

**THE RELATIONSHIP BETWEEN WRITTEN AND SPOKEN FIRST LANGUAGE  
AND ITS INFLUENCE ON THE USE OF ENGLISH AS AN ADDITIONAL  
LANGUAGE: A REFLECTION ABOUT THE TEACHING OF PRONUNCIATION**

***RELAÇÕES ENTRE A ESCRITA E A FALA NA PRIMEIRA LÍNGUA E SUA  
INFLUÊNCIA NO USO DE INGLÊS COMO LÍNGUA ADICIONAL: UMA REFLEXÃO  
SOBRE O ENSINO DE PRONÚNCIA***

***RELACIONES ENTRE ESCRIBIR Y HABLAR EN LA PRIMERA LENGUA Y SU  
INFLUENCIA EN EL USO DEL INGLÉS COMO LENGUA ADICIONAL: UNA  
REFLEXIÓN SOBRE LA ENSEÑANZA DE LA PRONUNCIACIÓN***



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**ABSTRACT:** This article discusses the graphophonemic and phonographemic relations in Brazilian Portuguese, according to Capovilla and Casado (2014a, 2014b), to evaluate the written and spoken production of Brazilian learners of English as an additional language. More specifically, it is presented, through a reflection that compares the theory above, a way of understanding the paralexia and paragraphs possibly found in the linguistic production of learners of English. Based on the relationships between writing and speech (graphophonemic relationships) and between speech and writing (phonographemic relationships) in Brazilian Portuguese, we discuss cases in which the relationships established in the first language can affect the production of speech and writing by learners of English

**KEYWORDS:** Spelling. Reading. English as an additional language.

**RESUMO:** *Este artigo propõe uma discussão acerca das relações grafofonêmicas e fonografêmicas em português brasileiro, segundo as propostas de Capovilla e Casado (2014a, 2014b), para a avaliação da produção ortográfica (na escrita) e falada (na leitura em voz alta) de aprendizes brasileiros de inglês como língua adicional. Mais especificamente, é apresentada, por meio de uma reflexão que coteja a teoria supracitada, uma proposta de entendimento sobre as paralexias e paragrafias possivelmente encontradas na produção linguística de aprendizes de inglês. Com base nas relações entre a escrita e a fala (relações grafofonêmicas) e entre a fala e a escrita (relações fonografêmicas) do português brasileiro, discutem-se casos em que relações consagradas nesta língua podem afetar a produção da fala e da escrita de aprendizes de inglês.*

**PALAVRAS-CHAVE:** *Escrita ortográfica. Leitura. Inglês como LA*

**RESUMEN:** *Este artículo propone una discusión sobre las relaciones grafofonémicas y fonografémicas en portugués brasileño, según las propuestas de Capovilla y Casado (2014a, 2014b), para la evaluación de la producción ortográfica (escrita) y hablada (en lectura en voz alta) de aprendices brasileños de inglés como un idioma adicional. Más específicamente, se presenta, a través de una reflexión que compara la teoría mencionada, una propuesta para la comprensión de las paralexias y parálisis que posiblemente se encuentren en la producción lingüística de los aprendices de inglés. Basado en las relaciones entre la escritura y el habla (relaciones grafofonémicas) y entre el habla y la escritura (relaciones fonografémicas) del portugués brasileño, se discuten casos en que las relaciones consagradas en esta lengua pueden afectar la producción del habla y la escritura de los aprendices de inglés.*

**PALABRAS CLAVE:** *Escritura ortográfica. Lectura. Inglés como LA.*

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## Introduction

Modern language teaching is a multifaceted area with plural practices that draw on studies from sister areas such as education, linguistics, psychology, and sociology. This is due, in part, to the constant search for more efficient teaching models that are better suited to the social, cultural, and psychological realities of modern language learners. Among these models are the studies of additional language learning<sup>2</sup>, which aim to explain the mechanisms (conscious or not) that lead learners to form rules, formulate hypotheses, and create patterns of the language to they are being exposed (GASS; BEHNEY; PLONSKY, 2013).

However, it is essential to note that, on the one hand, studies of learning an additional language (henceforth LA) serve as significant theoretical subsidies. Moreover, these studies are not only justified in light of the development of pedagogical models, as Gass, Behney, and Plonsky (2013) point out, since research of this nature integrates broader studies on language, cognition, and linguistic behavior of speakers, especially in cognitively oriented studies (ELLIS; CADIerno, 2009).

In linguistic terms, learning LA is not limited to the investigation of a single linguistic level. Instead, studies in this area of research focus equally on speakers' learning of the phonological, morphological, lexical, syntactic, semantic, sociolinguistic, and pragmatic systems.

In this article, we propose a discussion based on the concepts of *cipherability* and *decipherability*<sup>3</sup> of Brazilian Portuguese, according to Capovilla and Casado's (2014a, 2014b) proposals, for the evaluation of orthographic production (in LA writing) and spoken production (in LA reading aloud) of learners of English as LA. To this end, the relations between orthographic writing and reading aloud in LA are discussed from two angles, i.e., from orthographic writing to reading aloud (graphophonemics relation) and from auditory speech comprehension to orthographic writing (phonographemic relation). After this presentation, we discuss the level of transfer of graphophone mic and phonographemic connections from Portuguese to LA and reflect on how such relations can generate paralexies (incorrect word

<sup>2</sup> The term *additional language*, replacing the traditional term *foreign language*, is adopted here to neutralize the semantic traits of *strangeness*, *exteriority*, and *detachment* that the word *foreign* can evoke. We share that additional language can be considered a more neutral and comprehensive hyperonym than *foreign* or *second-language* terms. (LÓPO RAMOS, 2021, our translation).

<sup>3</sup> According to Capovilla and Casado (2014a, 2014b), the concepts of *cipherability* and *decipherability* refer respectively to the processes of transformation of speech into graphemes, that is, what occurs in writing (*cipherability*) as well as to the process of change of writing into discourse, that is, what is done in reading aloud (*decipherability*).

reading) and paragraphs (incorrect spelling) in English as LA. Thus, the article mainly proposes an analysis of a linguistic feature of the first language and the effects that such elements may have on the production of English as LA.

The paper presents a brief analysis of the literature produced by Fernando Capovilla and his collaborators when elaborating on the model for calculating the *cipherability* and *decipherability* of Brazilian Portuguese through a survey of the main methodological steps that led the researchers to the conclusion of the project. This is followed by a critical discussion of the possibilities of using the main results of this project in evaluating the written and oral production of learners of English as a foreign language. Finally, we present our final considerations in light of the reflections made throughout this text.

### **The necessity of breaking the Brazilian Portuguese code**

Reading and writing processes applied to literacy learners of different age groups generally use assessment techniques under dictation as a resource to check the state of individuals' phonological and lexical routes, depending on their developmental stage (ELLIS; YOUNG, 1988 apud CAPOVILLA; CASADO, 2014a, 2014b). However, dictations serve their purpose well but lack a more appropriate input material than current word lists.

According to Capovilla (2015), the word lists used do not constitute systematic paradigms because words typified simply as *regular* and *irregular*, for example, have interchangeable characteristics and relationships, especially in the realm of correspondences between sounds and graphemes. According to Callou and Leite (2003)

In the first stage of the literacy process, the child (or adult) will learn that letters serve as symbols for the phonic segments of the language. The initial difficulty is that the assumption of letter-phoneme biunivocity is limited and varies from dialect to dialect. Therefore, examining spelling errors in school should be a valuable method of investigation for the linguist because these errors generally reflect a mismatch between the phoneme and grapheme systems (CALLOU; LEITE, 2003, p. 46-47, our translation).

In light of the characteristics presented above, Capovilla and Casado (2014a, 2014b) propose replacing the shared asystematic word lists with tables generated from a matrix paradigm in which a nominal variable of type, such as *regular* or *irregular*, gives way to an interval variable of medium degree of graphophonemics decipherability, that is, in the correspondence between graphemes of the written language and phonemes of speech, and

another variable of medium degree of phonographemic decipherability, that is, in the correspondence between phonemes of the spoken language and graphemes of writing. Capovilla and Casado (2014a, 2014b) developed a program that calculates the degree of phonographemic decipherability and graphophonemics decipherability of Brazilian Portuguese to contribute to the problem raised by Callou and Leite (2003).

Below, we will briefly present the main steps in the model's design concerning both the concept of *decipherability* and the concept of *cipherability*.

### The graphophonemic decipherability of the written word

Graphophonemic decipherability of the written word aims to explain read-aloud processing and predict paralexics, that is, pronunciation errors during read-aloud, which arise from the relationships established between graphemes (units of writing) and phonemes (phonological units of language). To arrive at a model with such explanatory capacity, Capovilla proposes the following steps:

- (i) Checking the possibilities of phonetic-phonological realization of different graphemes by reading aloud. For example, the grapheme <x> can correspond, in Portuguese, to the phonemes /f/ as in 'axe', /s/ as in 'extensão'<sup>4</sup>, /z/ as in 'exact', but also /gz/ as in 'oxácido'<sup>5</sup> (CAPOVILLA, 2015);
- (ii) Verification of the different possibilities of orthographic realization of different phonemes through writing activities under auditory dictation;
- (iii) Definition of the absolute and relative frequency of each graphophonemic relation;
- (iv) Definition of the weighted decipherability index of the relation between each grapheme and its possible phonetic-phonological realizations

The goal one has in defining the absolute and relative frequency of each graphophonemic relation (item iii) is to establish two types of relations, that is:

- a) Relationships where the most frequent, and therefore canonical, phoneme of the relationship will be a likely candidate to usurp the grapheme of a less frequent word

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<sup>4</sup> Meaning: extension.

<sup>5</sup> Meaning: oxyacid.

in a read-aloud activity (example: oxyacid be pronounced with the post-alveolar deaf fricative /ʃ/ for the grapheme <x> ([oc'ʃasid]) instead of [oc'gzasid] because of the canonical relationship between the grapheme <x> and the fricative /ʃ/);

- b) Less frequent and less canonical relations in which the phoneme of the relation links 'exceptionally' with the grapheme in question. In these cases, there is a statistical force that, in read-aloud activities, can make room for a more frequent phoneme to replace the exceptional one. This is the relationship described in (a) in reverse.

Once graphophonemic decipherability has been established, it remains for the model to do the reverse process, that is, to define phonographemic decipherability.

### **The phonographemic cipherability of the spoken word**

The phonographemic cipherability of the spoken word aims to explain the processing of writing under dictation and to predict paragraphs, that is, errors in writing in dictation situations, which arise from the relations established in the phoneme-grapheme order. To arrive at a model with such explanatory capacity, Capovilla (2015) proposes the following steps:

- (i) Verify the possibilities of orthographic realization of different phonemes by writing under dictation. For example, the phoneme /s/ can be spelled with <c>, with in 'cell phone', <s> with in 'cars', <z> with in 'alcatraz', <ç> with in 'caça'<sup>6</sup>, <sc> with in 'scene' and <ss> with in 'kisses';
  -
- (ii) Verification of the different possibilities of phonetic-phonological realization of different graphemes through reading-aloud activities;
- (iii) Definition of the absolute and relative frequency of each phonographemic relation;
- (iv) Definition of the weighted cipherability index of the relation between each phoneme and its possible orthographic realizations.

The goal in defining the absolute and relative frequency of each phonographemic relation (item iii) is to establish two types of relations:

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<sup>6</sup> Meaning: hunt.

- a) Relationships where the most frequent, and therefore canonical, grapheme of the relationship will be a likely candidate to usurp the phoneme of a less frequent word in a dictated writing activity (example: [v'bojs] be spelled with <s> for the phoneme /s/ (abois) instead of aboiz because of the canonical relationship existing between the phoneme /s/ and the grapheme <s>;
- b) Less frequent and less canonical relations where the grapheme of the relation links 'exceptionally' with the phoneme in question. In these cases, there is a statistical force that, in dictated writing activities, can act to make room for a more frequent grapheme to take the place of the exceptional one. This is the relationship described in (a) in reverse

The next section presents an analysis of how the Portuguese (de)cipherability model can potentially help with issues related to paralexics and paragraphs in Brazilian learners of English as LA

### **Graphophonemic and phonographemic (de)cipherability and the teaching of English as LA**

As mentioned in the introduction, part of the studies on learning English as a foreign language focus on the mechanisms that lead language learners to form hypotheses and establish mental linguistic patterns at various levels of linguistic analysis. Among these mechanisms, it is already widespread in the specialized literature (ELLIS; ROBINSON, 2008; ELLIS; CADIerno, 2009; ELLIS, 2013; GASS; BEHNEY; PLONSKY, 2013) the fundamental role of certain first language constructions in how some analogous constructions will be formed in LA. In other words, the learner, especially the beginner, will make direct and related transfers from their first language to the language being learned at all levels of analysis, that is, at the phonetic-phonological, morphological, syntactic, semantic, and pragmatic levels. Specifically on the phonetic-phonological level, we have that

After a certain age, a person's sound references are connected to their native language. It is almost as if the native language is a filter for foreign sounds. If the sound is identical, there are no problems. However, if the sound is different, it will be reinterpreted according to the sound system of the native

language (GODOY; GONTOW; MARCELINO, 2006, p. 18, our translation).<sup>7</sup>

Although the role of transfer is widely discussed, including in the realm of phonetics and phonology (cf. ECKMAN, 2012 for a historical overview of studies in LA phonology acquisition), the same cannot be said about the effect exerted by the relations between the writing and speech systems of the first language on the writing system or even on the pronunciation of an LA. In particular, there is little discussion of how the correspondence relations between the writing and phonological systems of learners' first languages can influence the learning of writing and pronunciation of an LA. The reflection proposed here is inserted in this gap, and, for such, it is based on the confrontation between the Portuguese and English languages.

### **Portuguese and English: Two languages with different graphophonemic and phonographemic typologies**

The differences between the graphophonemic and phonographemic opacity levels between languages like English and Portuguese are evident even for the most experienced learners of English like LA. While Portuguese has a more direct relationship between graphemes and their respective phonemes, the same cannot be said of languages like English<sup>8</sup>, where graphical sequences do not always have a one-to-one relationship with phonemes (CELCE-MURCIA; BRINTON; GOODWIN, 2010).

The spelling of the English language is notoriously unpredictable. For example, the vowel /i:/ can be represented in writing in various ways. All the underlined letters in the following words represent /i:/ *me, see, sea, believe, receive, pizza, people, key, quay, quiche, Portuguese, foetus*. Most other phonemes can be spelled in different ways, especially vowels (CARLEY; MEES; COLLINS, 2018, p. 03, our translation).<sup>9</sup>

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<sup>7</sup> Original: After a certain age, a person's sound references are connected to the native language. It is almost as if the native language acted as a filter for any foreign sound. If the sound is identical, there is no problem. If the sound is different, it is reinterpreted according to the native sound system.

<sup>8</sup> Capovilla (c.p.) draws attention to the fact that, comparatively, Brazilian Portuguese literate learners are in an advantageous position compared to those whose first languages are English or French because these two languages are known to be more opaque in their graphophonemic relations. However, when compared to languages such as German, Italian, or Spanish, the Portuguese language becomes, in relative terms, more opaque in its graphophonemic relations because in the languages above, the relationship between graphemes and phonemes is much more direct and objective, and there is little variation.

<sup>9</sup> Original: English orthography (i.e., spelling) is notoriously unreliable. For instance, the vowel /i:/ can be spelled in numerous ways. All the letters underlined in the following words represent /i:/ *me, see, sea, believe, receive, pizza, people, key, quay, quiche, Portuguese, foetus*. Most other phonemes can be spelled in many different ways, especially vowels.



As a further example within the consonantal system, let us take the Africanized, post-alveolar sound [dʒ] that represents the sound of the following graphemes grapheme *modular*, *gentle*, *jitters adjust*, *edge*. Moreover, as pointed out by Carley, Mees, and Collins (2018), the same is true for vowels, which, in addition to the phonological processes of assimilation of nasalization features or modification by retroflexes and laterals (*vowel coloring*, as in *bird and label*), exhibit a graphophonemic relationship that is much more opaque than that existing in Brazilian Portuguese.

If literate learners of English as a first language have to deal with a writing system that is not very transparent in terms of the correspondence between writing and speech, when we think of Brazilian learners of English as a second language, the opacity of the English language is compounded by the graphophonemic and phonographemic statistical incongruities inherent in Portuguese. In other words, graphophonemic and phonographemic patterns are clearly transferred from the first language to the LA. In this regard, says Thaïs Cristófaró-Silva:

The construction of the sound system of the foreign language is based primarily on the sound system of the mother tongue with direct interference from it. In the case of the Brazilian speaker who is learning English as a foreign language, they should have a solid reference to the Portuguese sound system (CRISTÓFARO-SILVA, 2015, p. 10).

Thus, learning the sound and graphic systems of HL is based, even if only at the beginning of the learning process, on knowledge about the same linguistic aspects of the first language. Rafat (2016) demonstrates, with experimental data from English speakers without prior knowledge of Spanish, the importance of (in)congruity between the orthographic and sound systems of the first language in LA production. The data showed that the lack of connection between phonemes and graphemes in the first language resulted in more paralexias in LA production.

Thus, if the first language presents mismatches of correspondence between orthographic and sound systems with different frequency strengths for each of the relations, it can be expected that learners will transfer such relations, especially those more established in their language when using the TL.

Consider why foreign languages are difficult to understand when we hear them. Even if we can read them, the sounds of their letters and letter combinations may be different from the sounds corresponding to the same letters and letter combinations in our native language [...] the reason is that cognitive and contextual factors influence

our perception of the received signal. For example, the phonemic restoration effect involves integrating what we know with what we hear when we perceive speech (STERNBERG, 2016, p. 312-313, our translation)

We can conclude that knowledge of graphophonemic and phonographemic relations in the first language can influence the learning of an LA, especially in teaching contexts where learning takes place through the intermediation of written texts in the LA, as Steinberg (2006) points out.

Reading our language results in reading according to our pronunciation. Reading a language other than your own can cause many problems, at least in the early stages of learning. Learning takes place through a text. A text is written in a system [...] whose symbols represent phonemes, syllables, or morphemes respectively [...] when two languages, i.e., the mother tongue and the language to be learned, use the same system, then we run into interference problems. In the case of Portuguese and English, both languages employ the Latin alphabetic system. This system attempts to represent phonemes. The symbols used are almost the same in both languages but don't always represent the same phonemes. The codes are different. The same letter does not represent the same phoneme, which is not defined by the same letter in each language (STEINBERG, 2006, p. 66).

As already mentioned, the idea of relation transfer can be an obstacle in learning the LA system. However, the scenario can be aggravated if we think deeper about the relations enshrined in the first language that can be projected by the learner into the LA phonological system. This additional complication can be understood even with a first-language example. This happens in the graphophonemic relationship in Brazilian Portuguese, exemplified in the word *oxyacid*, discussed in Capovilla (2015), or other less infrequent ones such as *exodus*, *eximious*, and *syntax*. The central idea is that, for being a word of very low frequency<sup>10</sup> and because it is spelled with a non-canonical relationship between the grapheme <x> and the phonological sequence /gz/, the word becomes susceptible to a more frequent graphophonemic relationship, that is, with <x> being pronounced /ʃ/, thus generating paralexies [oc'ʃasid] or, similarly, in words like *execrable*, *exempt* and *exhume* which, because of their evident low frequencies or lack of knowledge by the learners, could open space for the relation <x> and /ʃ/, in this case, intrusive and responsible for the paralexies. However, it is crucial to note that the interference and consequent transfer from the first language to the TL depends on several factors other than purely graphophonemic ones, such as phonological context, being cognate or

<sup>10</sup> No such occurrence was found in the Corpus do Português [www.corpusdoportugues.org](http://www.corpusdoportugues.org)

not, proficiency level, word-specific knowledge, as well as individual learner differences (ESCALANTE, 2016).

If we look at a simple parallel, we can say that for beginning English learners like LA, words used frequently in English may seem as infrequent as *oxyacid* is in their language. Moreover, because they have little knowledge of the language they are learning, we can hypothesize that graphophonemic relations that are statistically more prominent in the first language may exert negative pressure on the LA system, thus generating paralexics (HAYES-HARB; CHENG, 2016). In other words, paralexics can occur in pronouncing a foreign word because of the use of graphophonemic canonization strategies according to the first language paradigm. An example of this situation can be given with the grapheme <ch> that, in Portuguese, is most often associated with the fricative /ʃ/ (examples: *chá*<sup>11</sup>, *chuva*<sup>12</sup>, *chapéu*<sup>13</sup>, *chop*, *chave*<sup>14</sup> and *achar*<sup>15</sup>) and in English to africative /tʃ/ (examples: *achieve*, *change*, *chow*, *each* e *chives*). Given the disparity of graphophonemic relation associations in both languages, it does not seem implausible to expect that words like *achieve*, *change*, *chow*, *each* and *chives* can be pronounced with /ʃ/ by novice learners since this is an established association in Brazilian Portuguese

It is a fact that the relationship between <ch> and /tʃ/ in English is not a one-to-one relationship, the grapheme can be realized as the velar /k/ (examples: *charisma*, *chemistry* and *stomach*) or as a post-alveolar /ʃ/ (examples: *chic*, *machine*, *Chicago* and *Michigan*); However, even the association between <ch> and /k/ does not find reinforcement in the Brazilian Portuguese paradigm.

In cases where learners erroneously resort to phonographemic relations, according to the Brazilian Portuguese paradigm, this strategy may lead them to commit paragraphs in writing a foreign word because of phonographemic canonization in the scrambling of a foreign phoneme. This case can be exemplified with the deaf labiodental /f/, which, in English, is frequently associated with the graphemes <f>, <ff>, and <ph>, but also with the digit <gh>. The low frequency of association between /f/ and <ph> or <gh> in Portuguese, for example, may lead learners to produce paragraphs as the first words in the following sequence of pairs:

<sup>11</sup> Meaning: tea.

<sup>12</sup> Meaning: rain.

<sup>13</sup> Meaning: hat.

<sup>14</sup> Meaning: keys.

<sup>15</sup> Meaning: found.

*\*fase/phase, \*frase/phrase, \*fisician/physician, \*graf/graph, \*touf/tough and \*enouf/enough* in written production in English.

Another case of intrusive first-language phonogram relations that can exert negative pressure refers to phonemes that exist in the TL but do not exist in the phonological system of the first language. This is the case of the English linguodental /θ/ (examples: *thanks, thin, bath* and *oath*) which does not figure in the Brazilian Portuguese phonological system and is often produced by beginners with substitute phonemes that share with /θ/ some phonological trait, such as the point of articulation, like the dental occlusive /t/, the mode of articulation, like the labial fricative /f/ or the alveolar fricative /s/ (GODOY; GONTOW; MARCELINO, 2006).

In short, we can also analyze, from the same perspective, cases in which, even if graphophonemic and phonographemic relations are similar between the first language and the TL, they may cause paralexies and paragraphs in the TL production due to the application of phonemic rules inherent to the first language that are not the same in the TL. Such is the rule known during Portuguese alphabetization, where the intervocalic grapheme <s> undergoes a voicing process and is pronounced with the voiced fricative /z/, as in *case, basic, loose e music*. Such a relationship in Portuguese reinforces the paralexies in LA (exemplo: *case* \*/keiz/, *house* \*/haoz/, *basic* \*/'beizik/ e *vase* \*/veiz/) which, in turn, receives reinforcement in data from LA itself, as in *asset, essay* and *bossy* in which the digit <ss> is pronounced as /s/, which may lead to the false conclusion that the rules in LA are similar to those in Portuguese.

### Final considerations

In this brief reflective paper, we present Capovilla and Casado's (2014a, 2014b) proposal for graphophonemic and phonographemic ((de)cipherability of Brazilian Portuguese and analyze the effect that these linguistic features of the first language can have on the production of a TL, taking transfer cases into account. The proposal was evaluated from the main methodological steps of Capovilla and Casado (2014a, 2014b) to understand better the process that made the model possible. Finally, we proposed a reflection on using a model to inform issues concerning the learning of an LA, especially English, by native speakers of Brazilian Portuguese. The examples listed and discussed in more detail can demonstrate that the graphophonemic and phonographemic relations of the Brazilian Portuguese system can exert negative pressure on learning the English phonological system and lead beginning learners to commit paragraphs and paralexies in LA.

However, it is essential to note that the discussion about the examples presented in contrast between Brazilian Portuguese and English does not end with this reflection. On the contrary, such models require an experimental intervention that puts them under an empirical analysis to confirm or refute the views presented here, which, for now, are still hypotheses to be further explored in future works.

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