(Re)framing Human Critical and Creative Skills:

A Semiotic Approach to TNE in The Age of AI

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Abstract

This chapter presents the argument for the use of semiotic principles in the task of reimagining pedagogies for the age of AI. The challenges identified in the public debate around emerging AI technologies touch upon the matters of Otherness, conflicting constructions of truth, and the matter of fixed versus constructed meaning, which are also prominent questions for Transnational Education endeavours, marking the entanglement of those two areas of enquiry. Part 1, presents an overview of the semiotic critique of AI; part 2, discusses how some core postulates from Semiotics, such as the semantic description and the idea of semiotic modelling, are relevant in pedagogical contexts both in the construction of prompting skills and as an important pillar to navigating the challenges of translation and cultural differences at the core of Transnational Education projects.

Keywords: Semiotics, Semiotic Description, Semiotic Modelling, Discursive Interactions, Critical Pedagogy, Transnational Education, Intercultural Translation

Introduction

In a recent article published at *The Conversation*, Anthony Grayling and Brian Ball (2024) interrogate the fundamental role Philosophy has to play in the age of Artificial Intelligence, by highlighting the entanglement of early AI theories with various philosophical traditions, in a critique that echoes a sentiment, among the Humanities and Social Sciences, that there is more than Tech to the debate around emerging technologies. Through their reference to the works of Allen Newell and Herbert Simon, we can refine this observation to the entanglement of AI with classic Linguistics, drawing a parallel similar to the one identified by Jean-Guy Meunier (1989), when he argued that, more than a programme processing numbers, AI is a form of "applied semiotics". Classed by Dario Compagno (2023) as a "Deleuzian" or "Barthesian" entity, AI is essentially a meaning-marking programme: created and operated through natural and artificial languages, it only knows the world through discourses, is trained from existing discourses, and prompted, through discourse, to produce new discourses. As a system operating through a textual apparatus, Large Language Models mirror Juri Lotman's (1990, 2009) understanding of culture as a complex network of texts, and the matter of cultural exchange as a chain of translations.

Artificial Intelligence's reliance on written text is symptomatic of the same phenomenon in Western culture and its knowledge production, in a logic in which "written culture" becomes synonymous with all accepted knowledge. Whether that means the encounter of different cultures and natural languages, or the interaction between "natural" and "artificial" forms of intelligence, the relevance of a Semiotics of text for both the Western academic system and Transnational Education (TNE) contexts is pronounced. Some of the key areas in which this theory can contribute to the construction of meaningful pedagogic practices are the matters of intercultural translations, the mediation between competing knowledge and meaning systems, and the contrasts between process and product, and lived experiences and their representation.

With its goal of bringing education across national borders, TNE as a pedagogical project as well as an area of enquiry will face challenges that are necessarily rooted in the problems of communication and meaning. In that context, the introduction of mainstream AI technologies can work as a force helping mitigate existing difficulties through creativity, while it can also widen existing gaps of both access to tools and information, and longstanding power relations that are deployed primarily through language. The first step in that discussion is to reflect on the meaning of the prefix “Trans-” as *across*, *beyond*, and *through*: “Trans-” practices worthy of their name are not simply about geographical mobility, but must contain in themselves a plan for *overcoming* what it prefixes. Thus, at its semantic core, TNE must strive to surpass, rather than superpose the idea of “nation”, promoting diverse practices that aim at constructing professional skills that equally transcend this concept of border, equipping future professionals to a globally—and not nationally—organised world.

On the one hand, the sensationalism surrounding the introduction of new AI tools and the inflamed reaction from its critics reignite familiar challenges. The long tradition of Post-colonial theories (Cf. mainly Bhabha, 1994; Buruma & Margalit, 2004; Hall, 2018, 2019; Lévi-Strauss, 1952; Said, 2003; Spivak, 1999) and the interrogation of power relations, bias, identities, diversity, and unique perspectives in knowledge created widespread awareness of the challenges of intercultural exchanges. In such a light, AI and TNE are entangled through the same points of tension and conflict: the polarisation and binary reactions they invoke, and the discursive relations of Otherness, with the capital O, constructed around ethnicities, nationalities, religions, languages and, today, the possibility of hyper-intelligent technologies that could potentially replace humans. Such discursive relations serve as a screen in which existential fears are projected: both the possibility that Others are dangerous, with no morals or appreciation for “our” culture and ways of living; or, the anxiety about opportunities and resources being taken, and the erasure of our cultural practices if Others are integrated. In such a light, the polarised public opinion around AI is a repetition of existing discourses around the

mobility of subjects across nations: a dynamic in the public sphere in which one side sings excessive optimism narrowly focused on the benefits of AI tools to human society, or the angst for human jobs, skills, and the destruction of “our” culture.

Like television, the personal computer, the web and, more recently, live streaming and video communication platforms, it is only a matter of time before AI is fully embedded in educational settings. In the same manner our pedagogies learned to adjust and incorporate new technologies in constructive ways that support innovation and best practice, they also adapted to create a meaningful environment for the exchange between cultural traditions, in the context of TNE, finding strategies to mitigate the resistance to Others in monocultural environments. Today, it is the encounter between two forms of “intelligence”—despite the controversies on whether or not AI “deserves” its name—that requires a response in the realm of education.

Marshall McLuhan (1964) observed that every technology we embrace is the origin of “self-amputations” that require us to readjust the ratios of our senses. Invoking the 115th Psalm, “They that make them shall be like unto them”, McLuhan concludes that those who “behold” technologies conform to them, and not the other way around. That statement intuitively informs the speculation about whether prompting AI will be the “future of work” and the increasing awareness about the role of the *prompter*—the person who creates and deploys the commands to generative AIs—and the specific skills they will need to embody as central questions both for education and the market. Beyond the learning of technical languages that enable the serial production of high-level outputs in text, image, and sound, the prompter will need skills, typical from the Humanities and Social Sciences, which ensure the understanding and production of symbols, alongside the ability to distinguish the blurred lines between reality and fantasy. Thus, pedagogical practices across disciplines—and not only in the Creative Industries—must intentionally address the realm of experience and interpretation at the core of semiotic theories. In the case of TNE, this urgency is aggravated, when we reflect on the matter of existing Large Language Models as a “creation” of the English Language and Anglo-Saxon culture, which

carries in itself the danger of replicating, multiplying, and amplifying existing discursive power structures that are not conducive to diversity.

With its rich conceptual framework and interdisciplinary nature, the value of semiotic theories and concepts to the navigation of an emerging cultural context becomes evident: not only does Semiotics offer a vast theoretical apparatus to describe and analyse cultural manifestations, such as Artificial Intelligence itself, but those tools contain in themselves the method to reconstruct the most definable traits allowing one to simulate those manifestations. Through its foundations in Logic and Mathematics, Semiotics is the closest point of intersection between the Social Sciences and STEM subjects as a “mirror discipline”. Such tools, besides supporting a critique of technologies and their socio-cultural implications, can open up the possibility of proposing new uses, through Semiotics, that will unlock dialogues and intertranslations between human and artificial intelligences.

In Part 1, the chapter will present an overview of classical and contemporary semiotic concepts that have been used to analyse AI (Cf. Baudrillard, 1981; Greimas, 1976, 1983; Jameson, 1992; Leone, 2019, 2024; Walsh-Matthews & Danesi, 2019), or that could potentially support a creative inclusion of AI in education and work, avoiding the fatalistic narratives in which AI replaces human work through the erasure of human skills. Part 2 continues my previous scholarship in Creative Education addressing the reversal of semiotic concepts as tools supporting pedagogical practice (Jardim, 2021, 2024b), focusing on the tools of semiotic description (Greimas, 1986; Greimas & Courtés, 1992; Hjelmslev, 1966), semiotic modelling (von Uexküll, 2013), and discursive interactions (Oliveira, 2013) and their potential to promote more effective interactions with AI. I will explore the opportunity of using these postulates in the project of cutting through existing linguistic and cultural barriers, and the focus on collaborative and interdisciplinary learning built from and for the context of Higher Education and Transnational Education settings.

Part 1: Semiotics and the Critique of AI

The prevalence of the written word in Western culture and epistemology makes the very idea of Artificial Intelligence in the model we have today emerge not so much as something "new". Rather, it is an automated culmination of a cultural model that privileges mechanisms typical from informational culture: binary languages, algorithmic models, mathematical certainty. The encounter of those values with the apparatus of written natural languages enables the creation of an automated tool that can produce, from the foundation of those values, the translation of written natural language into natural language outputs, still or moving images, and sound.

The creation of something "new" as a resignification of existing forms is another reiteration of the world imagined by both Jean Baudrillard (1981) and Fredric Jameson (1992) in their theories of *simulacra.* Beyond Walter Benjamin's (2008) concerns around the copy that devalues the original, Baudrillard and Jameson identify the presence of copies *without* an original, or images that don't need a referent, having the ability to exchange in themselves. The ubiquity of the fake (Leone, 2023), which includes the possibility of producing posthumous "genuine originals" by renowned painters (Collas-Blaise, 2024), requires us to do more than classifying AI creations as simulacra: as the parameters of what *can be true* or *genuine* must be expanded, Baudrillard's concept of *hyperreality* as a "more real than real" invites us to question the extent to which the world of imprints (of things, but also of ourselves) can replace the real world. These theories have been exhaustively discussed in their potential to create "images of the Other" as simulacra dictating how nations and their inhabitants are perceived (Cf., for example, Hall, 2018, 2019). Such a case exemplifies the importance of understanding the separation between the "real world" and the interactions occurring through imprints, which can be self-created or imposed through media images (Cf. Jardim, 2024a).

The blurred lines between reality and simulacra, however, expose the extent to which concepts such as "truth" and "lie" are malleable, and constantly evolving to accommodate new collectively partaken truths. Algirdas-Julien Greimas' (1976, 1983; Greimas & Courtés, 1992)

theory of veridiction precisely outlines that, beyond the scientific desire for an ontological proof, truth is a problem of discourse projections and contracts between an Enunciator, or the discursive position of the one who utters the discourse, and an Enunciatee, the discursive position of the one who receives, decodes, and interprets the message. As new contracts of truth and falsity are agreed between collectives of Enunciators and Enunciatees, products of speculation which, if taken literally, are false fabrications, can become new truths. In his analysis of imaginary animals, from 19th-century poetry to contemporary speculative biology, Leone (2024) proposes the term *verifiction*: a wordplay combining "veridiction" and "fiction", it describes the mechanism enabling the imaginary or unreal to become a "realised reality". As a product of literary Science Fiction, AI itself is a paradigmatic case study of verifiction, in its trajectory from fantasy to theory to reality. In what could perhaps be an instance of "meta-verifiction", one could argue that what, today, is read as falsities produced by AI when it is being "inaccurate" or "inventing facts", could be evidence of AI's ability to speculate the future realised realities. Rather than submitting such creations to the hard binary of "true or false", we can observe that every truth we accept today was, once upon a time, a falsity, a fabrication, a figment of a scientist's (or poet's!) imagination.

Simulacrum and verifiction are concepts denouncing the chasm between creator and creature, showing the ability of creations to acquire "lives of their own", especially today, when they can rapidly hit the viral realm of the web. Although commentators and companies prefer to focus on the grandiose milestones, such as Sakana AI's "fully automated open-ended scientific discovery" announced in 2024[1], smaller-scale versions of this dynamic are already in place when it comes to search engine algorithms and similar models used to read job applications, news articles, or academic journal databases. Because language models are used to index and

[1] See Sakana AI's announcement from the 13th of August 2024 https://sakana.ai/ai-scientist/. The news has been extensively shared on social media with strong negative reactions highlighting the potential implications for research careers as well as the production of knowledge itself.

search these—and many people are now using tools such as ChatGPT, Claude, or Copilot to summarise content when they are doing research work—there is a concern, on the part of those who expect their work to be found, read, and cited, that texts must be written in an AI-friendly format for optimised discoverability. Logically, the best way to ensure this is by putting AI in charge of writing at least parts of texts in a way that it can be found and used by other AI. Even though humans are the ones (allegedly…) in charge of the prompting, this creates a dynamic in which AI is producing manifestations of itself for itself, in a logic that simulacra literally exchange for themselves among themselves.

However, as impressive (for better or worse) as AI products can be, their functioning as reiterations of familiar figures of existing cultural texts also means that they are entrapped in the dynamics of fixed meanings explored by the early Linguistic traditions, such as in the works of Vladimir Propp identified by Meunier (1989) as one of the origins of AI theories. Thus, the essential discussion of *semiotic modelling*, a concept emerging from Jakob von Uexküll's (2013) biosemiotic theory, plays a role in identifying that our interactions with AI are exchanges between different *baupläne*, meaning a unique set of attributes *and* limitations from which it operates. Stéphanie Walsh-Matthews and Marcel Danesi (2019) argue that, although artificial and human intelligences are not equivalent, it is important to acknowledge that AI also possesses its own *bauplan*.

Reflecting on such concepts is critical to expanding the discussion of AI beyond the binary situation in which humans either "use" and "dominate" this technology, or are "surpassed" and "phased out" by it. To reach that point, one must align with the developments of contemporary semiotics, in which meaning is no longer understood as a fixed relation, being instead something that is *constructed* or *generated* through intersubjective relations. Accepting that open-ended generations of meaning are possible is key to understanding how the unique subjective attributes of AI can open up another range of possible *inter-actions*, in which AI's

unique “sensibility” can become a partner in the intersubjective process of generating meaning alongside the unique sensibility of human, natural intelligence.

An emblematic example of such semiotic theories of communication is Ana Claudia de Oliveira’s (2013) model of discursive interactions: starting from the notion of *coded sense* as one of four possible regimes governing communication, her work introduces the possibilities of sense also being *governed*, *felt*, or *random*. In classic Linguistics and early Semantics and Semiotics, coded sense corresponds to the domain of pure, “correct” semiosis: the matching of a form to its fixed, predetermined meaning. In this model, there is a strict hierarchy, like in the classic communication theory models, in which the Enunciator is in charge of the enunciation and the Enunciatee merely processes the marks left by the Enunciator, in a prescriptive manner (Oliveira, 2013, p. 246). In this regime, communication is unidirectional and coercive: the decoding of meaning is commanded, and consists of the reconstruction of a given meaning—no room for creativity or generation in such a system! It is possible to see the extent to which this discursive regime is the expectation for AI models: an executor of commands who understands the difference between “true” and “false” meanings and symbols, and does its best not to “invent facts” (or draw humans with too many fingers…)

Furthermore, it is not difficult to see the extent to which this regime of communication was already an increasing presence in the recent context of HE and Research, in the form of educational dogmas inherited from specific disciplines, which is particularly prevalent in STEM and the Life Sciences but not uncommon in the Social Sciences and Humanities—especially with the recent focus on employability and entrepreneurship as the “mission” of university programmes. In the specific context of TNE provisions, specialist dogmas go hand in hand with a particular ethos from the provider institution, which responds to national practices and visions around specific subjects, academic rigour and innovation, and what forms of knowledge are “acceptable”.

Yet, one of the most defining questions around coded sense is language itself, in its ability to “play us”, and the extent to which the mastery of a language system can create relations of inside and outside and hierarchies around who is allowed (or not allowed) to “have a voice”. In transnational, as well as interdisciplinary contexts, this theory permits us to identify the accumulation of linguistic codes one must master to exchange horizontally with the peers who are “native” of those systems: not only national natural languages, but generational, epistemological, technical, and, in the context of AI, artificial coding and programming languages.

However, in the other three regimes identified in Oliveira’s model, communication can be bilateral—thus constituting interactions *de facto* between the utterer and the interpreter. Her model distinguishes between *having sense*, or significant situations in which the meaning is extracted from a message, and *making sense* when the Enunciator and Enunciatee become partners or co-creators in generating the meaning of the message which is not predetermined, but open, processual. Nonetheless, the reduction or erasure of hierarchies in bilateral communication does not mean complete symmetry: similarly to the exchange between different cultural systems, the interactions between human and artificial intelligences constitute a problem of translation, even when the interactions occur through a common language such as English. For Juri Lotman (1990), the core of translation is the necessary *untranslatability* of languages: to translate is to force languages to become equivalent where they are not. In his theory, this certain degree of *incompatibility* is the primary condition to the production of meaning through dialogue: if both spheres are perfectly compatible, communication is easy but useless; however, it is also possible that complete incompatibility renders the exchange impossible.

Although both in the context of TNE and in the companies developing AI programmes the goal seems to be one of erasing incompatibilities, creativity and generation of new forms are essentially impossible without a degree of difference. To an extent, the crisis faced today with

dogmatic and formulaic professional practice across all sciences and in education and research is closely related to the attempt to decrease incompatibilities through high specialisation and strict norms on what debates are “acceptable” in an educational context. In AI’s specific case, the primary goal of companies perfecting Language Models has been to make these as “accurate” as possible, shaping a vision of this technology as perfect mirrors of our aspirations—effective executors or replicators of *existing* human forms. Although such a vision can serve a purpose in a project of mechanistic replications, the total compatibility would mean the loss of potential meaningful forms emerging from a genuine dialogue between artificial and human intelligences.

The production of simulacra, the manipulation of truth, semiotic modelling, translation, and the possibility of open-ended exchanges between different cultures as well as human and artificial intelligences are some of the key propositions that can guide a critical discussion of AI technologies beyond the binaries marking the public debate today and, hopefully, inform a meaningful inclusion of those technologies in the context of TNE and Pedagogy in general. In Part 2, I will explore some of the key tools that can contribute in that direction, by presenting semiotic procedures that can be reimagined as pedagogical tools to support best practices both in education and professional utilisations of AI tools.

Part 2: Semiotic Principles in the Dialogue Between Education, Work, and AI

Semiotic Description

Rather than a system of processing numbers, Meunier argues that AI processes physical symbols—a thesis that removes AI from the realm of material technology and inserts it into the semiotic theory (Meunier, 1989). Although the debate around AI, 35 years in, still focuses largely on the Computer Sciences, Large Language Models (LLMs) are essentially entities manipulating syntax and semantics by applying computational processes over them, which, for Meunier, consists of nothing more than “applied Semiotics”. Meunier’s argument is visible in today’s AI landscape, in which the use of such tools seems to be divided into the creation of

crude outputs that are obviously not made by humans (and also obviously not up to standards, whatever the task), versus the terrifyingly polished, “better than human-made” outputs that are the protagonists of the terrors of machines replacing our jobs.

Contrary to the prevalent discourse, this abyss is not so much created by the quality of the programme, the dataset used to train the model, or computational power: it is primarily the skills of the prompter—whether “natural” and “intuitive” or intentionally learned and deployed. What Meunier (1989) calls “symbol”, following Allen Newell’s (1980, 1986) vocabulary, consists of an instance that must be syntactically structured and semantically interpreted. In other words, what that would mean for users is an intentionally applied ability to understand the mechanisms behind certain structures (syntax), so as to conceive and communicate them through prompts, and the ability to interpret abstract meanings and values (semantics). The first step into producing effective commands, however, is to develop the ability to read the real world, which is in essence the objective behind the classical principles of semiotic description. The ability to translate symbols to a vocabulary that is readable to LLMs, as well as to manipulate symbols so as to construct variations of existing forms is a type of creative skill that can be learned through the structural understanding of manifestations: in essence, to learn how to read semiotically contains in itself the ability to manipulate, semiotically, that same class of manifestations. Beyond the project of alchemising users from the crude side into professional prompters, understanding this mechanism can also facilitate the emergence of new zones of AI use that could be of value in pedagogical settings, utilising such programmes not to “produce work”, but as add-ons that can assist the learner (rather than replacing their efforts).

Greimas and Courtés (1992) outline the definition of description, which, contrary to *discovery*, is the act of intentionally making classes of ordered operation visible, in an exercise that approximates logic and calculations, culminating in the construction of a new descriptive language. While a user’s intuitive contact with AI approximates the random aspect of discovery—trying things out and seeing what the machine can do, to then either “approve” of it

or not—to intentionally develop and apply a scientific descriptive language is a form of creating a common language between artificial and human intelligences. Besides serving the professional aim of strengthening the skills of producing high-standard outputs, learning to generate prompts in a controlled, pedagogical setting, can offer learners an enhanced awareness of how language can be manipulated both culturally and as a scientific descriptive language. In the specific context of TNE, such an understanding is crucial not only in offering learners a first contact with scientific descriptive languages but in a hands-on, experiential understanding of how everyday natural languages differ from constructed languages—such as the vocabulary of a specific study area—allowing both tutors and learners to more easily distinguish language-specific biases from the identification of contrasts and differences as a necessary step of description.

Louis Hjelmslev's project of a theory of language was one of elaborating a procedure of description as a form of calculation providing tools permitting one to describe or recognise a given text and the language in which it is constructed (Hjelmslev, 1966, p. 29). The role of analysis, on the other hand, is one of examining an object through the homogenous dependencies of other objects on it and over it reciprocally (Hjelmslev, 1966, p. 44). In simpler terms, this process starts with a series of divisions of a manifestation as well as the resulting parts, in a process of unfolding the object. As more divisions unfold, the description can be enlarged, so as to accommodate and register the new dependencies uncovered by the new levels of division (Hjelmslev, 1966, p. 45).

This procedure originates an understanding in contemporary Semiotics which distinguishes it from other Social Sciences: rather than a method "applied" to a given research object or subject, the principle of semantic description causes the theory and the object to mutually shape one another, as more levels are added to the complex of analyses. One could risk an argument that this particularity of Semiotics is at the very foundation of Machine Learning, in which the expansion of a data set and the training of the model mutually increase

one another. In semiotic terms, as chains of divisions are identified and the relations of interdependence between the parts are uncovered, the object “grows” by uncovering new layers of relations and interdependencies that emerged from the analysis, in a process that must continue until no more divisions are possible. Such an image can inspire a new vision of Pedagogy in which knowledge is a processual and open body which continues to grow as learners learn; in turn, the process of engaging with knowledge through division and unfolding is what increases the skills of the learner—rather than the unilateral “computation” of new data, from tutor to student.

One crucial notion in this theory uniting Semiotics and the very idea of “models” is that the function of description—both in the semiotic analysis and in prompting—and its resulting categories do not refer to the “real world”, but to mediating simulacra (such as written text and images). Rather than sense itself, what is being described is an *effect of meaning* which is gaugeable only through the text. In simpler terms, to read something or look at an image, we are interacting with a surface layer which communicates an “impression of reality” produced by our senses (Greimas & Courtés, 1992, p. 116). The same is true when the problem of a dynamic dimension affecting the agents in a text is introduced: such layers of the manifestation refer to simulations of actions or fabrications that can refer to inner or outer worlds. These significant micro-universes are ones of habit and permanence, and the message only constitutes elements that are more or less familiar—expected outcomes which, in the context of AI-generated outputs, are judged through the category “true vs false”, used to determine whether AI is “telling the truth” (e.g. “repeating known facts and concepts”) or if it is “inventing facts” (e.g. “fabricating” or producing “nonsense”). As messages based on the repetition of familiar figures, both nonsense and fabrications are still based on the familiar, such as the well-known essays that follow the *appearance of* academic rigour and correct referencing but attribute statements to authors randomly or, in the visual realm, the various images of animals with too many legs.

According to this logic, to produce effective commands, the prompter must rely on an existing frame which is already implicit in the manifestation and enables description as an operation making those categories explicit, by making a “concrete logic” evident. In an extremely complex argument, Greimas (1986) sheds light on the entanglement between the message and the apparatus for describing it: a verbal text is *at the same time* the message; the implicit structure or mechanism that makes the message possible; and the necessary tools to describe and analyse that given text. In essence, this observation matches Campagno’s argument that AI is the means and ends of discourse in one: its outputs and the Large Language Model itself are the message, the structure, and the necessary tools for its analysis. In a nutshell, the process of description constitutes a form of “translation” of implicit givens into an explicit model, in which the different elements contained in the manifestation shift from one into the other and back.

When read in reverse, the intricate processes of description proposed by Greimas are essentially a step-by-step supporting the construction of effective prompts. First, the suppression of discourse: so that a simple isotopy can appear, the surface dimension of discourses must be eliminated. This operation breaks down discourses into an inventory of messages, so that the parts constituting the system, rather than the complete manifestation, are visible. We could explore the example of prompting the image-generating tool Midjourney to “imagine a sunset”. This very simple prompt will allow the programme to come out with its own idea; as Midjourney’s model was trained with high-level, aesthetically masterful artistic and photographic artefacts, the result will likely be an enthralling photographic or pictorial representation of a sunset that reiterates traces of existing art recognised as beautiful. From the perspective of discovery, governed by the logic of chance, the user may be fascinated by the machine’s ability to create a beautiful image.

However, the prompter can go further and use the steps of description to decompose their mental image of a specific sunset, using the procedure to translate their abstract idea into

a realisable prompt. Although the chance result might be extremely satisfying to a US- or UK-native user, whose taste will be culturally attuned to the type of image Midjourney produces, the expectations and needs of a user outside of that cultural milieu might be frustrated by the more or less predictable type of image the programme will create. To mitigate this challenge, the apparatus of Plastic Semiotics proposed by Algirdas-Julien Greimas (Cf. 1984), Jean-Marie Floch (Cf. 1985, 2001), and Ana Claudia de Oliveira (2004) can offer the user a grid for refining their vision and extracting the elements that will ensure a more exact command.

Besides the elements of verbal description applied to the visual—for example, the specific medium (photography, painting, drawing, lithography, print, and so on), the specific geographic location, temporalities (in the past or future, in a specific season)—Plastic Semiotics offers the tools to identify visual contrasts in the form, colour, composition, and matter, which signify abstract semantic contrasts. The description of those *formants*—the minimal unit of visual texts—allows the user to decompose images in a visual inventory of messages, understanding how each class of visible contrasts (for example, light vs shadow) signifies a semantic contrast (for example, visible vs invisible, good vs evil, open vs occult, and so on). The results of this exercise can offer an insight into what systems of value are contained in the image and the specific emotions or meanings they are representing. By reversing the formula, this understanding can then be used to either replicate a system of values, or to translate one system of values into another.

By decomposing and analysing their own mental image, the user can decide what kind of medium (photography, painting, drawing), perhaps a particular style (of a specific painter, era, or traditional pictorial style), or go as far as training the model using their own work in drawing, painting, or photography as a style reference. Likewise, the user could try for a sunset in a specific location—the skyline of a specific city, or the horizon of a beach or forest at a given location—and command the specific colours of a season. Furthermore, they can control specific

significant contrasts (for example, a grey sky with a bright pink sun, or that the sun should be on the right, on the left, high or low in the image) that can help them convey a specific message.

All of these are possible “sunsets”: submitting a mental image to a division through a semiotic description allows the user to effectively translate the aspired mental image into a common language, which can permit the introduction of culturally specific elements that are not familiar to the LLM, but that can be *simulated* through a wise verbal description that works on the structure of the desired output. Furthermore, understanding the mechanisms through which images are constructed and how they represent specific systems of values can support users in creating images that translate, visually, from one system of values into another. Beyond prompting “imagine a sunset in traditional Japanese painting”, which would only mimic the pictorial style, understanding how visual signification is linked to deeper meanings would permit users to genuinely express a system of values, and not only its superficial appearance. Rather than repeating what a particular cultural style would look like, it would be possible to create visual translations that show “this is what it would look like in my culture and language” or “this is what your culture and language look like for me”.

Finally, the aim of description is the reduction of sequences to the state of unique units, in an operation ensuring that the body of descriptive denominations is coextensive with the givens that made them possible (Greimas, 1986, pp. 139-140). To illustrate this point, while it could be my choice to create an “abstract”, “non-figurative” or “deconstructionist” sunset, the prompt must ensure that at least one of the sequences remains grounded in familiar figures. In simpler terms, something in the image must link it to a similar class of images (in this case, other representations of sunsets). Understanding the various classes contained in a manifestation, and learning how to isolate these through description, allows the prompter to intentionally innovate by selecting what classes must remain familiar and what can be completely changed.

But a more valuable feature of this operation is the possibility of isolating familiar figures that can cut through nationally and culturally constructed meaning, by finding what structural elements constitute points of intersection between superficially different manifestations. In that sense, the fast computation operated by critically skilled prompters can become a tool for producing symbols that, through the reiteration of existing, familiar figures, can mediate the encounter of diverse cultural spheres in the production of new symbols that share elements of both spheres: an indeed *trans*national form of communicating and co-creating.

Semiotic Modelling and Bilateral Communication

The goal of semantic descriptions is to intentionally formalise the procedure of *semiosis*: an almost automatic operation of decoding, which we all do on autopilot, especially when faced with the levels of information overload in a screen-dominated reality. When we do semiosis, we reconstruct the entanglement of a form with a conventional meaning to produce a sign, to resort to the rawest definition, found in Ferdinand de Saussure (1922). As might be suggested above, our ability to instantly decode meanings allows us to sort through information rapidly but also allows for biases and learned cultural assumptions to be processed without our immediate awareness. Semiotics, on the other hand, presupposes a certain intentional, methodological doing, which aims at more than “finding out the meaning”: a semiotic analysis focuses on uncovering relations and modelling reality, rather than simply decoding it. To understand *how* meaning is generated—rather than simply mapping it through identifying relations of form and meaning—is what allows concepts to be reversed into tools that can replicate and even manipulate the meaning of a message.

One of the first challenges for those creating and using AI technologies is that the conventional meanings contained in a language are often taken for granted. Verbal language is not simply an interface for prompting: it is a culturally specific language, which contains a unique worldview that is far from being “universal” or “neutral”. For the prompter to both grasp this problem, and to learn how to translate culturally-specific language into a meta-language could

be the key to training LLMs in stepping out of a single point of view of Anglo-Saxon culture and Western scientific languages, opening up the models to “think” in other languages, as well as from other scientific systems—for example, Confucian or Vedic traditions. A similar problem is faced in TNE where, even when courses are partly delivered in the students’ native language, the world view informing curriculum and assessment design belongs to a specific culture and operates from that modelling.

Understanding that modelling is more than finding equivalent words in a superficial translation is key in harnessing the differences between AI and Human intelligence: recognising that each organism, form of intelligence, tradition or knowledge operates from a specific modelling requires us to include language and cultural perceptions as fundamental pieces of a subject’s *bauplan*, whether the entity is human or technological. In my recent work on interdisciplinary education (Jardim, 2024b), I draw from the concept of semiotic modelling utilised in the context of Edu-semiotics (Cf. Yu, 2017). Although the biosemiotic concept of *bauplan* focuses on biological signs, I argue that language, culture, and professional qualifications also act as added perceptual “filters”, which allow us to apprehend certain sections of reality while dismissing others as irrelevant or incorrect (Jardim, 2024b). Although these are learned ways of seeing, they nonetheless limit subjects in different directions and, like McLuhan’s postulates on technology, cause subjects to conform to practices and propositions conventionally understood as correct.

However, rather than a clear, limited inventory of possible permitted and interdicted operations, both human and machine *baupläne* are complex systems which, like Lotman’s cultural spheres, can at times collide and at times intersect. In the TNE classroom and in the interactions with AI, natural Language—in the present case English—is one of such intersection points between spheres. In those contexts, however, the lines between a culturally specific system with a pronounced *bauplan* and a common “neutral language” are dangerously blurred. It has been remarked by critics that, despite the wide availability of AI tools in different

languages, those models still “think” in English (Cf. Stokel-Walker, 2024). Furthermore, the cultural corpus used to train those models—photographs, art artefacts, literature, academic journals, news, and even content produced by social media users—predominantly belongs to an Anglo-Saxon milieu both in language and cultural and epistemological orientation.

Here, the concept *bauplan* is fundamental in understanding that the availability of a tool *to be prompted* in a different language does not mean that the *interaction is occurring in that language*—a similar challenge faced by a translated curriculum or course material, or in interactions in English in which the Enunciatee is not a native-speaker. Any non-native English speaker will be familiar with the struggle of grasping for words that name concepts that, pure and simply, *do not exist in English*—and, vice versa, grasping for words in their native language to name things that only exist in an Anglo-Saxon cultural environment. Thus, beyond the already well-discussed issues with AI cultural biases and the widely publicised efforts of mitigating them, untranslatability and cultural incompatibilities of languages raise important questions around access and equal opportunities—in essence, the distance between being native to a linguistic and cultural system and, thus, having the ability to make the best use of the nuances of this system when learning or prompting AI; versus being subjected to multiple translations imprinted in the content, their own mental images, and the translations performed the process of learning or prompting.

Although a subject may develop a computational language fluency—meaning the mastery of grammar and vocabulary sufficient to read and write, listen and speak—or make use of automated translation tools to compensate for that skill, these are not the same as the fluency in the specific modelling of the language, which contains a series of second-degree meanings or connotations that are a fundamental part of communication. Furthermore, those who are native to that system seem to be oblivious to those issues, since they are immersed in their own *bauplan*. Both in the context of TNE and in the critique and inclusion of AI in these contexts, semiotic modelling reminds us that the efforts to mitigate biases emerge from the fixed point of

Anglo-Saxon culture. In other words: one can aspire to curb biases from a technological tool or a curriculum, but that does not imply, strictly speaking, a wider opening to and genuine inclusion of other cultural systems. As such, even in its efforts to address its own biases, AI tools—by means of its own *bauplan*—can only rearrange or reverse existing cultural clashes[2].

The solution, at a large scale, lies in a genuine inclusion of other cultural paradigms, and not merely their effect of sense through translation—an expensive and herculean endeavour which is unlikely to see the light of day, given the popularity of the existing tools inside and out of the US. Thus, the structural understanding that comes through engagement with semiotic description and the study of specific semiotic modelling can play a role in pulling apart and working around the linguistic challenges and the widened access gaps the existing LLMs create for learners and professionals who are not natives to the English language, while also permitting users to close the gap by learning how to structurally recognise and mitigate gaps in understanding that originate in linguistic incompatibilities, even when they lack the computational fluency.

Furthermore, reflecting on the challenges of modelling and the incompatibilities it creates leads us back to the problem of bilateral communication and the need to see beyond coded sense if we are to make a meaningful inclusion of AI in educational and professional contexts. In my previous work on Creative Education, I argued for the importance of classroom interactions governed by “felt sense” (Jardim, 2021): a mode of communication through mutual awareness (Oliveira, 2013) as an engine for supporting student engagement and commitment, and

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[2] To exemplify an instance in which the mitigation of negative biases produces the opposite of the bias, see the article “From Black Nazis to female Popes and American Indian Vikings: How AI went ‘woke’” published by *The Telegraph*. https://www.telegraph.co.uk/news/2024/02/23/google-gemini-ai-images-wrong-woke/ The article sheds light on how the desire to curb racist and sexist biases from AI programmes culminates in humorously inaccurate representations of past events that, nonetheless, reflect present goals of equality, diversity, and inclusion. Rather than a genuine engagement with other cultural systems, those “false” artefacts reflect a view of EDI (or DEI, in US English) that is typical of Anglo-Saxon modelling.

overcoming cultural and language barriers in transnational settings. In any interactions with the Other—human or technological—felt sense requires us to step out from communication relations in which sense is commanded, to embrace co-presence and co-creation in the experience of meaning. In such a model, the goal is the interaction itself: the process, not the product. In terms of educational use, the emphasis on the act of interaction is extremely valuable, in which the *contact* with LLMs, or with others through the mediation of LLMs, can become an engine of bilateral discovery—as the contact itself, just like in the case of intersubjective interactions, is an instance of mutually enriching "training".

An existing example of felt sense in the interactions between AI and users is the English language correction tool Grammarly. Unlike the autocorrect tools embedded in text processing apps like Microsoft Word or Apple Pages, Grammarly engages the user in the process of correcting text by offering expanded cards that explain the suggestion. In the long run, the user is being taught the computational or algorithmic dimension of the language—what combinations are possible and not possible, what is conventionally correct or incorrect, what is accepted by the selected audience, and so forth—instead of automatically delegating the correction to the programme. Similarly, the user can generate their personal preferences (of location, for example, to receive correct national suggestions for US, UK, Canadian, Australian, or Indian spelling) and personal vocabulary, by including words and expressions they no longer wish to be considered an error. In this situation, the more the user engages with the programme, the more mutual learning is achieved, with the user increasing their algorithmic skills and the programme gaining cultural, technical, and subject-specific knowledge in the process.

On the other hand, the theme of fabrications and "errors" also invites us to reimagine existing standards. Another discursive regime proposed by Oliveira (2013) is *random sense*, a mode of communication in which the utterer and the receiver change positions, going beyond the limits of fixed roles and meanings. A realm of genuine creativity, it is the place from where new ideas emerge, which are often considered as nonsensical, absurd, and rebellious. More

than an exclusive feature of temporally new manifestations, what is “new” because it is “unfamiliar” can also destabilise the firm foundations of coded sense, causing discourses to be perceived as random, fabricated, or erroneous because they deviate from conventional meaning.

In transnational contexts, it is easy to overlook the extent to which the unfamiliar often comes across as false and carries negative values. Again, because random sense is bilateral, the issue affects both the Enunciators—the tutors delivering the content, the learners producing outputs in response to it—and the Enunciatees—the tutors assessing outputs, the learners “receiving” the content. In this delicate dynamics, embracing random sense expands the limits of both subjects, opening up the possibility of receiving the “erroneous message” as *difference*. That step, then, ignites the process through which a common language is found, and the error can be seen as correct from the perspective of another language system or another *bauplan*. When it comes to AI’s outputs perceived as fabrications, we can begin to see these as traces of emerging behavioural, ideological, or epistemological patterns.

In the case of human creativity, it could be inferred that innovation is always “false”, because it introduces that which is not a reiteration of familiar forms. The “fake forms” produced by AI, as well as the “remixes” of concepts and theories emerging from diverse cultural contexts, can be read as a challenge to existing codes, and a removal of limitations on what is possible. On the one hand, culture itself, as an ongoing continuum of memory and reality, contains in itself its own perspective of what is plausible and what isn’t: to “change the world”, one must push the boundaries of this continuum, introducing points of disruptions. As much as felt sense is a key to creativity and to the mutual enrichment of artificial and human intelligences as co-creating partners, random sense is the key to the possibility of creation: to create is necessarily to colour outside the lines, and novelty is almost always a *fabrication*—it is the emergence of something that didn’t exist yet; thus, it cannot be verified using static categories of right and wrong, true and false, plausible and implausible.

Conclusion

The introduction of ChatGPT in 2022 and the rapid appearance of more mainstream LLMs were the source of an extremely polarised public debate which seems to mirror the invention of the photographic camera in the 1820s. Two centuries apart, the reactions to those inventions are identical: on the one side, the ones who fear that a new tool will be the end of skills, professions, and cultural forms; on the other, the ones who believe that technology would be the source of a new freedom, which would permit us to explore existing skills and create new forms. In retrospect, we can see that the optimists were victorious: photography meant the emergence of a new language, which also caused an unprecedented revolution in the other pictorial arts. Today, painting is still taught at Universities and the appreciation of art—both old and new—carries on, *photography included*.

Moreover, the case of photography and painting teaches us that the loud reactions against the introduction of new technologies were never enough to stop revolutions from happening. It is my opinion that, with AI, it will not be different; thus, rather than fearing those products, it is the task of research and education to model the revolution in an enriching direction, finding the solutions to the inclusion of those tools in ways that help mitigate, rather than aggravate, the challenges of a multicultural world. In that sense, the project of Transnational Education offers a unique opportunity for the exploration of those technologies.

On the one hand, TNE permits the exploration of AI tools to mitigate cultural incompatibilities and find common languages; on the other, TNE environments are the perfect case study of the challenges of translation and its impact on equitable access. Through the sections above, I aimed to present specific applications of semiotic principles in addressing obstacles posed by the encounter of competing spheres, whether that means differing cultural systems of values or the coexistence of different forms of intelligence. Semiotics' unique focus on the structures of meaning and the mechanisms of how semantics surfaces as readable, audible, and visible forms can offer learners, educators, and professionals the ability to cut

through discourses to perceive their significant core, which can then support effective translations between cultures, as well as between discursive forms—from abstractions to text, from text to text, from text to image, for example. Besides supporting users in better prompting and navigating the problems posed by AI tools fashioned from the single perspective of their creators' modelling, the semiotic concepts presented in this manuscript are essential to the development of existing tools into forms that indeed fulfil goals of diversity, inclusion, and access.

Throughout my years as a Senior Lecturer, working with diverse cohorts in the UK Higher Education system, I have used semiotic skills to support diversity and to creatively harness cultural, linguistic, and professional incompatibilities as an engine for creativity (Jardim, 2021, 2024b). More than supporting positive student outcomes or better engagement with the content, developing skills like semiotic description and the understanding of modelling has been the source of transformative experiences in the classroom through the creation of impactful peer exchanges that helped learners to become aware of their *baupläne* and to reflect more critically on the systemic aspects of language, knowledge, and intersubjectivity. In the first academic year with ChatGPT and other tools as a widespread presence, I had the chance to witness the lowest and the highest possibilities: there were cases of misconduct and misuse of those technologies, as is to be expected. Yet, I have also seen masterful displays of ingenuity that show what can be achieved when humans and technology become partners, rather than competitors.

It can be argued that, rather than a generalisable hypothesis, this manuscript is a product of my own *bauplan* as a semiotician, confined to my experiences with my cohorts. However, in the successes I achieved blending pedagogies with my unique interdisciplinary training and my experiments in transferring this vision to students, I have seen Semiotics' potential to expand ways of seeing, allowing individuals to access their existing knowledge and experience through a structural lens and use these insights to enrich their academic and professional practices. Perhaps, it is possible to make the argument that, in its structural

understanding of systems, Semiotics—like AI tools—is a shortcut permitting us to access our existing knowledge and experience more effectively, while also using those theories to prime content to be more “learnable”—whether that means in a human-to-human exchange, or in the human-machine dynamics. The uncovering of modelling as well as the critical utilisation of semiotic description as professional and pedagogical skills can be an engine for innovation, as well as the path to qualify individuals who are capable of understanding and mitigating differences autonomously, while also being open to the potential innovation carried in errors and “fabrications”.

In the closure of his section on description, Greimas speculates that, once we sufficiently understand the paradigms of variations and rules of transformation of ideological models, it would be possible to construct and deploy models capable of influencing individuals and collectives towards a new structuration of values that, in its turn, could fulfil some form of psychological or sociological therapeutics (Greimas, 1986, p. 140)—a vision that could be interpreted as a long-term pedagogical project. Once we are capable of expanding the limits of what is possible or not, we may begin to see that, rather than replacing our skills, AI can help us exercise our imagination, while also making up for the gaps in which we do “lack imagination”. Through its unique *bauplan*, AI can show us the limits of our own modelling; if we can critically harness the skill of unfolding our culture and language in a way in which those objects are increased, then we can begin to reach beyond the replication of the familiar, allowing for the unique descriptive possibilities of this technology to become a tool to co-imagine futures.

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The author of this publication declares there are no competing interests.

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Key Terms Definitions

***Bauplan* / *Baupläne* (pl)**

A biosemiotic concept presented in the biological theory of Jakob von Uexküll, *bauplan* could be translated as a "construction plan" or "blueprint". It refers to a holistic structural set that determines the development of an organism—for example, the stages of a plant's growth, from seed to an adult tree with flowers and fruits. In the context of modelling, *bauplan* is utilised to describe the specific set of behaviours and actions that are particular to a subject.

Enunciator and Enunciatee

A presupposed pair, these concepts are found both in Generative Semiotics and in classical Communication Theory. Different from "emitter" and "receiver", which refer to the human entities, Enunciator and Enunciatee are discursive projections of those human entities. The use of those concepts marks the theoretical understanding that communication occurs in levels and that it is not human persons who exchange, but their projected imprints.

Formant

In Linguistics, formant designates a chain in the plane of expression that corresponds to a unit in the plane of the content which, through semiosis, is constituted into a sign. In Visual Semiotics, the notion of *formant* differs from the notion of *sign*, as it refers to categories or contrasts that can only signify together. Thus, rather than one term in the manifestation that corresponds to one abstract semantic term, the formant designates a pair in the manifestation (for example “black vs white”) which corresponds to a semantic pair (for example “day and night”).

Isotopy

A concept borrowed from chemistry and physics, isotopy is used in Semantics and Semiotics to describe the iteration of syntagmatic chains that grants a discourse its homogeneity. In simpler terms, isotopy can be defined as a significant repetition of linguistic units belonging both to the plane of expression and the plane of content, or the recurrence of linguistic units. In visual semiotics, this concept can be extended to any significant unit (such as form, colour, or composition).

Modelling

In the Pragmaticist tradition of Semiotics, modelling is used to describe the innate ability of subjects or organisms to produce representations of the world—for example objects, emotions, situations, or phenomena. These representations relate to forms that are significant to the one creating them: to engage in semiotic modelling, thus, is linked to the ability to create a “significant world”.

Referent

In traditional Linguistics, the referent is conceived as the “real world” objects to which words refer. Outside the purely linguistic context, both in Semiotics and Communication Theory, the referent is identified with the context of a text (or image), and the specific elements identified

to it. In both cases, the idea of a referential function serves to distinguish between the “things themselves” and their representations or images in cultural artefacts.

Semiosis

A linguistic concept, semiosis is the operation through which the mutual presupposition between a form and a content is recognised, producing a sign. Reading a text and apprehending its meaning or looking at an image and understanding what is represented constitute acts of semiosis.

Sign

It is difficult to present a comprehensive definition of *sign*, as all semiotic theories utilise this concept as the minimal unit of signification, but with slightly different understandings of what that entails. In this manuscript, I draw from two definitions of sign. The first, aligned with the Saussurean tradition of semiotics, refers to the linguistic reunion of a signifier (a form or expression) and a signified (an abstract content). In the second, aligned with the biosemiotic tradition, the sign refers to any physical form made externally to stand for something else, the referent (a feeling, object, phenomenon, and so on).

Simulacrum / Simulacra (pl)

Another concept utilised across theories in the Social Sciences, in this manuscript simulacrum is used in the sense Jean Baudrillard and Fredric Jameson create for the term as a representation independent from its referent. Unlike the sign, in which the image and the meaning are fixed and mutually presupposed, simulacra mark a type of relation in which images (textual or visual) are not tied to a predetermined content, but can create new contents and new meanings that are, in Baudrillard’s terms, “hyperreal”.