

Syncretic modality in slideshows in the era of Digital Humanities: Towards a reconceptualization of visuals?

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Abstract

The pervasiveness of slideshows in present-day academic lectures calls for a continuous redefinition and problematization of the nature and functions of modes, as well as of their interaction in a multimodal space such as the slide. Indeed, intense visuality in lectures is linked to a growing need for the ability to decipher the complex semiological landscapes that slides represent. This work is based on the analysis of a corpus of lecture slides drawn from the MIT OpenCourseWare initiative. Through a qualitative approach, it observes the fluidity of the different types of resources, with particular attention paid to visuals. This study offers an analytical framework which represents an embryonic rubric for operationalizing the grammar of visuals. It is based on a fluid and dynamic conception of visuals and focuses on the hybridity of the different semiotic resources, which often cannot be ascribed to specific categories without running into reductionist simplifications. The approach adopted aims to go beyond the investigation of the contribution made by individual modes, and to consider the meaning created dynamically by the interaction of the different resources, in a circular process which goes from the singular to the global and vice versa. Results show that the multiple semiotic resources involved develop syncretically and have a reciprocal transformative function in the meaning-making process. Also, they synergically convey the information desired through their mutual validation.

Keywords: visual communication, PowerPoint, syncretic modality, lecture slides, social semiotics, slideshow presentations, Digital Humanities.

Resumen

Modalidad sincrética en las presentaciones de diapositivas en la era de las humanidades digitales: ¿hacia una reconceptualización de los elementos visuales?

La generalización de las presentaciones de diapositivas en las clases actuales llama a una continua redefinición y problematización de la naturaleza y de las funciones de los diferentes modos, así como de su interacción en un espacio multimodal como la diapositiva. De hecho, la intensa visualidad de las clases conlleva una creciente necesidad de saber descifrar los complejos paisajes semiológicos que representan las diapositivas. El presente artículo se basa en el análisis de un corpus de presentaciones de diapositivas de clases procedentes de la iniciativa *MIT OpenCourseWare*. Mediante un análisis cualitativo, se analiza la fluidez de los diferentes tipos de recursos, con especial atención a los elementos visuales. Este trabajo ofrece un marco de análisis que representa una rúbrica embrionaria para operacionalizar la gramática de los elementos visuales, que se basa en una concepción fluida y dinámica de los elementos visuales y se centra en el carácter híbrido de los diferentes recursos semióticos, los cuales a menudo no pueden adscribirse a categorías específicas sin incurrir en simplificaciones reduccionistas. La elección de la perspectiva adoptada responde a la intención de no limitarse al análisis de la contribución de modos individuales, sino de considerar el significado creado de manera dinámica por la interacción de diferentes recursos, en un proceso circular que va de lo singular a lo global y viceversa. Los resultados muestran que los múltiples recursos semióticos involucrados se desarrollan de manera sincrética y tienen una función transformadora recíproca en el proceso de creación de significado. Asimismo, transmiten de manera sinérgica la información mediante su validación mutua.

Palabras clave: comunicación visual, PowerPoint, modalidad sincrética, diapositivas de clases, semiótica social, presentaciones de diapositivas, humanidades digitales.

1. Introduction

Slideshow presentations are becoming increasingly common in academic settings, and lectures constitute no exception to this trend. Multimodality approaches often focus on the analysis of different semiotic resources involved in the construction of meaning in social interaction. In this study, the emphasis is on specific communicative events, namely academic lectures. Given the plethora of semiotic resources which could be explored, the object of the investigation had to be restricted and is circumscribed to the use of visual material, with particular attention being paid to the role that slides play in the process of meaning-making. More specifically, the material analyzed is drawn from a corpus of lecture slides pertaining to four open courses run at MIT (Massachusetts Institute of Technology, Cambridge, USA) between 2014 and 2016.

Any multimodal analysis should take into account that the classifications of modes¹ are often contested because the very notion of ‘mode’ varies across different schools of thought (Mills, 2016). Modes may be broadly defined as semiotic resources or structures which allow for the construction of meaning in a given social and cultural context. However, what may be considered as a mode is highly dependent on the specific community, and the meaning which it allocates to such structures or resources, as well as the sign-making system that it shares. For instance, traditional modes may be seen as wide-ranging resources such as texts, images, sounds, gestures, etc. However, a given community of professionals may assign the status of mode to a precise element, such as color or font, in that it acquires a specific semiotic meaning which is clearly acknowledged within that particular community (cf. Djonov & Van Leeuwen, 2011). Kress also describes a mode as a “socially shaped and culturally given resource for making meaning” (2009: 55). Thus, a mode does not display a specific semiotic value *per se*, but such value depends on the usage that a social group makes of it. In other words, modes are unstable entities which evolve through social processes. The pattern which characterizes the use of modes in a certain context, and within a certain community, is definable as modal grammar (Jewitt, 2006).

It can be argued that not all modes have the same importance or prominence for the creation of meaning as such prominence is variable: it is highly context-dependent and participant-dependent. Moreover, such presumed prominence evolves over time, so that a certain mode may initially appear less salient, although ultimately it may represent the main vehicle through which meaning is created. What is more, a hierarchical conceptualization of modes is to some extent fallacious, given their interdependence and the fact that they often live in their reciprocal lights.

2. Multimodal approaches to discourse

Over the years, multimodality has become a key aspect of scientific enquiry across fields and disciplines and has been extensively employed to understand the functions of different semiotic resources (textual, auditory, visual, spatial, etc.) and their orchestration in the creation of meaning. As Jewitt (2014) points out, “multimodality can be understood as a theory, a perspective or field of enquiry or a methodological application”. As discourse is inherently multimodal, it comes as no surprise that, among its

various fields of application, multimodality has played a significant role in a vast array of discourse studies.

Following pivotal studies such as Roth (1994) or Kress and Van Leeuwen (2001), the constant growth of theoretical and methodological frameworks within the field of multimodality is indicative of the plurality of perspectives through which this ground can be approached. At the same time, it is also indicative of the growing need for new ideas and tools to investigate the complex multimodal phenomena which characterize contemporary social life.

According to Jewitt (2014), three main strands of research may be identified in the area of multimodality:

1. social semiotic, which investigates the way in which people use different multimodal resources in given social contexts;
2. systemic functional, which aims to observe how multimodal resources contribute to processes of meaning-making within an approach grounded in systemic functional grammar (see e.g. Halliday & Matthiessen, 2014);
3. interactional, which draws considerably on the notion of situated interaction (e.g. Scollon & Scollon, 2013) and places its focus on the participants and their reactions.

These approaches may at times overlap (for instance, both the social semiotic and the systemic functional approach draw significantly on Hallidayan theories) or may be fruitfully combined. From a different, albeit related, perspective, Jewitt, Bezemer and O'Halloran (2016) identify three focal approaches to multimodality, which include systemic functional linguistics, social semiotics, and conversation analysis.

Following a well-established tradition (see e.g. Baldry & Thibault, 2006; Bateman, 2008; Iedema, 2003; O'Halloran, 2004), this work hinges, ultimately, on an adaptation of Halliday's Systemic Functional Linguistics (SFL) (Halliday, 1975, 1994, 2003) to Social Semiotics (see e.g. Kress & Van Leeuwen, 2001; Van Leeuwen, 2005). It may be placed broadly within the area of 'multimodal discourse analysis' and partially draws on an approach which has been defined as 'systemic functional multimodal discourse analysis' (SF-MDA) (cf. O'Halloran, 2008; Jewitt, Bezemer & O'Halloran, 2016). As O'Halloran (2008: 444) notes,

[t]he sf-mda approach is concerned with the meaning potential of semiotic resources distributed across strata (i.e. context, discourse semantics, lexicogrammar and phonology, and typography/graphology) and the theory/analysis of the integrative meaning of semiotic choices in multimodal discourse. (O'Halloran, 2008: 444)

Halliday's traditional metafunctions of language (Halliday, 1975) have often been used to analyze the creation of meaning in intersemiotic systems. The ideational metafunction realizes the representation of entities extant in the world and, consequently, it is the 'content function of language' (Halliday, 2007: 183). The interpersonal metafunction is the 'participatory function of language' (Halliday, 2007: 184) and it allows the expression of the relationships between all the participants involved. The textual metafunction enables the actualization of ideational and interpersonal meaning in given contexts (see Royce & Bowcher, 2007).

A metafunctional analytical approach can find applications beyond the linguistic field and provides a descriptive basis across various meaning-making practices. For instance, visuals, on which this analysis concentrates, also fulfill the three metafunctions assumed in SFL in that their use can convey information, contribute to structuring the talk, and help the imagination of the audience in the construction of meaning (see Valeiras Jurado, 2015: 113).

In particular, the ideational metafunction represents the key focus of this study. In this respect, Unsworth (2006) suggests the notions of concurrence, connection and complementarity to describe the processes through which ideational meanings between image and language are created. Concurrence is related to an (approximate) equivalence between the meaning conveyed by image and language. Connection refers to the creation of meaning through the relations developing between image and language (such relations may be spatial, temporal, causal, etc.). Finally, in the case of complementarity, image and language construct different, but complementary, meanings by corroborating or neglecting one another.

This classification is partial, in that it is based fundamentally on a bimodal perspective which takes into account only images and texts and ignores other semiotic resources which unavoidably play a role in the creation of meaning in most social contexts. Also, these processes may be fluid and dynamic and not necessarily mutually exclusive. However, it serves the crucial purpose of clearly illustrating that meaning is not created simply by the different

semiotic resources involved but ultimately by the processes which characterize the relationships between such resources.

On a practical note, it should be kept in mind that a complete description of the meaning-making processes which lie at the interstices of multiple modes is, inevitably, a partial task and would probably fail in providing valuable insights into complex intersemiotic relations. Any classification runs the risk of being reductionist and overly-rigid given the immense human creativity and the vast technological power at our disposal and the consequent infinite potential in combining different modes. However, improving our understanding of the semiotic resources available, and the intricacy of their relationships, can help raise critical awareness and sensitize us to their prospects and their contingencies.

3. Academic lectures

3.1. Lectures as multimodal events

The lecture has always constituted a space characterized by creative intersemiosis (Thesen, 2016: 35). At the same time, the importance assigned to different modes and their salience within lectures has constantly evolved. Clark (2006) points out that social practices in academia have progressively led to “the triumph of the eye over the ear” (2006: 13), and, continuing in this vein, Thesen observes that the written text has gradually imposed itself over the “predominantly oral, memorial culture of the medieval university” (Thesen, 2016: 38).² Similarly, Kruse (2006) also highlights the mounting importance of writing in universities. This epistemic shift should be continuously problematized, considering the implications that ‘the triumph of the eye’ has in modern academic learning environments, with the exigencies of moving beyond the textual mode, intended merely as the written word, to a perspective encompassing an ensemble of different visual modes. In particular, Bayne and Ross (2013) emphasize the key importance of visuals and suggest that the supremacy of the verbal text is fading away, to the extent that the written word can even become entirely unnecessary in some academic contexts.

In a lecture, all semiotic resources need to be investigated as a composite. No mode can be observed in isolation if the objective is to understand its social semiotic value within the complexities of a given communicative event. The focus of this preliminary investigation is restricted to the analysis of presentation slides and this choice is guided by two primary reasons. Firstly,

this work is only an initial step into a broader analysis of the components of the meaning-making ensemble involved in lectures, and a comprehensive investigation would obviously be unachievable (running the risk of oversimplifications which are against the very nature of a study aiming to observe the complexities of multimodal events such as lectures). Secondly, it is not excludible *a priori* that a student may access one specific type of material, such as the slides, without consulting the other sources of information available on the course webpage.

One should take into account that the open courses analyzed can provide different types of materials online, ranging from videos to slides, from readings to notes, from transcripts to extra exercises, etc. Ideally, when students access a course, they watch the lecture videos and consult notes and slides, thus practically recreating the space of the lecture. However, for some courses, lecture videos are not available, and, in any case, a student may consult one type of material, ignoring the others, or may access them asynchronously.

The primary target audience is represented by the students attending the lesson in class, who may simultaneously listen to the lectures and observe the slides whilst they are being projected. However, all the slides are available online and may be accessed across time and space by a wide range of users, described by MIT as belonging to three main groups: students, educators, and self-learners. Presenters are aware that the material will be publicly available and thus visible to a potentially infinite number of users. This may, directly or indirectly, affect the specific construction of a slide and the exploitation of the affordances of the different semiotic resources.

3.2. Slides

Slide presentations are widely used in different academic settings, such as conferences and seminars, and also represent a standard tool through which lectures are conducted. Lecture slides may be ascribed to the “slide show genre” (Charles & Ventola, 2002: 170). While originally conceived as applying to conference presentations, this name may also be extended to lectures in which slideshows are employed. A slideshow may be included within the lecture genre as well, which, according to Fortanet’s (2005) classification, belongs to the category of “classroom genres”.

Lecture slides have been thoroughly investigated focusing on themes such as students’ reactions (e.g., Apperson, Laws & Scepansky 2008; Burke, James &

Ahmadi, 2009), performance and recall (e.g., Amare, 2006; Baker et al., 2018), and design recommendation (e.g., Garner et al., 2009). However, it should be pointed out that results regarding their efficacy are often inconsistent (see Levasseur & Sawyer, 2006, for an overview).

Slides are employed in lectures worldwide for several reasons: they help the speaker to follow the path envisaged in the presentation of the contents; they should favor understanding by students taking notes; they provide material which can be uploaded onto eLearning platforms, and so can be accessed remotely. However, extensive criticism has also been raised regarding the use of slides (see Kernbach, Bresciani & Eppler, 2015), especially in terms of information overload and as a potential distraction catalyst, hampering the full understanding of the talk. Moreover, Myers' (2000) reservations that PowerPoint (PPT) slideshows may lead the presenter to be an animator, rather than a lecturer, are still particularly relevant to any reflection on the use of these tools in academia.

The software employed for presentation design is generally Microsoft PowerPoint, which, in some settings, has become the standard, to the extent that the word is often used as an eponymy to refer to all types of presentation applications. However, several other tools are available and include: Prezi,³ Keynote,⁴ Google Slides,⁵ Visme,⁶ Slidebean,⁷ and Swipe,⁸ among others.

The use of computer slides has profoundly affected the way we communicate and interact in lectures. In this respect, academics can exploit a vast array of multimodal elements, while fulfilling the need to conform to the demands set by the genre and the expectations that it generates (Archer & Breuer, 2015; Van Leeuwen, Djonov & O'Halloran, 2013). Indeed, joining the academic community also involves the ability to analyze the different functions of the multiple modes available. Thus, lectures should be designed in order to consider the importance of multimodal resources for the transmission of information. Indeed, they do not simply represent an additional support to the lesson itself but have a transformative value and play a crucial role in the success of the communicative moment.

On the one hand, we can argue that lectures have always encompassed multimodal potential (see section 3.1). On the other hand, new technological affordances can radically modify the processes through which the creation of meaning takes place in a lecture. For instance, the linearity and the sequential production which characterizes speech is based on a conception of

communication which is ontologically different from the simultaneous occupation of space that a slide presents, as illustrated by Kress in his discussion of the logics of time and space (Kress, 2005). In this regard, we can argue that the ephemerality of speech has often been contrasted to the permanence of writing, but this distinction to some extent loses its applicability in most contemporary contexts, for example, in the case of lectures which can be video-recorded and then re-watched *ad libitum*. Additionally, the “ability of the written text to travel across time and space” (Räsänen, 2015: 136) seems to be extended to an entire communicative event, such as a lecture, although in a reproduced context which may imply different enactments on the part of the agents involved and possible different effects in terms of the users’ interpretation.

4. Method

4.1. Corpus

The corpus under investigation consists of 2620 slides presented in 68 lectures during four courses randomly selected from the MIT website through OpenCourseWare, the initiative which involves the web-based publication of MIT course content.⁹ At the time of writing, the site offers more than 2400 courses and has had 300 million visitors. The material available includes, among others, videolectures, transcripts, slides, handouts, extra reading material, and syllabi. Table 1 presents an overview of the corpus:

Course	Number of lectures	Lecture code	No. of slides	Length of lecture	Instructor(s)	Year
A Introduction to Computer Science and Programming in Python	12	A-L1	35	43'05	AB	2016
		A-L2	24	43'30	AB	2016
		A-L3	21	45'01	AB	2016
		A-L5	35	41'08	AB	2016
		A-L5	24	41'27	AB	2016
		A-L6	58	48'21	EG	2016
		A-L7	35	41'32	AB	2016
		A-L8	21	41'43	AB	2016
		A-L9	26	47'27	AB	2016
		A-L10	39	51'25	EG	2016
		A-L11	40	49'12	EG	2016
		A-L12	38	48'31	EG	2016
B Foundations of Computational and Systems Biology	20	B-L1	62	1h06'10	CB,DG,EF	2014
		B-L2	26	1h16'47	CB	2014
		B-L3	46	1h20'00	CB	2014
		B-L4	44	1h22'37	CB	2014
		B-L5	51	1h20'05	DG	2014
		B-L6	85	1h08'13	DG	2014
		B-L7	45	1h21'27	DG	2014
		B-L8	44	1h20'27	DG	2014
		B-L9	36	1h22'05	CB	2014
		B-L10	32	1h18'25	CB	2014
		B-L11	42	1h22'39	CB	2014
		B-L12	72	1h05'50	EF	2014
		B-L13	88	1h04'21	EF	2014
		B-L14	118	1h11'37	EF	2014
		B-L15	152	1h19'18	EF	2014
		B-L16	150	45'10	EF	2014
		B-L17	42	1h14'14	GL	2014
		B-L18	58	1h20'29	DG	2014
		B-L19	47	1h22'12	DG	2014
		B-L20	61	1h17'56	DG	2014
C Poker Theory and Analytics	8	C-L1	50	30'48	KD	2015
		C-L2	50	1h08'28	JF	2015
		C-L3	76	1h11'44	KD	2015
		C-L4	112	43'39	KD	2015
		C-L5	104	46'25	KD	2015
		C-L6	14	1h20'08	AB	2015
		C-L7	21	1h04'13	BC	2015
		C-L8	58	1h04'46	MH	2015
D Reducing the Danger of Nuclear Weapons and Proliferation	2	D-1	29	1h35'26	VN	2015
		D-2	30	1h23'27	AB	2015
Total		68	2620			

Table 1: Corpus details.

The four courses belong to different areas (Electronic Engineering and Computer Science, Biology, Management, and Physics) and ran between 2014 and 2016. Each course was taught by at least two different instructors, and this criterion allows us to include a wider range of presenters (thus aiming for a more heterogeneous set of participants). Another criterion for selection was that the courses include complete videolectures and transcripts.¹⁰ Although this study prioritizes slides as the main object of observation, this choice is linked to the potential use of related material for subsequent analysis.

4.2. Approach

This study focuses on lecture slides¹¹ and, more specifically, on the use of visual semiotic resources, with the awareness that they are part of a wider multimodal event which is the lecture itself. Among the many approaches available to investigate a complex product such as a slide, the multimodal approach allows us to account for the key role played by a syncretic use of modes (and, in particular, of visuals) and the ways in which they contribute to meaning-making processes.

Among the plurality of multimodal practices in academic environments, slideshows represent a complex, quotidian space where the conflation of different modes becomes evident. A presentation, be it a PPT or other, becomes a multimodal product. Indeed, not only is it a conglomerate of individual modes (in that it includes a vast array of visuals but can also include audio and video material within the presentation) but, at a wider level, it is inseparable from the context of production and from the presenter, whose comments become an integral part of the presentation.

Thus, the slideshow can be observed at three different levels:

1. statically, by looking at the slide as a final entity, as a product *per se*;
2. dynamically, by observing the animation within the slides and the products incorporated. This level of analysis is appropriate to investigate genre hybridity, which in turn is interdiscursively related to other genres;
3. interactively, by observing the context of production and considering the slides as inherently linked to the communicative event in which they are shown. This level of analysis takes into account the social semiotic plane from a more inclusive perspective.

In this work the approach adopted aims to go beyond the observation of the contribution of individual semiotic modes and to consider the meaning created dynamically by the interaction of the different resources, in a circular process which goes from the singular to the global and vice versa. As Kress and Van Leeuwen (2006: 177) aptly state, multimodal analysis often implies reflecting upon “whether the meanings of the whole should be treated as the sum of the meanings of the parts or whether the parts should be looked upon as interacting with and affecting one another”.

This investigation is based on a model specifically developed for the analysis of visuals, which I define as IFV (Integrated Framework for Visuals), as illustrated in section 5. Methodologically, the framework loosely draws on a typology of visuals introduced by Rowley-Jolivet (2002). This analysis is inherently qualitative, and it is exempted from quantitative data for two primary reasons. Firstly, several detailed works have previously approached slideshows (in lectures and in other settings) from this perspective (see e.g. Diani, 2015; Rowley-Jolivet, 2002). Secondly, this paper is conceptually based on the recognition of the fluidity of semiotic resources and the problematization of their ascription to a specific category; thus, I would argue that a qualitative approach allows a minimization of the risk of running into reductionist simplifications which would go against the theoretical underpinnings of this work.

A comprehensive multimodal social semiotic approach to the investigation of tools such as PowerPoint as a semiotic practice should include three different dimensions: the software's design, the composition of slideshows, and their presentation, as Zhao, Djonov and Van Leeuwen (2014) pertinently point out. This study, however, focuses exclusively on the second dimension and, more specifically, on the use of visuals, in that it has the mere purpose to conceptualize them from the perspective of hybridity and to illustrate such hybridity through a limited number of examples selected to this end.

5. Towards a dynamic typology of visuals

Rowley-Jolivet's seminal study (2002) focuses on the importance of visuals in scientific conference paper presentations. Her four-dimension typology, broadly drawing on Bertin (1973), can also constitute a point of departure for the investigation of visual elements in lecture slides. However, shifting paradigms in the use of visuals (determined, *inter alia*, by new technological affordances) call for the need to reconceptualize and redefine typologies of visuals.

Although his theories have often been oversimplified, leading to static applications of fixed categories of visuals to heterogeneous and dynamic elements, Bertin himself emphasized that graphic representation is constantly subject to changes regarding the very nature of the image, which can become a living entity.

La grande différence [...] entre la représentation graphique d'hier, mal dissociée de l'image figurative, et la graphique de demain, c'est la disparition

de la fixité congénitale de l'image. Devenue manipulable par superpositions, juxtapositions, transformations, permutations, autorisant groupements et classements, l'image graphique est passée de *l'image morte*, de l'illustration, à *l'image vivante*, à l'instrument de recherches accessible à tous (Bertin, 1973: 7-8) (italics in original).¹²

Bertin's work paved the way for an approach that I would define as 'semiological infographics', given the semiological perspective adopted to investigate information design. Yet, some of the conceptual underpinnings of his work appear inapplicable to contemporary contexts, as will be illustrated.

Bertin (1973: 6) distinguishes between graphical images (such as graphs, diagrams, and maps) and figurative images (such as photographs),¹³ and Rowley-Jolivet's (2002) classification integrates them with scriptural visuals (including texts) and numerical visuals (e.g. mathematical formulas). Numerical and graphical visuals are generally considered monosemic, while figurative and scriptural ones are defined as polysemic (Rowley-Jolivet 2002: 28).¹⁴ According to Bertin (1973: 6), the reading of a graphical image is originally defined as monosemic in that each single element has a given, pre-defined value encoded by a single variable. Thus, if one variable represents a given value, the reading of the graphical visual should be unambiguous. For instance, if in a graph the blue color refers to a certain piece of information, it is supposed that the user will not have to make a hermeneutic effort to interpret the graph, as the image is theoretically monosemic. Instead, figurative images are traditionally described as polysemic and open to various interpretations. Clearly, this conceptualization (which Bertin applied specifically to the field of cartography) nowadays needs to be problematized and is not applicable *tout court* to other types of visuals. Indeed, although Bertin's interpretation was particularly influential when it was developed at the beginning of the 1970s, the complexities of new technology, and its affordances in the digital age, render its application controversial in the modern era. In this regard, I would argue that the constant increase in the level of sophistication in the creation of visuals makes the distinction between monosemic and polysemic items inevitably largely fallacious if applied to contemporary visual design.

This paper aims to show that this dichotomic distinction is fundamentally an oversimplification which neglects the polysemic value that graphical and numerical visuals may also assume and the hermeneutic effort involved in their processing. Secondly, the hybrid nature and the fluidity of visuals often make the very distinction between these categories unclear. The notion of

monosemic images (conveying apparently only one meaning) inexorably implies some shortcomings, such as the overlooking of the fact that sophisticated graphical images can be ideologically laden, elicit emotions, and convey multiple, even oppositional, subjective constructions of meanings.

Conceptually, Rowley-Jolivet (2002) defines ‘graphical’ and ‘figurative’ as belonging to the same semiotic system (visual), while ‘scriptural’ belongs to the linguistic semiotic system and ‘numerical’ to the mathematical one. The use of the term ‘visual’ to define both the semiotic system and the mode could be criticized; consequently, for the sake of clarity, in this work the term ‘illustrative’ is adopted to define the semiotic system which pertains to graphical and figurative visuals (see table 2). Although such distinction is heuristic rather than conceptual, it may avoid the risk of running into definitional overlapping.

Table 2 presents the Integrated Framework for Visuals, which is based on a typology that includes the categories suggested by Rowley-Jolivet (which I grouped under the label ‘form’), but is also extended to features such as synchronicity, aspect, format and hyperlinking. Far from representing an exhaustive typology, it aims to take into account different features which characterize a wide range of visuals and may be adopted for the analysis of slides. Consequently, this framework is tentative and constantly evolving, given the nature of the items contemplated. It may be considered as a ‘snapshot’ of a typology which is applicable to a specific genre at this point in time, with the awareness that technological developments will determine the need for its constant adaptation.

<i>Features</i>	<i>Classes</i>	<i>Examples</i>	<i>Semiotic system</i>
<i>Form</i>	scriptural	texts	linguistic
	graphical	graphs, diagrams	illustrative
	figurative	photographs	
	numerical	mathematical formulas	mathematical
	other	videos	hybrid
	hybrid	imagetext, logos	hybrid
<i>Synchronicity</i>	asynchronous creation		
	synchronous creation		
<i>Aspect</i>	static		
	moving		
<i>Format</i>	vector	.wmf; .cdr; .cgm	
	raster	.gif; .jpg; .png	
	other		
<i>Hyperlinking</i>	non-hyperlinked		
	hyperlinked		

Table 2: Integrated Framework for Visuals.

Visuals are firstly classified according to their form, including scriptural, graphical, figurative and numerical items, but also the classes ‘other’ and ‘hybrid’. Given the general tendency to conceive visuals as images, the

inclusion of scriptural and numerical elements in this category may appear debatable. However, visuals are here intended as a macrocategory, thus encompassing elements consisting of different visual signs. A description of visuals which does not include the scriptural and numerical elements is, of course, conceptually possible but appears in line with the dichotomic perspective that the theoretical background of this paper aims to deviate from, i.e. the conceptual contrast between words and pictures (and, more generally, between different categories of modes). The class ‘other’ heuristically encompasses all other potential forms of visuals, such as videos, which are not specifically contemplated in the traditional typology. Hybridity, as we shall see, is a feature which is present across visuals, and all items may present hybrid characteristics. Hence, these classes should be considered fluid and permeable. Some visuals may also be predominantly ascribable to one category, while displaying features of another. However, in some cases, the ‘hybrid’ label appears necessary as it is not possible to define which class is focal in order to ascribe the item to one single class. For instance, if we consider a logo which includes both figurative and textual elements, it would be conceptually fallacious to analyze the different elements as if they existed in isolation and thus the image text has to be conceived as a hybrid visual.

Visuals are also classified according to their dynamic aspect, in that both static and moving visuals may be present. Dynamicity encompasses different stages from complete steadiness, to the presentation of animated effects, to video material. As regards format, although it may not appear crucial for the construction of meaning (as images in different formats may not display manifest differences), raster and vector images¹⁵ carry with them affordances which can imply precise constraints in the production of the slideshow. Slides may also be classified according to the presence of hyperlinks. This aspect is not automatically applicable to all visuals, but in the digital age it seems to be acquiring particular importance and is relevant to the genre under investigation in this study. Slides may include external links, thus having an outward drive which cannot be ignored, in that the anchoring element (and the related content) becomes an additional source of information.

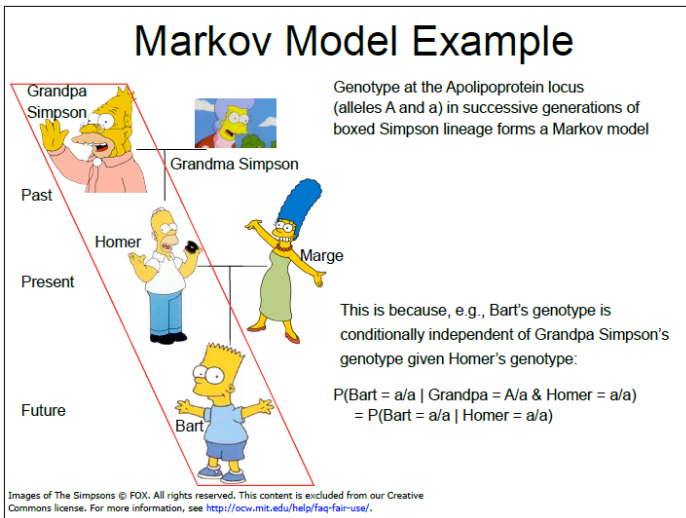
6. Slides as multimodal spaces

6.1. The fluidity of visuals

As mentioned above, this paper argues for the need to reconceptualize visuals according to fluid and dynamic categories. While some elements may

be unproblematically assigned one specific label as only one form of visual is present, in several cases this attribution is not possible. Indeed, new technology has led to further mutability in visuals, and the boundaries between the categories are often blurred. One single paper clearly cannot describe exhaustively the infinite forms of hybridity which emerge in complex spaces such as slides. Thus, the objective is to present selected examples which demonstrate the high level of intricacy which characterize visuals with merely illustrative purposes.

Not only can visuals not be easily ascribed to specific categories, but a single slide often includes multiple forms of visuals and it is impossible to define it as purely numerical, scriptural or figurative. By means of an example, Figure 1¹⁶ constitutes a complex modal ensemble in which different figurative elements, whose presence is crucial for the graphical conceptualization of the message, are clearly combined with scriptural ones. The construction of meaning is given by the interdependence of the different visuals, which create hybrid units acting in synergy and thus assuming a given epistemological value thanks to their mutual validation. For instance, a single visual (e.g. the image of Homer Simpson) is not only ‘accompanied’ by another (e.g. the textual element ‘Homer’), but a new compositional unit (whose different components reciprocally nurture their validity) is created, and it acquires a specific meaning within the entire space of the slide.



Source: [Chris Burge], [Foundations of Computational and Systems Biology], [2014]. (Massachusetts Institute of Technology: MIT OpenCourseWare), <http://ocw.mit.edu> (Accessed 25/06/2018). License: Creative Commons BY-NC-SA.

Figure 1: Hybrid slide (B-L10).

The analysis of the position that the different visuals assume within the slide is also critical to the definition of their meaning-making potential (see Djonov & Van Leeuwen, 2013), but this approach would clearly be beyond the scope of the paper, which is aimed exclusively at the problematization of a clear-cut separation between classes of visuals.

The next slide, as shown in Figure 2, presents a formula expressed through numerical signs, followed by the same concept in a more verbalized version (“in words”). The two forms coexist and, while scriptural signs can have a clarifying function, they both guide the viewer in the interpretation process. Thus, one visual is not merely an addition to the other but, rather, they become inseparable for the successful conveyance of meaning.

Markov Model (aka Markov Chain)

Stochastic Process:

- a random process or
- a sequence of Random Variables

Classical Definition

A discrete **stochastic process** X_1, X_2, X_3, \dots
which has the **Markov property**:

$$P(X_{n+1} = j \mid X_1 = x_1, X_2 = x_2, \dots, X_n = x_n) = P(X_{n+1} = j \mid X_n = x_n)$$

(for all x_i , all j , all n)



Image is in the public domain.

In words:

A random process which has the property that the **future (next state)** is **conditionally independent** of the **past given the present (current state)**

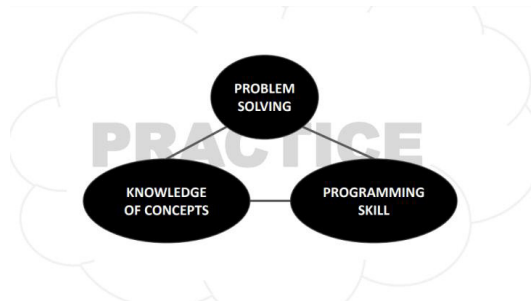
Andrey Markov, a Russian mathematician (1856 - 1922)

Source: [Chris Burge], [Foundations of Computational and Systems Biology], [2014]. (Massachusetts Institute of Technology: MIT OpenCourseWare), <http://ocw.mit.edu> (Accessed 25/06/2018). License: Creative Commons BY-NC-SA.

Figure 2: Hybrid slide (B-L10).

Figure 3 also presents figurative elements, as well as textual and numerical ones, within a graphical apparatus. They are all central to the representation of knowledge and the creation of a shared meaning among the agents involved. Hence, the slide itself constitutes what I define as a ‘multitopia’, meaning an environment which entails a variety of environments, characterized by the presence of various visuals which act synergically.

graphic, which is then composed of different signs. However, when observed individually, the different semiotic resources appear as a combination of texts, images, and lines, which co-construct meaning.



Source: [Ana Bell], [Introduction to Computer Science and Programming in Python], [2016], (Massachusetts Institute of Technology: MIT OpenCourseWare), <http://ocw.mit.edu> (Accessed 25/06/2018). License: Creative Commons BY-NC-SA.

Figure 5: Hybrid visual (A-L1).

In this case, lines play a chief function in that they represent a connection; they link the different elements, thus contributing to the creation of a specific visual syntax¹⁷ (Van Leuween, 2005). The meaning potential of these connections is noticeable and can indicate dependence, cause, development, etc. The line itself does not simply serve as a connector but has a transformative value, in that the single elements which are linked are not intended as isolated entities but as a part of new composition.

Another illustration of the hybridity of visuals is offered by Figure 6, which presents an instance of coding. Coding lies in between the realms of numerical and textual representations in that both semiotic systems are employed for the conveying of information. It may be described as a hybrid system, which inevitably generates visuals which do not clearly belong to a single traditional category.

```

def bogo_sort(L):
    while not is_sorted(L):
        random.shuffle(L)
  
```

Source: [Eric Grimson], [Introduction to Computer Science and Programming in Python], [2016], (Massachusetts Institute of Technology: MIT OpenCourseWare), <http://ocw.mit.edu> (Accessed 25/06/2018). License: Creative Commons BY-NC-SA.

Figure 6: Coding (A-L12).

As previously mentioned, logos constitute complex alphanumerical-pictorial ensembles, ascribable to the category ‘hybrid’. They often include both graphical/pictorial and scriptural elements which work in synergy.

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Source: [Kevin Desmond], [Poker Theory and Analytics] [2015], (Massachusetts Institute of Technology: MIT OpenCourseWare), <http://ocw.mit.edu> (Accessed 25/06/2018). License: Creative Commons BY-NC-SA.

Figure 7: Logos (C-L1).

Thus, it can be argued that each mode has a transformative function in relation to the others, transferring meaning from one element to another, which in turn is transformed, assuming a new meaning.

6.2. Multimodal syncretism

Slides include a vast range of semiotic modes, whose usage varies according to the presenter, the subject, and the educational objectives to be fulfilled, so that each course displays its own multimodal mannerism. Certain types of information can only successfully be conveyed through specific visuals, which are used in a syncretic way. In this respect, slides become catalysts for the syncretic use of multimodal resources.

Slides can be seen as multimodal spaces which incorporate multiple resources. To describe them, I suggest using the term syncretism, which contemplates the investigation of different modes and their relations from a global perspective. Like a chemical reaction which rearranges the atoms of the reactants to create different substances, the combination of the different modes creates a new final product. Thus, syncretic modality is in line with the concept of intersemiotic complementarity, i.e. how modes “complement each other in the ways that they project meaning” (Royce, 2007: 63). Different modes generate new inseparable entities, which exist in a perpetual entanglement.

7. Conclusions

Slideshows in lectures have become common in all disciplinary fields, and visually attractive presentations are often deemed necessary in order to meet students' expectations in the era of Digital Humanities. During lectures, students are expected to listen, watch and read at the same time. This appears in contrast to assumptions that we live in a logocentric society, as well as to traditional conceptualizations of representation in which text supersedes all other forms of meaning (Lim, 2004). The seismic epistemic shift which we have experienced has led to the imposition of a visual culture, and this fundamental change is also reflected in academic lectures, where multimodal resources can function as enhancers of knowledge popularization and knowledge communication. The different resources are not simply accompanying tools which only have an aesthetic function or which only guide the presenter through the lecture. Rather, they help listeners to co-construct knowledge and to engage in the process of creating commonly-shared meanings.

This work focuses on authentic examples of academic communication and provides a contribution to applied linguistics through two main focal points: 1) a theoretical one, which describes the fluidity of modes (with special attention being devoted to visuals), problematizes their very distinction, and suggests the conceptualization of syncretic multimodality; and 2) an empirical one, which observes real instances of modal syncretism in slides and confirms the blurred contours which exist between different types of modal resources.

The dilemma regarding whether new media require “a new concept of literacy, or simply a recombination of literacy practices” (Tyner, 2000: xv) remains unsolved. If the word ‘graphicy’ (see e.g. Donnison, 2004) has been introduced as opposed to literacy and numeracy to define the ability to master graphic and pictorial resources, I would argue for the need to conceptualize the notion of ‘modacy’, intended as the ability to master multiple modal resources, which has become crucial with the advent of new and converging technologies.

This paper also emphasizes the necessity to gain a finer understanding of the fluidity of modal resources, and their flexible and permeable nature. New technological affordances make their ascription to static categories highly problematic, and the time is ripe for a problematization of the very distinction of modes in the first place. Different semiotic resources are

unstable and dynamic. This is particularly evident for those ascribable to the category of visuals, which are becoming progressively hybrid to the degree that they may become increasingly complex and lose their defining features. Thus, it is often impossible to categorize slides as ‘scriptural’, ‘numerical’, ‘graphical’ or ‘figurative’, according to traditional paradigms, in that the majority of slides present a combination of different visuals. Overall, this approach highlights the need for a constant reconsideration of predefined categorizations of modes in a world where technological advances constantly create shifts in paradigmatic conceptions of the resources available, and new creative ways of combining modes become possible.

Clearly, the relatively limited number of courses and presenters involved in this study implies a word of caution regarding the possibility of drawing generalizable conclusions. Also, the themes of subjectivity and reflexivity inevitably play an important role in an area where individual choices may be determined by a complex array of factors which are not always available to the researchers. However, given their ubiquity and their relevance in academic lectures, slideshows represent a fertile ground for research.

On a practical note, the mastery of slides as a genre implies a deep understanding of the affordances of various semiotic resources in a given context. This, in turn, may lead to a more enlightened use of such resources and to a more successful construction of meaning, as well as (potentially) to communicative achievements and the ensuing educational success. Indeed, the acquaintance to how multimodality operates in educational settings can allow us to implement multimodal tools more effectively. From an educational standpoint, analyses of this type can contribute to helping lecturers become more cognizant of both the affordances of multiple semiotic resources and the need to consider them from a syncretic perspective.

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NOTES

¹ Following Bezemer and Kress's seminal definition, in this work a mode is intended as "a socially and culturally shaped resource for making meaning. Image, writing, layout, speech, moving images are examples of modes" (2008: 171).

² In this respect, see the concept of *lectio* and *disputatio* which characterized medieval scholastic practices (cf. Higton, 2012: 23).

³ Prezi provides completely animated presentations. Slides are showcased within one frame, making the transition unexpected and involving.

⁴ Keynote has been developed for Apple devices and offers a wide range of transitions and animations.

⁵ Google Slides is characterized by simplicity and an intuitive approach. It allows collaborators to be connected and work simultaneously on the same presentation.

⁶ Visme is cloud-based and is particularly useful to produce creative infographics.

⁷ Slidebean manages formatting and transitions automatically and is a very time-efficient tool.

⁸ Swipe allows the presentation to be fully interactive by creating polls that can be used in real time.

⁹ All courses are freely available at <https://ocw.mit.edu/courses/>.

¹⁰ For all the courses selected, the material available includes slides, videos (showing the complete lecture), and transcripts of the entire talk accompanying the slides.

¹¹ Thus, a slide represents the basic unit of meaning in this analysis.

¹² "The big difference [...] between the graphic representation of yesterday, wrongly dissociated from the figurative image, and the graphic of tomorrow, is the disappearance of the congenital fixity of the image. Having become manipulable by superpositions, juxtapositions, transformations, permutations, permitting

groupings and classifications, the graphic image has gone from the still image, from the illustration, to the living image, to the instrument of research accessible to all”.

¹³ It should be pointed out that Bertin’s original interpretation also included mathematical and musical signs as categories of fundamental signs.

¹⁴ Bertin’s work also contemplates the case of pansemic meanings attributed to signs, as happens, for instance, with non-figurative images, i.e. abstract images. ‘*Pansémie*’ is thus described as an extreme form of ‘*polysémie*’ (Bertin, 1973: 6).

¹⁵ Raster graphics consist of colored pixels arranged to create an image, while vector graphics are made up of paths, each with a mathematical formula (vector) which dictates how the image is rendered. Vectors can be infinitely scaled without losing quality, whereas raster images cannot be scaled to larger sizes without scarifying their appearance.

¹⁶ All images are used in conformity with *The Code of Best Practices in Fair Use for OpenCourseWare* (see <http://cmsimpact.org/code/code-best-practices-fair-use-opencourseware/>).