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A social semiotic multimodal analysis framework for website interactivity

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Abstract

The paper presents a social semiotic multimodal framework for the analysis of website interactivity. Distinguishing it from interaction, the work defines interactivity as the affordance of a text of being acted (up)on. It is actualized digitally in interactive sites/signs (hyperlinks included), having a two-fold nature, as places enabling actions producing effects and as forms endowed with meanings. They have also a two-dimensional functioning, syntagmatically on the page where they are displayed, and paradigmatically, opening to multiple text realizations based on choice. The framework adapts Halliday's (1978) Ideational, Interpersonal and Textual metafunctions to the analysis of the two-fold nature and two-dimensional functioning of interactive sites/signs. As exemplified in the analysis of a sample of blogs, the framework is designed to account for the interactive meaning potentials of a digital text, both in its aesthetics and structure, and is intended to complement the extant practices of text analysis of webpages.

Keywords: interactivity – multimodality – digital texts – hyperlinks

Table of Contents

Digital texts afford interactivity; they do not only represent some meaning, they also enable "users" to act at given sites and achieve some effects. Links, buttons and all forms of interactivity are not only signs making meaning on the page, they are also sites of action, producing a changed textual situation. In that they represent an analytical gap in linguistics, text-analysis as well as multimodal analysis.

Using a social semiotic approach, the present paper aims to address the gap, by presenting a multimodal framework for the analysis of webpage interactivity. It first reviews the (at time ambiguous) use of the term interactivity, distinguishing it from interaction; then it introduces the notion of "interactive sites/signs" as the *loci* of interactivity in digital texts. Along with their two-fold nature of sites and signs, it discusses the relation between their form, the actions required to activate them and the effects they can produce; then it considers their two-dimensional functioning, syntagmatically on the page and paradigmatically as offering optional textual realizations. The framework then applies Hallyday's (1978) three metafunctions (ideational, interpersonal, and textual), mapping them onto the two-fold nature and the two-dimensional functioning of interactive sites/signs.

Interactivity (and Interaction)

Widely used transdisciplinarily, the term "interactivity" is "underdefined" (McMillan, 2002) and "undertheorized" (Sundar, 2004: 385); it is an "elusive concept" (Bucy, 2004: 373), employed to refer to different phenomena. As Yun (2007: 527) observes, "some may think of it as an active human-to-human interaction and others may immediately imagine a human-to-computer interaction". Stromer-Galley (2004) reviews the term as used to define either what she calls "interactivity as process" or "interactivity as product". The former corresponds to "user-user interaction" (Shrum, 2002), also labelled as "human-to-human interaction" (McMillan, 2002; Yun, 2007); it concerns all aspects of interpersonal communication and will be here referred to as "interaction", following Goffman's (1959) tradition. In this sense, digital/online interaction is computer-mediated communication between two or more participants, i.e., by means of digital/online texts.

In turn, "interactivity as product" encompasses "user-machine" and "user-message" interaction (Shrum, 2002); or, analogously, "human-to-system" and "human-to-documents" interaction (McMillan, 2002). It involves the interaction with media and texts. It will be referred to here with the term "interactivity" to name the active relation between a "user" and a text, i.e., what users can do (on)to a text. The term is often used to define the affordance of a medium or a text and, in this sense, a commonly cited definition is Jensen's (1998: 201): "a measure of a media's potential ability to let the user exert an influence on the content and/or form of the mediated communication" (cited also in Zafiropoulos, Vrana, & Karystinaiou, 2007). As the interactivity of a museum defines what it enables its visitors to do there, the interactivity of a website is intended to define what the website enables users to do there. This latter definition is the focus of the present work.

While the notion of interaction can be useful to highlight the ways in which participants co-/de-/un-construct or negotiate meaning, (mis-)understand each other, cooperate, argue, (dis-)agree and so on, the notion of interactivity can be useful to highlight the ways in which a text configures its relation with its intended users and with other actors/texts; consequently, it can say something about its designers' interests in positioning themselves

and their texts in respect to prospective users and third parties. The analysis of interactivity can also offer insights into the ways in which the engagers with a text respond to it according to their interest in making meaning of and acting upon it.

While interaction, both offline and online, has been the focus of attention of much linguistic research, interactivity in general, and digital interactivity in particular, has been mainly investigated in media and (business) communication studies (as the cited works and reviews above show) rather than in text-based disciplines. Within studies in multimodality (Jewitt, 2009; Kress & van Leeuwen, 2001, 2006; O'Halloran, 2004), face-to-face interaction has been studied extensively, specifically by Norris (2004, 2006), who has developed a multimodal framework for its analysis. Digital/online interaction has been the subject of various investigations in social semiotics (Hodge & Kress, 1988; Kress, 2010; van Leeuwen, 2005), as in, for example, Adami (2010) and Sindoni (2013). To my knowledge little has been developed in these fields for the analysis of what is commonly referred to as "interactivity". The present paper aims to address the gap.

Digital Interactivity and Hypertextuality

In digital environments, social semiotic studies have mainly focused on hypertextuality (cf. Lemke, 2002; Zammit, 2007) rather than interactivity. A much less ambiguously used label than interactivity, hypertextuality (for a review of the origins of the term, cf. Landow, 1992) defines the affordance of digital texts of giving access to a network of other texts, enabling readers to "travel" (Lemke, 2002) from one text to another through the use of hyperlinks.

A digitally-afforded form of intertextuality (Kristeva, 1980), hypertextuality is established by means of visible links on a given webpage. The user can click them to access further texts, thus constructing individualized reading paths through texts, which Zammit (2007) – following an established tradition – terms "pathways".

In digital environments, users can do more than constructing individualized reading paths; they can provide feedback, for example (e.g., comment on or rate a given text), or transfer a text to others (e.g., as in the case of "sharing" or "forwarding"). While accessing further content, providing feedback and transferring text are three distinct effects, they all require the user's action upon the text to be produced. Consequently, if we define digital interactivity as the (affordance of digital texts enabling the) user's active relation with a text, it derives that hypertextuality is to be considered as one of the interactive possibilities afforded by digital texts. Hyperlinks are considered among the interactive functions of a website also by McMillan (2002), Yun (2007) and Voorvels, Neijens and Smit (2011). Within multimodal studies, neither Lemke (2002) nor Zammit (2007) exclude that hypertextuality is a part of a text's interactivity, yet their work disregards the other interactive possibilities afforded by digital texts. While Lemke outlines a framework for the analysis of the "hypermodality" of hypertexts, and Zammit's PhD work presents a framework for the analysis of users' pathways through hypertexts, the present paper tries to sketch a framework for the analysis of website interactivity, hypertextuality included. It does so by outlining the meaning potentials of "interactive sites/signs", i.e., the *loci* of interactivity in digital texts.

Interactive Sites/Signs

Online interactivity is physically activated through clicks or touches to a (keyboard/mouse with effects onto a) screen, which consequently changes its appearance. Semiotically, the actions performed onto certain signs of a given text produce some textual changes. Socially, by doing something at given sites of a digital environment, the "user" obtains something from it.

Digital texts have "interactive sites/signs", such as links, buttons and fields, which enable users to act upon the text. The two-fold label "site/sign" is adopted here to indicate that they are both places (sites) where the user can act and signifiers associated to signifieds (signs) sharing a meaning component which could be verbalized as 'here you can act and obtain some effects'. Because of their two-fold nature, interactive sites/signs present three separate and intertwined features. They (a) have a meaningful form, (b) require an action, and (c) produce an effect. The next section discusses the two-fold nature of site/sign, before examining the three aspects of form, action and effect.

The two-fold nature of sites/signs

The two-fold nature of interactive sites/signs poses problems to text analysts, to linguists as well as to text-based semioticians. Signs in a text are usually meant to be interpreted. As images are meant to be observed, written language is meant to be read to produce its effects. Interactive sites/signs, instead, are meant to be acted upon rather than, or along with, being interpreted.

Neither the relation between semantic and pragmatic meanings, nor the couple signifier/signified are sufficient to describe interactive sites/signs, since their function in digital texts is not (chiefly) to represent something. It is rather to *do* something. While it is true that we can "do things with words" (Austin, 1962), even the most immediately performative instances of language require their signifiers to be pronounced to have an effect. A performative formula such as "I do pronounce you husband and wife" must be articulated to come into being and have its effects. In turn, reading an interactive site/sign, such as a hypertextual link for example, does not activate it. Independently of whether a link, for example, is represented through a word, an image, a shape or a colour, its signifier is meant to be manipulated, to perform its interactive function. Irrespectively of the signifier, the signified of an interactive site/sign is always something like 'here you can [type and] click, and you'll have an effect, in some way related to the signifier'. Interpreting the site/sign can provide an indication of the type of effect it will produce; but it needs to be acted upon to produce it, it needs to be "handled". In this sense interactive sites/signs are more similar to objects than to "textual" signs. This is a significant difference to "usual" signs, as conceived of in text-based disciplines. Yet they are there, visible on the page/screen as two-dimensional signs among other signs.

Understandably, linguistics and text analysis lack the tools for the description of this new kind of signs, which are not only bearers of meaning but also and foremost sites of action. Before the advent of digital texts, the kinds of things that are now performed by interactive sites/signs were out of the scope of any text analysis since they were not performed by verbal language or, more generally, by signs within a text. Actions afforded by printed media, such as turning the page (cf. Lemke, 2002) or opening a new book, are clearly analogous to the functions performed by hyperlinks in digital texts; however in non-digital

environments, these interactive options fall outside of what is considered as "text", since, quite simply, they are not performed through the use of "signs". The same can be said for lending someone a book, equivalent to the actions of sharing or forwarding in digital environments, for attaching a public notice on a board, equivalent to the action of posting in online social networks, or for writing a letter to the editor, analogous to posting a comment to an online news article or blog. Now an interactive site/sign for the posting of a comment not only signifies an invitation to do that (cf. "to send a letter to the editor write to…" on a printed periodical) but embeds also its performance.

In sum, the primary function of interactive sites/signs poses problems to text analysts since it involves actions rather than meanings; yet at the same time interactive sites/signs are "there", as a visible part of a text; hence, as (action-enabling) elements embedded in the text, they demand to be analysed accordingly, both as signs of interactivity and as sites of action producing certain effects.

Forms, actions and effects

Interactive sites/signs can vary in form, in the actions required to activate them and in their effects. More significantly, there is no direct correspondence between the three.

Forms

Interactive sites/signs can be represented through writing, images or shapes, or any combination of these (and sound); they can be still or dynamic. Besides representing an analytical gap for the text analyst, they seem to pose problems to the multimodal analyst too, since their modal configuration is rather independent of their "interactive" function. Writing, images and shapes might all equally embed a site/sign, enabling a click resulting in a change of the screen.

In fact, certain forms have, conventionally, the potential to signal interactivity; our experience of the ongoing web design sign-making practices has accustomed us to recognize certain formal features as candidate signifiers for an interactive site/sign. For typed text, these are salience-enhancing graphic features such as underlining, bolding, and colour differentiation (more traditionally blue) with the rest of the text, e.g. thisisalink. Closed (rather than open) shapes, especially when combined with shadings in colours, thus producing a 3-D effect, are possible candidate signifiers too, in resembling a button that can be pushed or a blank field that can be filled through typing. Smallness in size can be a potential signifier too, so a small image or a small logo (of a social network, for example) – rather than a large one – are likely to be used as an "icon" to be clicked; yet, large still images can also be clicked upon and give access to dynamic images, if used as thumbnails to a video, for example. All in all, one major signifier usually disambiguates the possible interactive value of a sign on a page (which is not, however, part of the form of the site/sign itself), i.e. a change in the shape of the cursor displayed on the screen when it hovers onto an interactive site/sign, turning from an arrow into either a hand – when the site/sign needs to be clicked to be activated – or into a vertical bar, when its activation requires typing (and click).

Actions

Against a wide range of forms, a rather small range of actions can activate interactive sites/signs. They require users either to (1) click (tap for touch screen devices), or (2) type and click on them, or else (3) hover onto them with the cursor (e.g. for the viewing of a label). The sites/signs requiring either the sole clicking or the hovering might be represented through any kind of visual mode, i.e., writing, still/dynamic images or shapes. The "type and click" action has a preferred signifier, i.e. a rectangular shape of various dimensions, usually with a white background and 3-D shadowing, representing a blank field to be filled – yet the relation is not univocal; the blank field could also require a click-only action, when filling it requires selection among a range of options appearing in a dropdown window as a result of a click. Therefore, there is no direct correspondence between signifier and signified action. This does not mean that a change in the form of a site/sign may not be meaningful. Quite the opposite, indeed; as exemplified in the analysis in Section0below, when no automatic univocal correspondence exists, the association is dependent on choice. Choice is always significant in that it is driven by the sign-maker's interest (Kress, 1993, 2010).

Effects

In spite of their many textual realizations, the range of effects produced by an interactive site/sign is possibly as small as the range of actions required to activate it. Semiotically speaking, a site/sign can enable the user either (1) to access new text, or (2) to provide text, or else (3) to transfer text to others.[1] Access to further text is enabled by hypertextual links and keyword search forms; the former direct to an existing page, while the latter generate *ad hoc* "search result" pages on the basis of the keyword entered. The provision of text can be either in the form of some user-provided content (e.g. the posting of a comment, for example) or of a "+1 count", in the case of click-only sites/signs which provide users' feedback on rating, visits, preferences etc. (as for the 'like' button on *Facebook*, for example). Finally, the transfer of text consists in the sending of a text to other spaces, either to others (e.g. through email sending/forwarding), or to a social space (through sharing on, e.g., *Facebook* or *Twitter*) or to the user's own device (as in the case of "saving", "printing" and "bookmarking" options).

The first effect, text access, does not result in a change of the text but only in a change of what appears on the screen. The second effect, text provision, produces a change in the text (although in some cases comments may require approval for the change to be publicly visible). The third effect, text transfer, produces a new text through re-contextualization, thus changing the recipient's textual environment.

As no direct relation exists between forms and actions, nor does it exist between actions and effects. So a type-and-click site/sign (the field to be filled) might enable users to provide text, as in the case of a comment form, or to access text as in the case of a keyword search form.

As for where the effect is visible on the user's screen, two options are possible:

1. it can be displayed in a new window, paired to the one containing the interactive site/sign;

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[1] The three semiotic effects can generate different social effects to different social purposes (for a classification according to user's purposes, e.g. search, book, comment, rate etc., cf. for example Voorveld et al. 2011).

2. it can be displayed as a change of the page, either in the form of a partial modification of the text (as in the case of the "+1" feedback, e.g., for "like" buttons) or by replacing the text displayed on the page with a new text, as in the case of hyperlinks directing to new text (so the previous text can be accessed again only by clicking the "back" button of the browser.

To recapitulate, interactive sites/signs have a two-fold valence; as signs they represent something by virtue of a signifier associated to a signified; as sites they require the user's action to produce a textual effect. Forms, actions and effects do not have a straightforward correspondence; notwithstanding the common interactive signified "here you can act to achieve an effect related to the signifier"; the precise interactive meaning, action and effect can only be experienced by acting upon the site/sign, not by interpreting the signifier. Precisely because forms, actions and effects do not correspond univocally, the actual combination of the three in an interactive site/sign – and the overall configuration of the interactive sites/signs of a text – is significant of design choices made to meet specific rhetorical aims, as will be shown in the analysis in Section0.

The two-dimensional functioning of interactive sites/signs

The two-fold nature of site/sign discussed above is further associated to the two dimensions in which the site/sign works. Indeed it functions (1) in the spatial dimension of the page where it appears, as a sign inserted within a text displayed on the screen, and (2) in an intertextual dimension, as an optional "gateway" between two texts or changed textual situations.

In this sense, an interactive site/sign works both in space (on the screen) and in time (producing a changed textual situation). In her analysis of hyperlinks Zammit refers to these two dimensions as "synoptic" and "dynamic" (2007: 12), yet dynamic might be ambiguous in the present framework since it is used to refer to a modal configuration of a sign on a page, when it moves or unfolds through time. Here a traditional dichotomy in linguistics will be used, i.e., syntagmatic/paradigmatic. Syntagmatically, the interactive site/sign makes meaning in combination with other elements within a syntagm of the text displayed on the screen, and paradigmatically, it functions through selection, thus enabling the actualization of one out of a range of possible textual realizations, or paths. Clearly other labels might be chosen, e.g. synchronic and diachronic (to give salience to the space/time relation embedded in sites/signs), however the use of the syntagmatic/paradigmatic seems apt to frame the functions of a site/sign in terms of combination (in a syntagm) and selection (within a paradigm) among options, i.e., relations *in praesentia* on the page and *in absentia* on the changed textual situation which they can give access to, if activated.

An analysis of the interactivity of a digital text must account for all aspects of interactive sites/signs, namely, for their two-fold nature, as sites (of actions producing effects) and as signs (forms with meanings), and for their two-dimensional functioning, syntagmatically on the page and paradigmatically enabling, through selection, a given textual realization.

A Social Semiotic Framework for the Analysis of Interactive Sites/Signs

The framework proposed here uses Halliday's (1978) three metafunctions to the analysis of interactive sites/signs and the interactive meaning of their configuration in a text. In Halliday's terms, language is used to perform three different functions: (1) to say something about the world, an Ideational function; (2) to say something about those involved in the communicative event, an Interpersonal function; and (3) to say something about the text, a Textual function. The three metafunctions can be used analytically to describe three different and intertwined layers of meaning of any language in use. Kress and van Leeuwen, in their "grammar of visual design" (1996, 2006) have adapted Halliday's framework to the analysis of multimodal texts, naming the three functions as Representational, Interactive and Compositional. In his framework for the analysis of hypermodality, Lemke (2002) uses the labels Presentational, Orientational and Organizational, while Zammit (2007) uses Kress & van Leeuwen's naming, adding a fourth Logical function. Here, to avoid the obvious ambiguity of an 'interactive' function with the object of analysis of the present work, Kress and van Leeuwen's naming has been excluded, while Halliday's original labels are adopted.

The three metafunctions of interactive sites/signs

An analysis of the various combinations of the three metafunctions, mapped onto the two-dimensional functioning and the two-fold nature of interactive sites/signs, can provide insights into the social semiotics of the interactivity of a text. The ideational function of an interactive site/sign corresponds to what the interactive site/sign is and does, i.e., what it represents and performs in the world; the interpersonal function corresponds to the relations/identities projected by the site/sign about the author and the user of the text; while the textual function corresponds to how the other two are presented within the text, i.e. to the shaping of the ideational and interpersonal meanings produced by the textual configuration of interactive sites/signs.

In the light of the two dimensions along which interactive sites/signs function in their meaning-making, the three metafunctions need to be mapped out distinctively (but connectedly) for the syntagmatic and the paradigmatic plane. The present section presents the framework, while the following exemplifies its application to a webpage.

Dimensions	Ideational function	Interpersonal function	Textual function	Interactive value
Syntagmatic (within the page)	What it is - signifier/signified	What it says about - authors - users	How/Where in the page - salience - info structure	Aesthetic (the aesthetics of interactivity)
Paradigmatic (optional realization)	Which action which effect where	Directionality/power: - Who towards whom: author/users/others	Before-after Given-New	Structural (the structure of interactivity)

Table 1: The three metafunctions mapped onto the two dimensions of interactive sites/signs.

As sketched in Table 1, on the syntagmatic plane, the ideational meaning of an interactive site/sign corresponds to what the sign is and means in terms of its signifier and signified; on the paradigmatic plane, it corresponds to what action activates it and what effect it produces as detailed in Section0above. The interpersonal meaning deals syntagmatically with whether the sign addresses directly or indirectly the user and in which terms (whether by offering or demanding etc.), and which kinds of expectations it raises, while paradigmatically it deals with who is at play towards whom and with which directionality (e.g. is the user forwarding the author's text to others? Is the user inputting his/her own content to the author's text? Is the author's text directing to some third parties' text?). The textual metafunction would map, syntagmatically, the positioning of the interactive site/sign within the page thus accounting for the informational value and salience of its ideational and interpersonal meanings and their relation with the other elements in the text, while, paradigmatically, it would map the site/sign ideational and interpersonal meanings in a before-after perspective, i.e., the meaning made through the relation between the text where the site/sign appears – as the Given – and the text as changed after the site/sign is activated – as the New.

As will be seen, the analysis of the syntagmatic meanings of an interactive site/sign and of their ensemble in a text account for the interactive *aesthetics* of a page, before it is actualized, experienced and performed, while the analysis of the paradigmatic meanings account for the interactive *structure* of a page in relation to the configuration of the interactive possibilities provided.

The framework at work: An example of analysis

To exemplify the analytical potentials of the framework sketched in Table 1, it is here applied to the homepage of a wine blog, *Spittoon* (www.spittoon.biz), later (Section 0) compared to the homepage of a food blog, *Silverbrow on Food* (www.silverbrowonfood.com).[2] Because of space constraints, the discussion here focuses on the sole description of the *interactive* meanings, i.e., the meanings made by the elements as interactive sites/signs, while the meanings made as mere signs, rather than as sites/signs, will be generally disregarded; their analysis can be easily integrated through the use of the multimodal tools of analysis of a webpage as outlined in Kress & van Leeuwen 1996, 2006, especially for the syntagmatic plane, as well as those in Lemke 2002 and Zammit 2007, for the paradigmatic plane.

Figure 1 shows the top portion of the homepage of *Spittoon* as it appears on a 14" screen, with medium viewing size selected within the browser settings. To identify the interactive sites/signs displayed in the page portion one needs to move the cursor around the page and see when it changes its shape into either a hand or a vertical bar.

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2   The two websites have a mere exemplifying function and are used here as part of a sample of a pilot study for an ESRC collaborative project on narrative and multimodal analysis of UK parenting food blogs, which originated the idea of the framework. The project (principal investigator G. Kress), funded by the UK National Centre for Research Methods (NCRM) of the Economic and Social Research Council (ESRC), involves two Nodes: MODE (Multimodal Methodologies for Researching Digital Data and Environments) and NOVELLA (Narratives of Varied Everyday Lives and Linked Approaches); cf. http://mode.ioe.ac.uk/2012/09/16/multimodal-analysis-of-food-blogs/
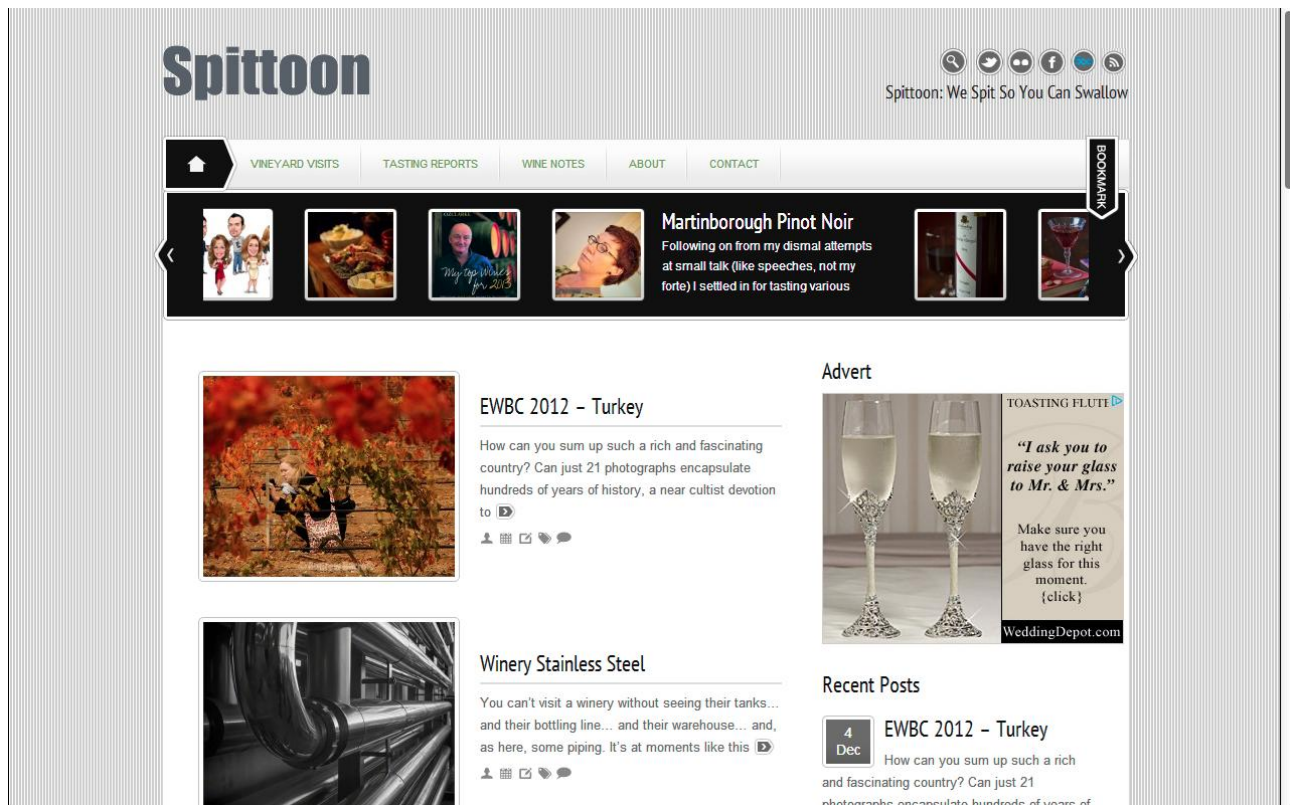
Figure 1: the top section of Spittoon homepage (Retrieved 8 Dec 2012)

Ideational function

The top header, above the horizontal bar, presents seven interactive sites/signs, one placed at the top left and six at the top right. Syntagmatically, the top left one, a written "Spittoon", is the title and header of the blog; paradigmatically, through a click, it redirects to the homepage of the blog. The top right section presents syntagmatically six round shapes containing symbols. The first symbol is a lens, often used to represent a "search" button; the others are the symbols identifying five different online social networks, namely (from left to right), *Twitter*, *Flickr*, *Facebook*, *Scribbler*, and *FeedBurner*. The social networks' logo is represented only through their symbols, while colours comply with the (white and grey) colour palette used in the blog, hence represent the latter. Paradigmatically, by clicking the lens symbol, the user can search the blog (a search form appears to its right that can be filled through typing); by clicking the second up to the fifth icon, the user can access the blogger's profile pages on the related social networking sites; clicking the last circle redirects to the blog's page on *FeedBurner*, where the user can subscribe and receive automatic content updates (i.e., feeds) published on the blog. All these sites/signs redirect the user to a new text on the same window, so by clicking on them the user abandons the blog and needs to click the "back" arrow to be able to go back to the blog page.

Just below the header, a bar appears composed of two sections, one above the other, with backgrounds of different colours (whitish for the upper section; black for the lower one). The upper section is a menu bar, presenting four interactive sites/signs represented by four words, separated by a vertical line, indicative of the titles of four different pages of the blog

(as their traditional position signifies); these are preceded by a black square with what may look like a large white arrow pointing towards the top. Paradigmatically, a click on the latter re-directs to the homepage of the blog (thus the large white arrow is rather the signifier for "home", reproducing the shape of a house), while a click on each of the words in the bar redirects to the related page of the blog. The lower section is a dynamic "banner" and presents a series of still images loop-sliding from right to left. When an image arrives at the centre of the banner it slides a little further to the left while some typing appears on the right, in the form of a title and a body text (differentiated through positioning, font size and bolding effects). Paradigmatically, through a click, each image links to a blog post, and so do the title and the body text when they appear at the centre of the banner. The image and the text appearing on the banner correspond to the image, placed top left, the title and the first lines of the body text of the blog post accessed through the site/sign. At the extreme left and right ends of the banner two other interactive sites/signs are represented by two arrow-shapes, the left one pointing to the left and the right pointing to the right direction. Paradigmatically, by clicking the arrows, the images on the banner scroll further and in the opposite direction than the one indicated by the arrow; so, by clicking the left-end arrow, the images in the banner scroll from left to right, allowing new images to appear from the left end of the banner; vice versa, by clicking the right-end arrow, the images scroll to the left at a faster pace than the one they normally have in the dynamic banner, thus allowing new images to appear from the right end of the banner. Moreover, by hovering with the cursor onto an image, it slides further, revealing the title and body text related to it.

On the upper right end of the banner a ribbon-shaped interactive site/sign with a black background and a white typed "bookmark" can be clicked and a pop up window opens instructing the reader on how to save the blog among his/her browser's bookmarks.

Below the banner a series of interactive sites/signs direct to the blog posts both through an image and through the title and body text (corresponding again to the title and first lines of the linked post). Below each body text excerpt, other five small interactive sites/signs are represented by grey symbols; paradigmatically, clicking does not activate them, while, by hovering onto each symbol, a label appears above it, providing (from left to right) the name of the author of the post, the date of posting, the post category (i.e., one of the page titles shown in the upper horizontal menu bar), the post tags (i.e., keywords), and the number of comments to the post.

Finally, below the banner on the right of the page, an interactive site/sign framed in a square and preceded by the writing "Advert" links to an advertised page. Below that, a list of Recent Posts appears, with the same interactivity pattern (image + typed title and body text syntagmatically; click to redirect to the blog post paradigmatically), preceded by a non-interactive square with the date of posting.

Ideationally, the page is dense with interactive sites/signs, in various forms (dynamic elements, symbols, still images, writing), requiring all kinds of actions (click, type+click, hovering), producing, as an effect, the sole access to new text, yet displayed in a variety of realizations (labels, sliding of new images, page change, change of speed).

Interpersonal function

Syntagmatically, the six icons on the top right header of the page signal the reader that the blog is connected with a range of recent networking options. This combines with the

complex dynamism of the banner and of the labels appearing when hovering with the cursor to communicate a certain degree of interactivity of the website (for dynamic modes contributing to augment the users' perceived interactivity, cf. the findings in Yun, 2007). Together with other features of the page, such as the colour palette, the modular layout, the sans-serif fonts, for example (communicating both minimalism-essentiality and functionality-effectiveness), it contributes to shape identity values of the blog (and blogger) related to professionalism, 'updatedness', and marked interactivity. These values might be reinforced by the preference given to symbols over verbal language as signifiers of sites/signs (the top right ones, the ones at the bottom of each post for the labels "author", "category", "tag", and "comment", and the arrow/house in the black ribbon in the menu bar); their modal configuration resembles the icons displayed on navigational bars of software programmes – which enable actions to be performed – rather than the more traditional verbal forms for hyperlinks, which access further text to be read (which users do not consider as interactive as other sites/sings, according to the findings in Yun 2007), thus enhancing the blog interactive aesthetics. Besides shaping the blogger's identity as professional, they also project identity values onto the type of addressed users, who need indeed to be accustomed to and willing to interpret and experience symbols, rather than read more traditional word-labels.

As for the paradigmatic plane, although presenting the full range of actional possibilities (click, type+click, and hover), with the sole exception of the advertisement, all interactive sites/signs on the page (not only the portion visible on the screen) enable the user only to access further text; even more, all hyperlinks redirect to further text within the blog itself or directly related to it (its profile page on the social networking sites), while only the advertisement gives access to a third party website which is not related directly to the blogger. Interpersonally this shapes a very clear directionality, centred towards the blogger, with a high degree of recursiveness, and a significant self-referencing on the part of the blogger. The blog configures itself as quite closed to the outside web; although it is open to other social network platforms, all pages linked to there refer to the blog or blogger's persona.

Textual function

Syntagmatically, the top right position of the six buttons in the top header is New in respect to the blog's name (the logics would be 'from *Spitton*, here is something else you can do and go to'). Together with it, they appear at the very top, as 'header', as part of the 'masthead' of the website, i.e., the ideal presentation of the blog/blogger (as very well connected through all networking options). The core information, which is updated, i.e., the 'contents' of the blog, comes below.

The banner appears in a very salient position (at eye's level) and is further made salient by its dynamism and colour palette, i.e. the full colours of the images against a black background, versus the overall white-and-grey of the rest of the page. Textually, the banner confers a salient position to the value of dynamic interactivity within the page.

While the vertical arrangement of the list of posts below the banner resembles the vertical arrangement of the "Contents" page of magazines, the dynamic banner functions similarly, in its scrolling from right to left of the screen, to the breaking news titles of TV news broadcast. Yet it allows for personal manipulation of the sliding pace and it displays a

multimodal text combining images and writing, while the position is more salient, at the top centre of the screen rather than at the bottom. Thus the banner combines a "breaking news" meaning with a "highlight" value and a "manipulation/personalization" possibility similar to browsing among pages, further enhancing the invitation to engage with the elements in the banner and, consequently, enhancing the aesthetics of interactivity of the page.

As for the relation between the elements in the banner and the others in the lower part of the screen, redundancy is the main feature. The banner re-proposes as "highlights" some of the posts presented on the left column and re-presented chronologically on the right column, below the advertisement.

Against a superficial richness and multiplicity of contents, at a more attentive look, the page layout reorganizes the same content in three different versions, as highlights (in the banner), as an index (in the left column) and as a chronological sequence (in the right column). The selection and re-proposition of the posts presents the user with a hierarchical organization of the different posts, thus indicating what the blog/blogger considers the ones that require attention first.

Paradigmatically, the before-after relation between the sites/signs (both in the banner and in the section below) and the respective linked blog posts is extremely cohesive, marked by the repetition of the (image+writing) elements of the site/sign and the continuation of the body text. While the sites/signs function as an anticipation of the linked text, the latter functions as a continuation:expansion. Against a multiplicity of access points, most sites/signs converge to the same restricted kernel of posts, thus shaping an apparent wide range of choice against a quite limited amount of content. It is a case when many different paths lead in fact to a very restricted set of destinations.

All in all, against a marked aesthetics of interactivity deployed at a syntagmatic level, the analysis of the paradigmatic plane reveals a clear asymmetry of power shaped towards the author/blogger; the user can neither provide feedback nor access pages authored by others. Any action by the user exposes him/her to further content by the blogger with a high degree of redundancy, self-reference and an explicit hierarchical ordering of contents. Hence an interactive aesthetics combines and contrasts with a structural closeness of the homepage, firmly centred towards the blogger's semiotic production.

To achieve a complete and detailed social semiotic multimodal analysis of the meanings of the page here, each element should be analysed also for its non-interactive function, i.e. for what it represents besides and beyond its value as an interactive site/sign – as images, shapes and writing within the whole page layout and as the "Given", in a "before-after" path to further text (situations). This kind of analysis is well established in multimodal studies; yet it is beyond the scope of the present work, which is intended to propose a framework for the analysis of website interactivity that can possibly integrate a social semiotic multimodal analysis of digital texts.

Comparative uses of the framework

The meanings projected by the interactive configuration of *Spittoon* differ considerably from those that appear in the homepage of the blog *Silverbrow on Food*, shown in Figure 2. Here, rather than a detailed analysis of all aspects of the page's interactive sites/signs, only some

comparative reflections will be made, with the intent to exemplify the potential of the framework for comparative analysis.

Syntagmatically, *Silverbrow on Food* looks more static; no dynamic element is displayed and no change in the text is produced when hovering onto the page with the cursor. The signifiers chosen for most interactive sites/signs of the page, i.e., underlined and differently coloured writing, carry less interactive aesthetics in their readily signifying hypertextuality, i.e., content-to-be-read rather than manipulated (again, for hyperlinks as not contributing to users' perceived interactivity, cf. the results in Yun, 2007). An interactive aesthetics is communicated almost exclusively by the presence of the search form and the button-like shapes in the second column, which invite/suggest "manipulation" (hence inter-action).

Notwithstanding its aesthetics, an analysis of the paradigmatic plane shows a greater openness of *Silverbrow on Food* than *Spittoon*, as well as a more varied directionality. The so-called blog-roll section which can be found in the third column under the header "Other blogs" lists a series of links giving access to other blogs, while the second column presents two buttons (i.e., "Email me" and "Feedback", the latter of which made salient because of the different colour) enabling the user to provide text. Finally, the typed hyperlinks within the posts link to other websites too. Thus the blog enables extensive blog->others directionality, linking to third parties' texts, as well as a user->author one, allowing the user to provide content.

Figure 2: The top section of Silverbrow on Food homepage (Retrieved 15 Nov 2012)

Thanks to the combination of the analysis of the three metafunctions mapped onto the two dimensions, the framework provides insights that are generally not visible using other methodologies, such as traditional content analysis (c.f. e.g. the analysis of links in news blogs in Kenix, 2009). So, while, the openness of *Silverbrow on Food* may immediately emerge against the closeness of *Spittoon* through mere quantitative analysis (i.e., by comparing the number of links accessing other websites in the two blogs), simple counting would not trace any differences between *Silverbrow on Food*'s blog-roll shown in Figure 2 above and the blog-roll of *Eat Like a Girl* (Figure 3). In fact, the higher number of *Eat Like a Girl*'s external links would configure the latter as more open to the outside web. However an analysis of the textual function at the syntagmatic level, and specifically the different salience produced by the position of the blogroll in the two blogs, would show a rather different picture. Although fewer, the links to third parties' texts are immediately available and highly salient for *Silverbrow on Food*, being placed in the top-right part of the page, whereas the highly populated blog-roll of *Eat Like a Girl* is visible and reachable only to those users who make the effort of scrolling the screen down to the very bottom of a very long page containing the chronological sequence of several long posts displayed vertically one after the other.

Hence a combined analysis of the textual function of the syntagmatic plane with the interpersonal function of the paradigmatic plane might result in a more refined assessment of the extent of openness/closeness of webpages. This is clearly only an example of the fact that the three functions used in combination can reach a refined level of analysis of the aesthetics and structure of interactivity of a website. They might be useful to explain the "great incongruence […] between the level of actual and perceived interactivity" (Voorveld et al., 2011: 89) found in experimental studies which rely on content analysis for measuring actual interactivity. Unable to provide an explanation to their findings, the authors conclude that "simply having more interactive functions on a Web site does not guarantee higher perceptions of interactivity" (2011: 89). An accurate analysis of the three metafunctions of interactive sites/signs might provide the explanation to their observation.
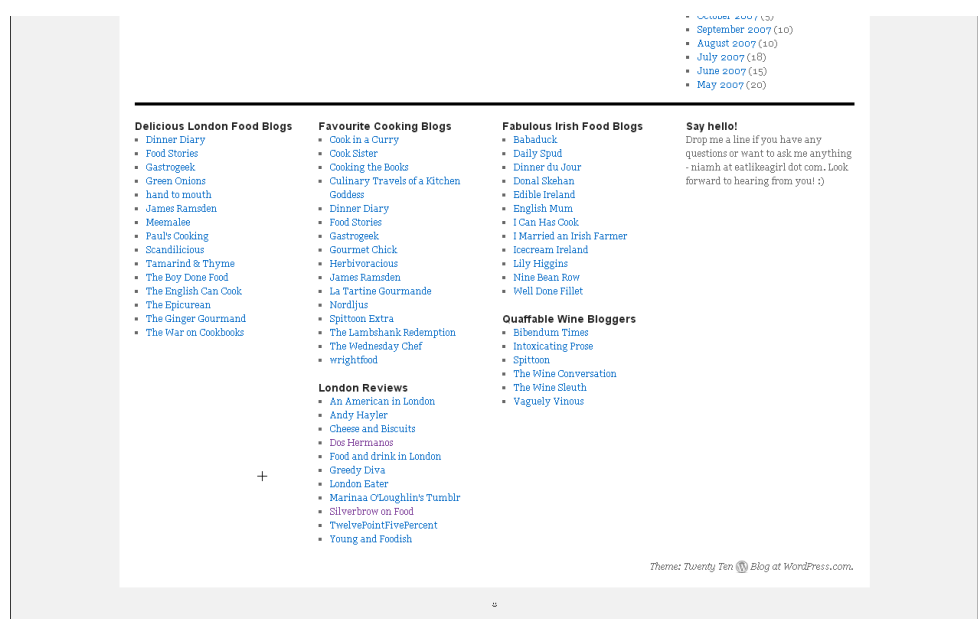

Figure 3: the blog roll section of Eat Like a Girl blog (Retrieved 5 Nov 2012)

Concluding Remarks

Links, buttons, icons and fields in digital texts are not only signs on a page to be interpreted, but also and foremost sites for action. As such they require an apt description. The framework outlined here provides the initial tools to describe, interpret and explain the meanings of interactive sites/signs and hence the interactive aesthetic and structure of websites. It is intended to be used together with other multimodal analysis tools to complement the text analysis of websites. Far from being complete and detailed, it requires testing and refining. Each metafunction requires the identification of sub-categories and analytical tools both for the syntagmatic and the paradigmatic plane. These, as well as their naming, require testing onto different types of digital texts. The whole framework needs to be tested when applied in combination with the multimodal analysis of all sign-complexes of a text. This could not be done within the limits of a single paper. It is hoped nevertheless that the extant stage of development of the framework as presented here might serve to provide insights into the (two-fold) nature and meaning-potential of interactive sites/signs and to prompt further attention to the phenomenon within studies in multimodality and text analysis.

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