', which focuses on the preservation of linguistic diversity. … Those writing on 'language ecology' claim that there is a relationship between linguistic diversity and biological diversity. (p. 108)

In many ways, language ecology in its concern for the preservation of minority languages fits in perfectly with Michael Cronin's (2013) notion of translation ecology. Though translation ecology springs from a metaphorical background, it directly influences real ecological sustainability. In this perspective, translation is not simply an act of language but an act of ecology. By translating texts from minoritization or endangered languages, translators work against linguistic mainstreaming, making it possible for the different voices and perspectives to survive and circulate.

What makes these metaphorical appeals to ecology particularly significant is their ability to bridge the gap between the sciences and the humanities, forming an interdisciplinary field of study that integrates ecological principles with linguistic and translational research. "Natural science have for long been placed in opposition to Human science because the former have always been ascribed with objectivity and the latter with subjectivity" (Naderi & Tajvidi, 2023, p. 52). On the other hand, with geography as the only exception, the social and human sciences have gradually separated themselves from the natural science (Cronin, 2017). The erasure of the division between human and social sciences on one hand, and natural sciences on the other, is particularly relevant and urgent in addressing the environmental crisis we face today (Arjmandi, 2024). An interdisciplinary convergence is essential because the environmental crisis is not merely a scientific or technical problem; it is a deeply interconnected issue that spans ecological, social, cultural, political, and economic dimensions.

These metaphoric approaches, as Shread (2023) argues, would create a different space for exchange and collaboration that cuts through two traditionally separate domains of an interdisciplinary field of study between Science and Humanities. This very interdisciplinarity, when

merged with the whole other spectrum of language, translation, and environment, opens up further possibilities to embrace, appreciate, and analyze the interwoven contexts of relationships. These initiatives, then, align closely with Michael Cronin's (2020) vision of "the need to orient knowledge to different ends" and the re-evaluation of "the infrastructures of knowledge," (p. 100), emphasizing a transformative approach to understanding communication within ecological contexts. While it differs from ecological studies in the literal sense, according to Arjmandi and Ehteshami (2025), metaphorization nevertheless serves as a middle stage in *the ecological turn* in the humanities if such a turn is to come about. In the act of doing so, metaphorization would be taken both as theoretical ground and a call to action: to help us imagine and build connections that are meaningful among language, culture, and environment.

4. Conclusion

An exploration of ecological metaphors extending into translation and linguistic systems reveals a deep and evolving connection among ecology, linguistics, and translation studies. What started as a metaphorical bridge to connect ecological principles with linguistic and translational processes has developed into a strong interdisciplinary framework responding to some of the most pressing concerns of the day: endangered languages, cultural diversity, and environmental sustainability. The metaphorical application of ecology in these fields not only creates a deeper understanding of language and translation, but also offers a perspective with which to study the interrelated nature of human and natural systems.

Ecological metaphors in linguistics and translation studies opened up a world of new uses in the establishment of an interdisciplinary dialogue. The concept of language ecology by Einar Haugen was the first such metaphor, which viewed languages as living organisms interacting with their environments in ways similar to biological ecosystems. This metaphor gave space for scholars to examine the dynamic and interdependent relationships of languages to their social, cultural, and political environments. Extracting from the ecosystem context, researchers could find a better understanding of language contact, multilingualism, language shift, and language endangerment. After that, others, such as Mühlhäusler (1997), Haarmann (1986), and Denison (1982), picked up this metaphor of language ecology, expanding upon it and shaping it by applying principles from ecology to explain the survival, decline, and revitalization of languages in a variety of contexts.

In a similar vein, Michael Cronin's notion of translation ecology has become a powerful explanatory framework for understanding the range of

roles through which translation may actively support the preservation of linguistic and cultural diversity. Drawing on the ecological principles of balance, interdependence, and sustainability, Cronin understood and highlighted the unsymmetrical power dynamics imprinted on global translation practices, advocating for a more equitable practice of translation. Such a metaphorical framework inspired further research, including the development of Eco-Translatology in China, encompassing ecological principles into translation studies, regarding translation as an adaptive process within a complex ecosystem.

The metaphorical use of ecology throughout these disciplines has not just aided in rendering complex concepts more lucid; it has also urged theorists to consider language and translation from a perspective of sustainability. As biodiversity is critical to the wellbeing of ecosystems, linguistic diversity is also essential to the resilience and adaptability of human cultures. Revitalization efforts in endangered languages appear to be very much like conservation initiatives to protect and nurture something precious before its final demise. This analogy of the sustainability of language with that of ecology highlights the importance of preserving minority languages and the unique worldviews that such languages carry.

Perhaps among the more remarkable contributions of ecological metaphors in translation and language studies is their unique quality in fostering a knotted connection between sciences and humanities. As such, they facilitate an interdisciplinarity in the interplay between science and humanities, providing an open ground for dialogue and cooperation. Such interdisciplinary aspects allow for a wider outlook in properly understanding the nexus between language, culture, and its interconnected environment.

Today, the environmental crisis is not just a scientific or technical problem, but rather an extremely intimately connected problem, encompassing ecological, social, cultural, political, and economic aspects. Thus, to deal with this crisis, one needs to develop an interdisciplinary approach based on the common ground of ecology, linguistics, translation studies, anthropology, sociology, and political science. Such an approach will become more powerful when based on the use of ecological metaphors, which allow scholars to think of language and translation in terms of sustainable development and interconnectedness.

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