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Semiotic knowledge brokering: An additional language for understanding policy convergence in the European Education Policy Space

Victoria Konidari[1]
FISPPA, University of Padova

Abstract
This research explored the difficulties confronting educational policy convergence in the European Union (EU) and developed a working hypothesis on the basis of Luhmann's (1995) and Lotman's (1990) theory of social systems and cultural semiotics. It put forward the arguments that (1) policy convergence in education is a complex process of dialogue between multiply coded social semiotic systems, (2) any change in the functioning of social systems cannot disregard the semiotic substrata that underlie them and (3) locating and understanding semiotic areas of entropy in communication offer valuable insights into the ongoing challenges encountered in policy convergence.
In service of the above-mentioned objectives, this study selected education policy documents of Italy, France and Greece for the period 2001 to 2017 as the corpus for analysis. We explored the semiosis of the dialogic process with EU policy documents of the same period, with focus on three parameters of Jacobson's (1985) model of communication; (2) conducted a thematic qualitative text analysis of the documents using MAXQDA 18; and (3) created concept maps for the thematic category 'goals and objectives of education' via the Leximancer software.
The results revealed heretofore hidden areas of entropy at the semiotic level, confirmed the value of semiotics as complementary data to the accountability paradigm and repositioned semiotic knowledge brokering at the core of policy convergence.

Keywords: *Policy convergence, education, semiotics, entropy, knowledge brokering.*

Περίληψη
Η εργασία ερευνά τις δυσκολίες σύγκλισης εκπαιδευτικής πολιτικής στην ΕΕ, αναπτύσσει μια ερευνητική υπόθεση βασιζόμενη στην θεωρία κοινωνικών συστημάτων του Luhmann και πολιτισμικής σημειωτικής του Lotman και υποστηρίζει ότι α) η σύγκλιση πολιτικής στην εκπαίδευση είναι μια σύνθετη διαδικασία διαλόγου ανάμεσα σε πολλαπλώς κωδικοποιημένα κοινωνικά συστήματα, β) οποιαδήποτε αλλαγή στην

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[1] Konidari Victoria is currently a Marie Curie fellow in the FISPPA department of the University of Padua, in Italy, in charge of the Re-mapping research project funded by EC (grant number 750405, https://re-mapping.eu/).
e-mail: viktoria.konidari@unipd.it & vickonidari@yahoo.gr.

λειτουργία ενός κοινωνικού συστήματος δεν μπορεί να αγνοεί το σημειωτικό του υπόστρωμα, γ) ο εντοπισμός και η κατανόηση των περιοχών σημειωτικής εντροπίας στην διαδικασία επικοινωνίας προσφέρει πολύτιμες πληροφορίες για την ερμηνεία των συνεχιζόμενων δυσκολιών στην διαδικασία σύγκλισης.

Τα κείμενα εκπαιδευτικής πολιτικής της περιόδου 2001-2017 της Ιταλίας, Γαλλίας και Ελλάδας αποτελούν το ερευνητικό corpus της εργασίας μέσα από το οποίο: α) διερευνώνται η σημειωτική σχέση ανάμεσα στα παραπάνω κείμενα και στα αντίστοιχα της ΕΕ για την ίδια περίοδο, μέσα από την μελέτη τριών παραμέτρων του επικοινωνιακού μοντέλου του Jacobson (αποστολέα, παραλήπτη και μηνύματος); β) πραγματοποιείται μια συγκριτική θεματική ποιοτική ανάλυση των παραπάνω κειμένων με τη χρήση του λογισμικού MAXQDA 18, και γ) δημιουργούνται γνωστικοί χάρτες με τη χρήση του λογισμικού Leximancer για την θεματική κατηγορία «σκοποί και στόχοι της εκπαίδευσης».

Τα αποτελέσματα εντόπισαν μη ορατές περιοχές εντροπίας σε σημειωτικό επίπεδο, απέδειξαν τους περιορισμούς του παραδείγματος λογοδοσίας, και τοποθέτησαν τη σημειωτική μεταφορά γνώσης στο επίκεντρο των διαδικασιών για την επίτευξη σύγκλισης.

Λέξεις-κλειδιά: *σύγκλιση πολιτικής, εκπαίδευση, σημειωτική, εντροπία, μεταφορά γνώσης*

Introduction

This work addressed the difficulties concerning education policy convergence in the policy space of the European Union (EU) and drew on social systems and the cultural semiotics approach in the adoption of new metrics to cast light on the reasons for the convergence and the delays in this process. The findings led to the conclusion that the semiotic approach can serve as a complementary language to the accountability paradigm.

Policy convergence to EU benchmarks for education is neither simple nor self-evident. This difficulty was acknowledged in the first Joint Interim Report of the EU Council (2004, p. 10), which stated that 'transforming education and training systems is a medium or even long-term process' as 'Member States have different starting points' and 'the reforms undertaken reflect different national realities and priorities'. During the last two decades, the EU tried to tackle the aforementioned difficulty through the governance paradigm, which was established by combining the principle of subsidiarity and the open method of coordination (OMC). The OMC was introduced in 2001 for policy areas related to economy, but three years later, its application was extended to education, albeit with the recognition that its implementation 'in the field of education and training does not have the same implications or the same ramifications in practice as it does in other EU policy areas' (Official Journal C 133, 06/06/2003). In the light of a persistent lack of convergence in significant EU policy areas, the year 2013 saw the European Council (2013) underscore the need for the increased use of the OMC, with the council inviting member states to engage in the following initiatives:

> *'To establish a closer link between the key strategic policy challenges identified throughout the European Semester and OMC activities, to fully tap into the potential of cooperation and peer learning established within the OMC through improved working methods and to stimulate a constructive process of follow-up of the country-specific recommendations by sharing, with the relevant policy committees and on a regular basis, the results of the OMC cooperation mechanisms'.*

In the meantime, researchers looked into the problem of policy convergence under the lens of the idiosyncratic characteristics of the European Education Policy Space (EEPS), which has been viewed as an avenue typified by 'borderless education' (Lawn, 2001), a 'learning space of soft governance '(Lawn, 2006) and an 'intellectual

homeland' (Lawn, 2009, pp. 506–520) in which stakeholders create a 'distinct European identity and culture through the governing of a shared cultural and political space'(Grek, 2009). In this context, problems of convergence have been explored primarily on the grounds of the tensions engendered by the transition from governing to governance and from legitimacy to accountability (Lawn, 2003, 2011; Ozga, 2011, 2016; Grek et al., 2013). In relation to the latter, a technical form of accountability (Ozga, 2013) that is anchored in commensuration, standardization, harmonization, data production, data management and constant comparison (Ozga, 2013; Grek & Ozga, 2010) emerged as the necessary governance tool to facilitate policy convergence and 'make European policy spaces governable' (Lawn, 2009).

Despite these developments, however, the long-lasting difficulty of the EU in dealing with educational inequality and underperformance proves the limitations of both the OMC and the accountability paradigm. For example, the two EU benchmarks for compulsory and upper secondary education (reduction in early school leavers and low educational attainment) were not achieved by all member states during the Education and Training 2010 program and were reiterated in the Horizon 2020 agenda. Such commitment nonetheless failed to stimulate progress, with an average of 10.6% of the youth (aged 18–24) in the EU-28 being still early leavers from education and training and 13 member states being still unable to meet relevant benchmarks (Education and Training Monitor, 2018). This decline was previously substantiated by the latest PISA 2015 results (OECD, 2016), which revealed that not only is the EU as a whole seriously lagging behind in all three domains of basic literacy but has also taken a step backwards from its performance in PISA 2012.

This study argues that the enduring problem discussed above strongly indicates our failure 'to conceptualize the situation correctly' (Harvey, 2009, p. 22)—a contention that aligns with the Stiglitz report regarding the necessity of 'better metrics' (Stiglitz et al., 2009, p. 9). In line with such reasoning, the current research was grounded in Lotman's (2004, p.2) position that 'the space of reality cannot be represented by a single language, but only by an aggregate of languages', the author's cultural semiotics approach (Lotman, 1977, 2004, 2005) and Luhmann's (1995, 1999) social systems theory and conception of education as a social system (Luhmann, 2002). These perspectives anchored our assertions that (1) educational policies should be explored as social and semiotic systems, (2) policy convergence in education is about a coordinated systemic change within the EU space and (3) the effectiveness of anticipated systemic

change is coursed through respective semiotic channels and depends on successful communication between the social systems in question. In sum, this study advocates the idea that focusing on processes and not outcomes and changing the unit of analysis can offer valuable insights into hidden areas of entropy that occur during policy convergence but are left unattended by the accountability and performativity paradigms. The rest of the paper is structured as follows. In the second section, the paper presents a six-point comparison between the theories of Lotman (1977, 2004) and Luhmann (1995) on semiotic and social systems, respectively. The comparison was conducted to uncover the systemic commons that arise in the process of change. In the second section, the application of the working hypothesis in the examination of the education policy discourses of three EU countries (Italy, France and Greece) is discussed. These countries' education policy documents for compulsory and upper compulsory education from 2001 to 2017 constituted the corpus subjected to analysis. Following the argument of policy convergence as a dialogic process, this study used Jacobson's (1956) model of communication to explore three parameters: the *addresser*, the *addressee* and the *message*. MAXQDA 18 software was used to conduct a comparative qualitative thematic text analysis, and Leximancer software was adopted to create concept maps of the thematic category related to the message conveyed by each education policy. The results revealed differences in the constitution of the scene of address, which are manifested through (1) the degrees and characteristics of addresser and addressee presence; (2) differences in the elements, relations, classifications and sequences of respective thematic categories; and (3) differences in the constitution and content of respective concept maps.

In the third section, the paper presents our argument that the above-mentioned differences create undetected entropy in communication between different semiotic systems at the EU level and consequently hinder the coordinated change for which policy convergence strives. The paper concludes with a proposal revolving around two directions for further research which can enrich the working hypothesis put forward in this work, a discussion of this study's contention regarding the complementary value offered by semiotics to the accountability paradigm and an account of a proposed semiotic knowledge brokering that facilitates policy convergence in the EU space.

Systemic commons between social and semiotic systems

This section presents the theoretical grounding of the study's working hypothesis, which was based on Luhmann's theory on social systems (1995) and Lotman's (1977, 2004, 2005) cultural semiotics. This theoretical framework was chosen as a counterpart to the accountability and performativity paradigms not only because of the latter's unilateral concentration on outputs but also because the systemic perspective offered by Luhmann and Lotman allows access to data with a different informative value that illuminates the processes that bring and inhibit change at the systemic level. The strength of this selection lies in the fact that although Luhmann adopts a sociological orientation and Lotman employs a cognitive approach—in effect, according analytical focus to social and semiotic systems, respectively—they share the assertions that systemic change courses through communication and that change in social and semiotic systems occurs over the same systemic channels. What follows is a six-point comparison of the systemic ideas common to social and semiotic systems.

First, the authors both argued that the communication process cannot disregard the influence of culture. Luhmann (2002, p. 111) considered education a social subsystem with its own system-specific functions, explaining that 'the constitution of social systems is bound to a cultural code that is always already to hand, although the emergence and function of this code must be explained' (Luhmann, 1995, p.104). Lotman et al. (1973, p.53) supported the central position 'that natural language and culture are respectively primary and secondary languages having modeling functions'. This standpoint was reinforced by Lotman, who underscored the interwoven character of culture thus: 'Culture as a whole may be considered as text', 'a complex text, which consists of a hierarchy of "texts within texts"' (2004, p. 7).

Second, the authors underlined the modeling function of social and semiotic systems. For Lotman, semiotic systems, by definition, represent and shape our perceptions of the world. Natural language, the 'primary modeling system . . . by its very structure', 'exerts a powerful influence over the human psyche and over many aspects of social life' (1977, p. 9); 'secondary modeling systems', such as culture (1973, p. 62), introduce additional layers and codings that increase the complexity of the semiotic space (1977, p. 9). From a social systems perspective, Luhmann (1995) punctuated the modeling function through the formulation of a system's expectations in its communication with its environment. The author maintained that a social system,

through the communication of its behavioral expectations, prescribes anticipated behaviors 'by the intervening selection of a narrower repertoire of possibilities' (1995, p. 96).

Third, both scholars attached importance to the fact that social and semiotic systems are self-referential and that their communication with the environment happens through meaning. Establishing an analogy with the biosphere, Lotman (2005) introduced the notion of *semiosphere* to define a semiotic space, averring that although such space 'has an abstract character . . . and its boundary cannot be visualized by means of the concrete imagination . . . [it] has a definite semiotic homogeneity and individuality . . . outside of which semiosis cannot exist'. For the author, 'elements occurring in a text without any correspondence in the code cannot be bearers of meaning' (Lotman, 1990, p.11); therefore, 'outside the semiosphere there can be neither communication, nor language' (p. 124). Along the same lines of thinking, Luhmann (1995, p. 37) referred to meaning in terms of closure stating that 'meaning systems are completely closed to the extent that only meaning can refer to meaning and that only meaning can change meaning'. Similar to Lotman, Luhmann (1995, p. 67) contended that 'information is always information for a system' and 'is only possible within a system' (p. 68).

Fourth, the authors highlighted the contingent character of the communication process. Lotman (1990) attributed the success of communication to the systemic level and argued that the generation of new meaning depends on the combination of translatability and untranslatability between different semiotic systems, with the spectrum running 'from complete mutual translatability to just as complete mutual untranslatability'(p. 125). The author added that the non-coincidence between the input and output of a communication channel 'is equivalent to error and arises as a consequence of 'noise in the channel of communication' due to 'the various types of circumstances which impede transmission' (Lotman, 1977, p. 23). For Luhmann (1995, p. 106), contingency refers to 'the horizon of possible variations', which emerge through the selection of information 'from a domain of potentialities that the system itself devises and holds to be relevant' (p. 68). In a manner that resembles how Lotman perceived non-communication, Luhmann (1995, p. 142) explained further that 'coded events operate as information in the communication process, uncoded ones as disturbance (noise)'.

Fifth, these authors maintained that social and semiotic systems impose boundaries in accordance with the same modus operandi. For Lotman (2005), such boundary is one 'of the fundamental concepts of semiotic delimitation'. The author defined it as existing

> *'between the semiosphere and the non- or extra-semiotic space that surrounds it. . . . The border of semiotic space is the most important functional and structural position, . . . , is a bilingual mechanism, translating external communications into the internal language of the semiosphere and vice versa. Thus, only with the help of the boundary is the semiosphere able to establish contact with non-semiotic and extra-semiotic spaces'.*

From the standpoint of Luhmann (1995), boundaries are the first interface in a system's communication with the environment. They 'relate the elements of which the system is composed and which it reproduces to the system. Every element makes a relation and with it a boundary decision' (p.195). The author likewise indicated that 'using boundaries, systems can open and close at the same time, separating internal interdependencies from system/environment dependencies and relating both to each other' (p. 29).

Finally, both scholars stated that social and semiotic systems are subject to the same double condition of survival. According to Lotman (1977, p. 3), a semiotic system exists as long as the 'reception and deciphering of information' occur during interaction with the environment; 'an organism incapable of responding and adjusting to external influence would inevitably perish'. This double condition was equally emphasized by Luhmann but with an additional immersion to it. He argued that 'complex systems must adapt not only to their environment but also to their own complexity' and that during the autopoietic process of a system, 'it must be guaranteed that elements are reproduced as elements of the system and not as something else' (Luhmann, 1995, pp. 31, 37).

These six shared components reflect that systemic commons exist in the way social and semiotic systems function, communicate with the environment and reproduce themselves. In what follows, we delve into the education policies of Italy, France and Greece as texts in the Lotmanian definition of the term. By comparing the way they 'communicate' with corresponding EU policy discourse, we intended to uncover (1) the limitations of the accountability paradigm, (2) the hidden areas of entropy at the semiotic level that hinder policy convergence and (3) new insights that can facilitate the resolution of difficulties related to such convergence.

Research

To validate our working hypothesis, we treated policies on compulsory and upper secondary education in France, Italy and Greece as case studies. These member states embody important differences in socioeconomic and cultural levels as well as different educational profiles, specifically (1) in terms of public expenditure for education as a proportion of the gross domestic product (Eurostat, 2019), (2) in terms of the student–teacher ratio and the number of students per class (OECD, 2018a, pp. 350–355) and (3) in terms of the modernization of vocational education and training (Education and Training Monitor, 2018, pp. 98, 131, 164). Despite these dissimilarities, these member states were chosen because during the last 10 years, all three have faced, to varying degrees, forms of economic, security and migration crises and because an exploration of early school leaving rates (Education and Training Monitor, 2018, pp. 102, 125, 158) and PISA results (OECD, 2018b, p. 5) revealed essential similarities amongst these nations, albeit not in a way that would allow the establishment of common trends.

Methodology

To probe into the *semiospheres* of the case education policies, we used Jacobson's (1985) model of communication and pursued three methodological directions. First, we executed a temporal cut, exploring the *semiosphere* prevailing during the period after the Lisbon Agenda was implemented in 2001 to 2017. This methodological choice was prompted by Lotman's argument that a text even when taken in isolation, it is still 'the most valuable source of judgments about its own pragmatic connections' (Lotman, 1982). Second, we focused on three elements of Jacobson's model, namely, the *addresser*; the *addressee* (EU and member states) and the *message* as they are the systemic elements affected by the transition from governing to governance in the context of the EEPS. Third, we chose not to include in our analysis, the other three elements of the Jacobson's communication model—*channel, code* and *context*—because they present a lesser degree of differentiation across the national contexts: a) the white documents of the EU and its member states as considered as main the channels of communication, b) the code of communication despite the differentiations of the national language is always linguistic, and c) the context of communication although it can be interpreted differently across the national contexts, can also be

regarded as common given that communication takes place in the wider context of the EEPS and amid the pressures of a highly globalised environment.

Research corpus

The corpus in this research (Figure 1) was divided into four *texts*, one per education policy. For the Italian *text*, we examined 65 documents (30 laws, 30 ministerial decrees and 5 presidential decrees). The French *text* consisted of one document, *Le Code de l' Éducation 2018*, which contains administrative and legislative sections, is published every year and comprises all previously released official policy documents within our chosen time frame. The Greek *text* was composed of 111 documents (14 laws, 74 ministerial decrees and 24 presidential decrees). Finally, the EU *text* encompassed 38 documents (18 strategic policy documents, 12 council conclusions and 8 progress reports). The quantitative and qualitative analyses of these documents were carried out using MAXQDA 18.1.

Figure 1: Research corpus.

For the constitution of our corpus, we included only policy documents relevant to compulsory and upper secondary education and excluded policy texts pertaining to

purely administrative issues or specific types of schools (e.g. music or art schools). As shown in Figure 1, before the analyses even began, the number of policy documents per *text* was already an indicator of divergence amongst the respective *semiospheres*.

Research results

Apart from looking into the addresser, the addressee and the message, we investigated the presence of the first two elements through the presence of the *national 'I'* and the *EU* in the examined national policy texts.

The national 'I'

To ascertain the presence of the *national 'I',* we quantitatively analyzed two main categories of terms. The first category includes words and concepts that refer to this *national 'I'* either through the name of a country or three connotated words (the *nation*, the *state*, the *republic)* that project the *national* 'I' as a political entity. The second category comprises all adjectives deriving from the *national 'I'* (e.g. Italian, French, Greek). Tables 1 to 3 show that the *national 'I'* is differentially present in each policy *text*. The French text (Table 1) has the highest number of instances, with 2815 references (910 for the *national 'I'* as a subject and 1905 as an adjective).The Italian document (Table 2) exhibits 548 instances, almost equally divided between the two categories (256 and 292 occurrences of the first and second categories, respectively). The Greek text (Table 3) manifests the weakest presence, with 171 instances unequally divided between the two categories; the second category (140 occurrences) outranges the first (31 occurrences).

Table 1: Frequencies of occurrence of the national self in the French text.

FRANCE	CATEGORIES	FREQUENCIES	SUM
THE NATIONAL 'I' (as subject)	*La France*	**143**	**910**
	La Nation	**15**	
	L'Etat	**680**	
	La République	**72**	
THE NATIONAL 'I' (as adjective)	*National(e)*	**1653**	**1905**
	Français (adjective and language indicator)	**252**	
TOTAL			**2815**

Table 2: Frequencies of occurrence of the national self in the Italian text.

ITALY	CATEGORIES	FREQUENCIES	SUM
THE NATIONAL 'I' (as subject)	L'Italia	16	256
	La nazione	0	
	Lo Stato	152	
	La Repubblica Italiana	88	
THE NATIONAL 'I' (as adjective)	Nazionale	207	292
	Italiano (adjective as language indicator)	85	
TOTAL			**548**

Table 3: Frequencies of occurrence of the national self in the Greek text.

Greece	CATEGORIES	FREQUENCIES	SUM
THE NATIONAL 'I' (as subject)	Greece* as territory	30	31
	Nation (έθνος)	0	
	State (κράτος)	1	
	Republic (Δημοκρατία)	0	
THE NATIONAL 'I' (as adjective)	National (εθνικός)	71	140
	Greek (*228/297 Greek language as school subject)	297	
TOTAL			**171**

The EU

To determine the presence of the EU in national *texts*, we undertook quantitative and qualitative analyses and located the number and types of references of any form pertaining to the union. Tables 4 to 6 indicate that the number of occurrences and the content of these occurrences differ from one member state to another. The French document has the highest number of occurrences (138) that fall under nine categories, amongst which the most frequent concern European schools in Strasbourg (58 instances) and the European economic space (25 occurrences), followed by mentions of the EU and relationships and cooperation with EU agencies and other member states, each with 13 occurrences.

Table 4: Categories and frequencies of references to the EU in the French *text*.

FRANCE	Categories of references to the EU	Frequencies
1)	European schools (Strasbourg)	58
2)	European economic space	25
3)	EU	13
4)	Cooperation, relations, European agencies	13
5)	Members of the European Union	13
6)	Curriculum (European policy, foreign languages)	11
7)	'The European environment' of the country	2
8)	The European flag	2
9)	The big European project	1
TOTAL		138

The Italian text evinces a lower number of instances than that found in the French text, but this country exerts a strong impact on the EU as a partner in dialogue regarding the design of its education policy. In the Italian documents appear 11 occurrences of decisions made by EU institutions, 9 in regard to the EU's policy on the Italian curriculum and 4 on specific references to EU recommendations on Italy's education policy.

Table 5: Categories and frequencies of references to the EU in the Italian *text*.

ITALY	Categories of references to the EU (15 documents)	Frequencies
1)	EU institutions (council, commission, parlement)	11
2)	Curriculum	9
3)	Funding	7
4)	Citizens from other EU countries	6
5)	CERCR	5
6)	Equivalence of diplomas	4
7)	European projects	4
8)	Europe as entity	4
9)	Reference to EU recommendations for education policy	4
TOTAL		53

The Greek documents show the least number of instances (23), amongst which the two highest categories are either generic references to the EU, the EU identity and the EU council in general (eight occurrences) or specific areas of alignment with European regulations on education (European students exchange programs, the Common

European Framework of Reference for Languages and the European Credit System for Vocational Education and Training).

Table 6: Categories and frequencies of references to the EU in the Greek text.

Greece	Categories of occurrences referring to the EU (13 documents)	Frequencies
1)	*EU-EU identity-EU Council*	**8**
2)	*European student exchange programs*	**4**
3)	*European portfolio of languages and CERCR*	**3**
4)	*European funding*	**3**
5)	*Citizens from other member states*	**2**
6)	*Curriculum (European civilization and institutions as school subject)*	**2**
7)	*European Credit System for Vocational Education and Training*	**1**
TOTAL		**23**

The message

To scrutinize the message conveyed by each policy *text*, we carried out two types of analysis. The first was a qualitative thematic category analysis of each *text* using MAXQDA, and the second entailed the use of Leximancer to create concept maps for the thematic category *goals and objectives of education*, which is situated either at the code or subcode level, depending on national *text*.
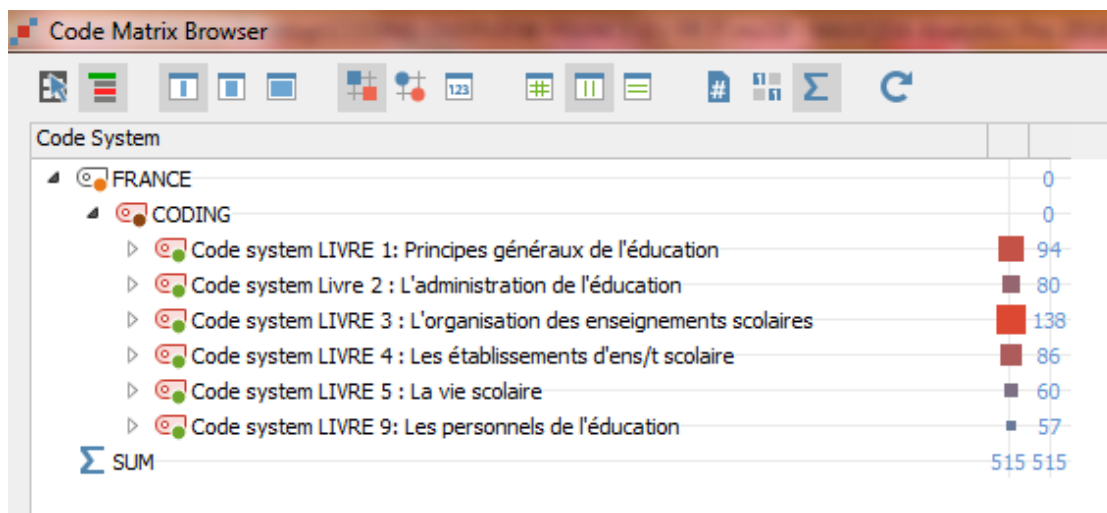
The creation of thematic categories

Thematic categories were created inductively and sequentially in three stages. In the first stage, we created main topological categories which, in the second stage, were elaborated in first-coding categories on the grounds of their semantic density, relative autonomy in relation to adjacent thematic categories and frequency of occurrence. In the third stage, the first-coding categories were further elaborated in second-level coding. Finally, all the thematic categories were tested in terms of the validity of their data material.

Figures 2 to 4 illustrate four core observations: (1) each education policy comprises different categories, which are of varying sizes and ranges, thus revealing the size, range and content of each *semiosphere*. For methodological reasons, we translated only the thematic categories of the Greek *text* as the exact same linguistic and semantic equivalents exist in English without any semantic ambiguities. We refrained from

adopting the same approach for the French and Italian *texts* because conceptual misunderstandings can be found in the translations.

Starting with France, the main thematic categories are already structured in the French *text* as both the administrative and legislative sections of *Le Code de l'Éducation* are already organized in books (*livres*). We cite here the six categories that are relevant to the scope of our research. We observed that the French policy text exhibits wide thematic categories regarding the frequencies of a code occurrence, with the largest class being the *organisation des enseignements scolaires* (organisation of school teaching/education/schooling/instruction as the word *enseignement* does not have only a direct translation in English) followed by the *principles généraux de l'éducation (general principles of education).*

Figure 2: Man thematic categories for the French *text.*

In the Italian *text* (Figure 3), the coding is different and very clear. There are four thematic categories: a*dministration (amministrazione)*, *school (scuola)*, *school staff (personale scolasico)* and *students (studenti).* These are narrower in focus than the categories of France given their focus on school-level codes. The thematic categories *administration* and *school* are the most frequently occurring.

Figure 3: Main thematic categories for the Italian *text.*
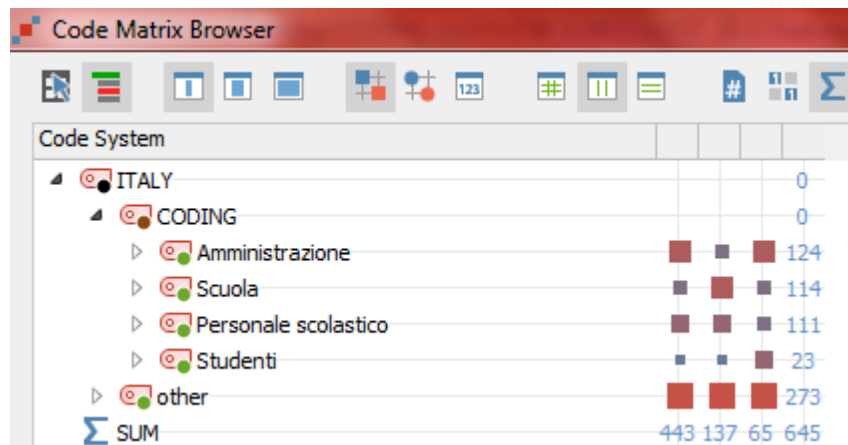
The Greek *text* (Figure 4) features more categories than those found in the first two types of texts, but they are also even narrower as they point to specific aspects of school life. These are also the least frequently occurring categories. Moreover, the absence of overarching categories has given rise to low-frequency categories, such as *school leadership* and *goals and objectives of education*. The two high-frequency classes are *students* and *administration*, which are far superior in these terms to the other thematic categories.

Figure 4: Main thematic categories for the Greek *text.*
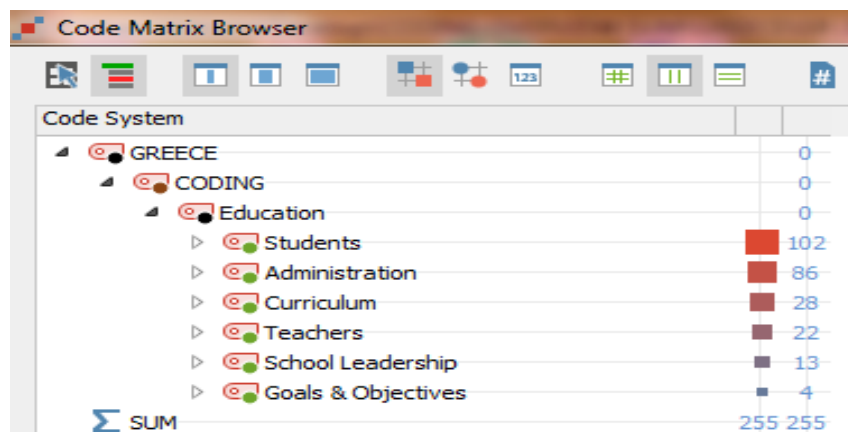
The differences amongst the case countries become even more obvious if we look at the subcode level of the thematic categories, which we excluded from the paper because of space constraints. A comparison of Figures 2 to 4 with Figure 5sheds light on the main

thematic categories of the EU *text* and directly indicates the different priorities and missing elements in the national *texts*. Some elements of the EU's thematic categories are still found at the subcode level of the national *texts*, but the fact that they are not frequent enough to constitute a category on their own signifies the priority level accorded to these categories.

Figure 5: Main thematic categories for the EU *text*.

Concept maps of the goals and objectives of education category

We examined the boundaries of the *semiosphere* and the degree of communication between the semiotic systems of the EU and those of the three member states in greater depth by analyzing the thematic category *goals and objectives of education*. This analysis brought to light three key avenues of contrasts: the code/subcode level, the frequency level and the concept map level.

The first parameter of differentiation is the *position* of the *goals and objectives of education* category in the respective policy *texts*. The thematic category is a code in the EU and Greek *texts* but a subcode in the French and Italian texts. It is also interesting to underline that subcode positioning equally varies. *Goals and objectives of education* is a subcode of the thematic category *general principles of education* in the French *text*, whereas it is a subcode of the thematic category *school* in the Italian *text*.

The second parameter of differentiation is the frequency with which the code/subcode appears in the policy *texts*. In France, the goals and objectives of education are communicated every year given that the reference document is published annually (Table 7). In Italy, the goals and objectives of education were communicated in six out

of 65 policy documents released in 2000, 2003, 2008, 2013 and 2015. In Greece, the goals and objectives of education were communicated in only two out of 111 documents published in 1998, 2006 and 2017. In the EU, the goals and objectives of education are mentioned in 24 out of 38 texts, and these issues are communicated every year.

Table 7: Frequencies of the thematic category *goals and objectives of education*.

Text	Number of texts	Frequency
France	*1/1 text*	*Every year*
Italy	*6/65 texts*	*2000, 2003, 2008, 2013, 2015*
Greece	*2/111 texts*	*2006, 2017*
EU	*24/38 texts*	*Every year*

The third parameter of differentiation revolves around concept maps. To visually map each semiosphere, we extracted the coded elements of the category *goals and objectives of education* with the MAXQDA software and created concept maps for this thematic category using the Leximancer software. Given that each policy *text* belongs to a different writing culture, which may create bias in the visual representation process, we took the methodological decision to create concept maps of *four-level nodes*, whose sizes indicate their importance in a concept map.

The concept map of Italy (Figure 6) is composed of the following nodes: *Italy*, *school*, *training* and *education*. The *training* node is the largest, containing the variables *teaching*, *higher*, *technical (education)* and *professional* (*education*). This node also overlaps significantly with the *education* ode. Both these nodes are connected through the variable *professional* with the node *school*, which in turn, is linked to the node *Italy*. The distance of the node Italy from the other three nodes reflects the country's principle of school autonomy (*autonomia scolastica*).

Figure 6: Concept map of the coded segments *"Goals and objectives of education"* for Italy.


The concept map of France (Figure 7) is constituted by the nodes *education (education)*, *equality (égalité)*, *citizenship (citoyenneté)* and *schools (*of any type for the French term *établissements scolaires)*. The largest node is the node of education, which contains the variables *France*, *education, school (scolaire)* and *training (formation)*. The node of education overlaps with the node *equality*, which consists of the variables *school*, *professional (professionnelle)*, *equality* and *cooperation (coopération)*. Interestingly, the *education* node is linked to the *equality* node via the variable *school*, the overlapping *education* and *training* nodes are linked to the node *school and training institutions* (établissements *scolaires*) through the variable *equality* and the *citizenship* node is linked to the *equality* node by the variable *professional (education)*. Equally intriguing is the difference in the position of the *national 'I'* in this concept map in relation to the Italian concept map. *France* is part of the *education* node, which is connected to founding values of French culture (*equality* and *citizenship*), whereas *school and training institutions (établissements scolaires)* are in a more distant position.

Figure 7: Concept map of the coded segments *"Goals and objectives of education"* for France
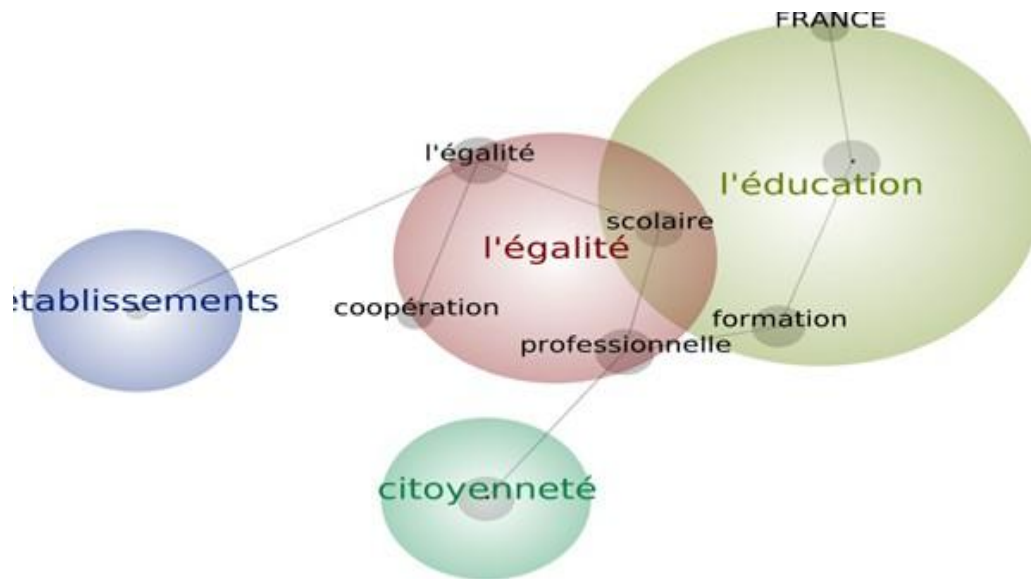
The concept map of Greece (Figure 8) comprises the nodes *development, student, identity* and *collectivity*. The absence of the *national 'I'* in this concept map corroborates our quantitative finding in the previous section on the quantitatively weak presence of the *national* "I". The *national 'I'* appears indirectly through two verbs, namely, *assures* and *provides*, which reveal the role of the state in the national education system of Greece. The largest node is *development*, which overlaps considerably with the nodes *students* and *identity*. The node *identity* overlaps with *student* and *development* and contains the variables *all*, *students* and *society*. Finally, the *collectivity* node is the most distant; encompassing the variables *collectivity* and *freedom* and is linked to the node *students* through the variable *human rights*. The presence of the *collectivity* node in the education policy concept map signifies a strong cultural element of Greek society—Greek culture is collectivist in nature. It scores only 35 out of 100 in the Hofstede scale of individualism, whereas France and Italy score 71 and 76 out of 100, respectively.

Figure 8: Concept map of the coded segments *"Goals and objectives of education"* for Greece.
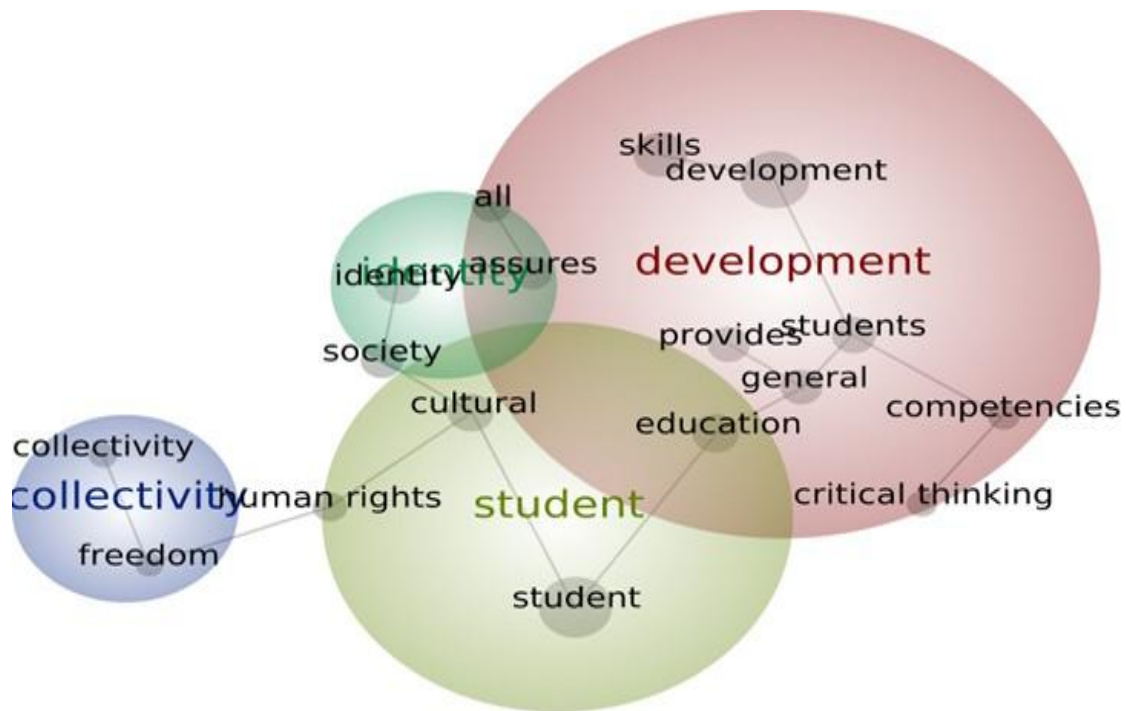
Finally, the concept map of the EU policy (Figure 9) is made up of the following nodes: *training*, *participation*, *education* and *European*, amongst which *training* is the largest node. The *European* node overlaps with the *training* node, which in turn, overlaps markedly with the *participation* node. These overlays are a visual representation of the EU's argument about the connection amongst skills, employability and participation in society, as expressed recently in the New Skills Agenda (2016, p. 2). More specifically, the agenda declared the following:

> *'Skills are a pathway to employability and prosperity. With the right skills, people are equipped for good-quality jobs and can fulfill their potential as confident, active citizens. In a fast-changing global economy, skills will to a great extent determine competitiveness and the capacity to drive innovation. They are a pull factor for investment and a catalyst in the virtuous circle of job creation and growth. They are key to social cohesion'.*

Figure 9: Concept map of the coded segments *"Goals and objectives of education"* for EU.
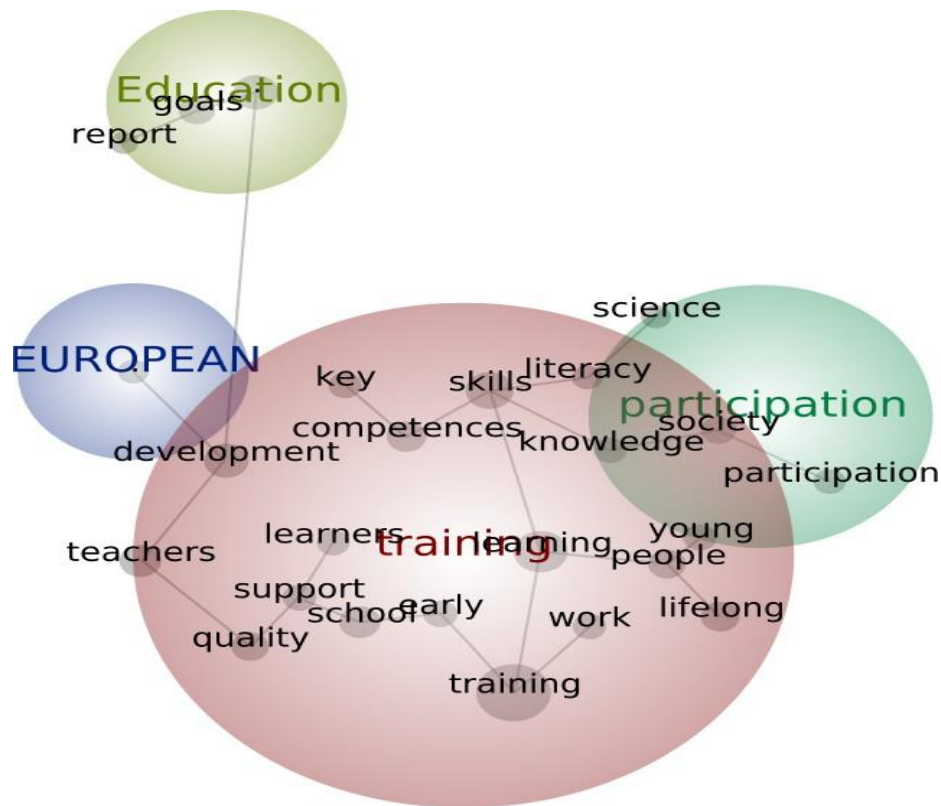
The *training* node differs in degree of content and complexity from the other nodes in the same concept map but also in relation to the nodes in the national concept maps. This node contains three main chains of variables: (1) *key skills*, *competencies*, *literacy*, *knowledge*, *society*; (2) *lifelong learning for young people*, *work* and *training*, which overlap with the node *participation*; (3) the variable *development*, linked to the variables *teachers*, *quality*, *school*, *support* and *learners*, which overlap with the node of *European* (identity) and linked to the node *education* as a carrier of this development. It is important to note that the connections amongst these variables are closer to the node *European* than to the other nodes of the concept map. Finally, in the node *education* are two linked variables: (educational) *goals* that reveal the EU's clear orientation towards achieving its goals and objectives and (progress) *reports*, which function as moments of control over and feedback on anticipated outcomes.

Locating semiotic entropy

The results exposed multiple levels and layers of semiotic entropy amongst the policy *texts* of France, Italy and Greece and between these documents and the EU *text*.

Differences in the scene of address

First, the findings brought to light diverse degrees of presence of the *national 'I'* and the *EU* in the policy texts. On the one hand, the difference in the representation of the *national 'I'* in the policy *texts* is fundamental—considering that the self-referentiality of the social and semiotic systems, which operationalised through *autopoiesis* and *autocommunication*, respectively, are based on the systemic *'I'*. From a social systems perspective, the importance of *'I'* is foundational as it is requisite both for internal differentiation (reproduction) and external differentiation (distinction from the environment) (Luhmann, 1995, p. 189). From a semiotic perspective, 'the structure of the "I" is one of the basic indices of culture' (Lotman, 2004, p. 147), and the system's self-description is the 'highest form and final act of a semiotic system's structural organization'(1990, p. 128) as 'the system through the stage of self-description . . . assigns to itself clear boundaries and a higher degree of unification but also makes a boundary of the fact of its self-consciousness'(2004, p. 172).

The association between the systemic 'I' and key systemic operations was also highlighted by our results. In all three national *texts*, there seems to be a correlation between the strength of the systemic *'I'* and the frequency of the code/subcode *goals and objectives of education*, with the case of the Greek *text* being the most characteristic. Greek education policy evinces the lowest and weakest presence of the *national 'I'* and the lowest and weakest frequency of reference to educational goals (Tables 1, 2, 3 and7).

The degree and type of presence of the EU as a partner in dialogue in the national *texts* is also paramount when taking into account Butler's (1997) work on *discursive performativity*. Butler argued that every accounting takes place within a *scene of address* (p. 5), wherein the discursive constitution of a subject and the perception of interpellation are fundamental parameters—both for the communication process and the perception of accountability because 'no account takes place outside the structure of address' (p. 36), and no account *'can be understood outside the interlocutory sense it takes place'* (p. 112). In other words, a weak representation of the EU as addresser or

addressee affects the perceived *scene of address* and, by extension, the convergence process. This weak representation of the EU in the national texts is also evident in the three concept maps (Figures 6–8) as the words 'Europe' and 'European' are unrepresented in the four-level nodes.

Differences in the *message*

We obtained three core observations regarding the message. First, the qualitative thematic analysis of the policy texts revealed different thematic categories in the first coding level amongst the three national *texts* but also varying ranges, arrangements and structures of these thematic categories in the three countries. Second, the comparison of the common thematic categories of member states with the corresponding ones in the EU policy *text* revealed the boundaries in transmission and reception as well as the semantic entities that have been discarded or have not reached first-level coding in the national policy *texts*. Third, the four-level node concept maps for the thematic category *goals and objectives of education* pointed to distinctions in the type (content) of four-level nodes, the variables and links attached to each node, the proximity of the nodes and the clustering networks of nodes within the concept maps. Comparisons amongst the national texts also illuminated differently perceived, lived and projected realities as well as different subject and semantic configurations. In contrast, the comparisons between the concept maps of the national texts and that of the EU document uncovered common areas of untranslatability or prioritization operationalised under the form of absence in the four-level node concept maps. More precisely, the words *Europe*, *European*, *science*, *participation*, *report*, *knowledge society*, *key competencies*, *work*, *quality*, *learners*, *lifelong*, *young people*, *teachers' quality* and *development* do not appear in the concept maps of the three national *texts*.

The differences in the message delineated that each system selects only the information 'that the system itself devises and holds relevant' (Luhmann, 1995, p. 68) and that each system uses the selection of information as an 'event' through which it 'reduces complexity insofar as it announces a selection and thereby excludes possibilities' (1995, p. 68). However, the internal diminution of entropy for each national system increases the entropy in the EEPS given that the different semiotic substrata hold varying types of information as relevant. This intersemiotic entropy prevents 'understanding', which is, for Luhmann (1995, p. 117), the third selection of a communicative act, apart from

'information' and 'utterance'. The importance of the findings lies precisely in this contradiction between the two types of entropy. As Luhmann (1995, p. 1248) put it, 'entropy indicates more precisely where the problems lie whose solutions enable communication in the course of evolution, get system information going and transform improbabilities into probabilities'.

Semiotics versus statistics

The results are valuable as they validated our working hypothesis on the need to use different metrics and introduce semiotics to explore how education policy *texts*, as semiotic manifestations of diverse social subsystems of education, communicate and how, through this communication, such texts change and converge. The importance of the findings is highlighted first through the additional data that they offer when compared with the relevant data originating from the accountability and performativity paradigm and second through the additional perspective that they present with respect to the policy convergence process.

A comparison of the statistical data related to the two initial benchmarks of reference would indicate that their value is limited in the informative domain at the moment of evaluation. More precisely, the Horizon 2020 agenda stated that the rate of early leavers from education and training aged 18 to 24 should be below 10% and that fewer than 15% of 15-year-old individuals should be under skilled in reading, mathematics and science. As presented in Table 8, all three countries exhibited reduced proportions of early school leavers from 2014 to 2017. Greece and France have attained the benchmark of 10% since 2014, and Greece had the lowest percentage (6%) of early school leavers in 2017. Italy has not only satisfied the standard but has also exceeded the EU average for this indicator. What we do not see in these results is, for instance, the different national *semiospheres* reflected in the repetition of class in the three countries, how various national traditions chose to tackle low educational performance in times of acute social crisis for particularly vulnerable population groups and how the above-mentioned parameters are reflected in statistical data concerning school dropout or retention rates. Furthermore, if we compare the promising performance in respect of the EU benchmark with that concerning basic literacy, we will notice that the situation is far less favorable; the percentages in all the three countries are well above the EU benchmark of 15%, but no indications are explicitly indicated on how these countries are to

proceed. More specifically, in relation to underperformance in mathematics, the performance of the three countries go considerably beyond the EU standard and the EU average. France's performance reflected deterioration in 2017, Italy improved only slightly from 23.3% to 24.7% and Greece achieved almost no change. In relation to underperformance in reading and science, statistics showed that countries are far from keeping pace with the benchmark and that outcomes have deteriorated since 2014. Nevertheless, we come once again to the same deficiency: These statistics do not provide insights on how to improve performance, and they indicate measurements of different data that mask the importance of semiotic differences.

Table 8: Performance of France, Italy and Greece as regards the two EU benchmarks.

EDUCATION and TRAINING MONITOR (2018)	FRANCE		ITALY		GREECE		EU AVERAGE	
	2014	2017	2014	2017	2014	2017	2014	2017
Early leavers from education and training (age 18–24)	9%	8.9%	15%	14%	9%	6%	11.2%	10.6%
Proportion of 15 year-old underachievers in reading	18.9%	21.5%	19.5%	21%	22.6%	27.3%	17.8%	19.7%
Mathematics	22.4%	23.5%	24.7%	23.3%	35.7%	35.8%	22.1%	22.2%
Science	18.7%	22.1%	18.7%	23.2%	25.5%	32.7%	16.6%	20.6%

Source: Education and Training Monitor (2018)

Returning to our initial argument on the need for a complementary language, we contend that performance and accountability data have limitations in the ways by which they can improve education policy analysis and converge at the EU level. The statistical data on students' learning outcomes or member states reaching benchmarks are snapshots of performance based on previously defined and, therefore, static measurements of performance variables. These do not clarify the causes or factors of unfavorable outcomes, which may also be elusive as they are out of context. To recapitulate, performance variables that address a matter irrelevant to the nature or drivers of performance are restricted to tackling symptoms and not the root problem. The value of semiotics compared with statistics is that by shifting focus from performance and outcomes, this domain repositions EU policy convergence to its initial

basis, relaunching the dialogue with those 'who do not see things from the same angle as we do' (Ricoeur, 2006, p.27) and remind us that in a dialogue, 'non-comprehension is just as valuable a meaning-making mechanism as comprehension' (Lotman, 2004, p.6).

Semiotic translation as a new form of knowledge brokering

Knowledge brokering has thus far been used as the translation equivalent of policy convergence. As proclaimed in the relevant literature, the main tasks of a knowledge brokering perspective are to 'translate, coordinate and align perspectives' (Wenger, 1998, p. 10) between researchers and policy makers and construct 'a language in which the parties can place themselves and engage with each other in mutual understanding' (Barnett, 2003, p.xvii). In this context, knowledge brokers operate as a 'new layer of translators' (Rasmussen & Holm, 2012, p. 67) who 'facilitate the transfer of research and other evidence between researchers and practitioners' (Ward et al. 2009, p. 2) and 'operate as knowledge managers, linkage agents or capacity builders who create connections between researchers and their various audiences' (Meyer, 2010).

However, although knowledge brokering refers to an operational translation of data between different hierarchical and operational levels of afield, the semiotic entropy uncovered in our research clearly indicates that such approach should broaden its spectrum to include an additional direction. The findings reconfirmed Lotman's (2004) central viewpoint that 'the value of dialogue is linked not to the intersecting part, but to the transfer of information between non-intersecting parts' (p. 5) and the need to explore the disturbance of uncoded events (Luhmann, 1995, p. 142) in the communication process. In this instance, the role of semiotic knowledge brokering would be, at the synchronic level, to locate the 'noise', the 'disturbance', the events of non-communication, and, at the diachronic level, to locate the 'explosive moments' in systemic history through the observation of a system's *autopoietic* and *autocommunicative* processes (Lotman, 2004). Lotman (2004, p. 123) defined 'the moment of explosion' as the 'moment of unpredictability [that indicates] a sharp increase in the informativity of the system' (p. 14). It is the moment in which 'an 'external' culture [finds] for itself a name and a place in the language of the culture into which it seeks to insert itself' (p. 134). The location in the respective systemic histories of the 'moments of explosion' and of the conditions that allowed their emergence in the

past can proffer valuable information on the methods that enable us 'to increase the receptivity and dialogic capability of a culture' (Torop, 2008) and help 'translations' that have already made their way through the semiotic system but remain at the 'moment of primary explosion' (2004, p. 150) reach higher moments of consciousness in the systemic self. Table 9 summarizes the principal points of our argument.

Table 9: Additional language for policy convergence.

Paradigm of thinking	Accountability	Semiotic knowledge brokering
Data	Benchmarks and student performance	Non-intersecting parts of dialogue in policy texts
Comparisons	Between differences in performance and differences in policy convergence	Between semiotic differences and differences in meaning
Tools	Statistics	Semiotics
Obstacles	Operational entropy	Semiotic entropy
Aim	Increase attainment of benchmarks within the EEPS and improve student performance	Increase informativity of the semiotic system within the EEPS and improve understanding

Put differently, we contend that the additional language provided by semiotics will pave the way for the initiation of more connective actions that will enhance systemic informativity. In this context, the aim of semiotic knowledge brokering would be locating areas of synchronic entropy within each *semiotic text* of the EEPS and, diachronically, identifying 'moments of explosion' to engender new understandings and thereby transform the unrealized possibilities of communication into reality.

Conclusion

On the basis of Lotman's (1977, 2004, 2005) and Luhmann's (1995) theorizations regarding semiotic and social systems, this research demonstrated that education policies are complex social semiotic systems that need to be understood in a communication context of coordinated change in the EU education policy space. The results unveiled previously undetected areas of semiotic entropy, underlined the

limitations of the accountability paradigm and the need for complementary data and placed semiotic knowledge brokering as an additional language from which to comprehend policy convergence. The paper concluded that a diachronic and synchronic semiotic knowledge brokering to the education policy documents of member states facing difficulties not only can offer valuable insights to policy convergence but also introduces a different kind of dialogue that could be beneficial in the process of European integration.

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