ABSTRACT

In this chapter I analyze, from a cognitive pragmatics point of view and, more specifically, from a relevance-theoretic approach, the way Internet users assess the qualities of web pages in their search for optimally relevant interpretive outcomes. The relevance of a web page is measured as a balance between the interest that information provides (the so-called “positive cognitive effects” in relevance theory terminology) and the mental effort involved in their extraction. On paper, optimal relevance is achieved when the interest is high and the effort involved is low. However, as the relevance grid in this chapter shows, there are many possible combinations when measuring the relevance of content on web pages. I also address how the quality and design of web pages may influence the way balances of interest (cognitive effects) and mental effort are assessed by users when processing the information contained on the web page. The analysis yields interesting implications on how web pages should be designed and on web usability in general.

INTRODUCTION

According to Sperber and Wilson’s (1986; 1995) Relevance Theory, human beings have developed a cognitive ability to maximize the benefits deriving from the processing of inputs when they engage in interactions with the surrounding world, either through conversations with other people or through the processing of documents such as the vast amount of web pages contained on the Internet. This claim is mainly applied to ostensive communication, in which the identification of underlying intentions and attitudes and the mutual awareness of this identification play a major role in the eventual success or failure of interactions with other people, but this cognitive ability also applies to cognitive processing in general and to people’s overall processing of inputs intended to improve their picture of the world (including the information that simply accesses us from the surrounding world without a prior intentionality and also including our own thoughts, some of which are more likely to be entertained than others in a particular situation). Indeed,

as a result of constant selection pressure towards increasing efficiency, the human cognitive system has developed in such a way that our perceptual mechanisms tend automatically to pick out potentially relevant stimuli, our memory retrieval mechanisms tend automatically to activate potentially relevant assumptions, and our inferential mechanisms tend spontaneously to process them in the most productive way. (Wilson & Sperber, 2002a, p. 254)

This chapter aims at applying this claim to how web pages created by Internet users are interpreted by other users (that is, in user-to-user communication through the web page). In this sense, it should be noted that relevance theory has been applied mainly to the output of search engines and information retrieval systems (e.g. White, 2007a, b). In this case, what is analysed is the users’ assessment of relevance when a computer system displays a number of results from a typed query. This is system-user interaction and not user-user interaction, and hence not a type of communication that cognitive pragmatics would cover. The analysis provided here goes beyond this initial application of relevance theory by focusing on the quality of users’ interpretations of web content that other users upload on the Internet with an underlying intention (for example the intention to share this information with other users) and often (but not necessarily) with the prediction of a specific interpretation of this web content.

BACKGROUND
Relevance is an essential aspect of human cognition and sought in interactions with people and the surrounding world. This is mainly the reason why there are two principles of relevance. Initially, Sperber & Wilson proposed one principle of relevance to account for the fact that an act of ostension carries a guarantee of its eventual relevance, but in the Postface to the second edition of their book *Relevance* (1995, pp. 260ff.), they propose that we can distinguish a broad cognitive principle of relevance: “human cognition tends to be geared to the maximisation of relevance”, as well as a narrower communicative principle of relevance: “every act of ostensive communication communicates a presumption of its own optimal relevance”, 1986, p. 158), the latter being the main focus of analysis within pragmatics but one which, in reality, abides by the same overall rules that we follow when interacting with the surrounding world. An ostensive stimulus (in which both sender and hearer are aware of the sender’s underlying intentionality to communicate some information) creates a presumption of relevance, which addressees expect to be optimal (though not always so, unfortunately). The notion of optimal relevance indicates that the balance between possible interest in exchange for the demanded effort is highly satisfactory. But the cognitive principle is important too, since it stresses the fact that we are biologically geared towards processing the most relevant inputs available, including verbal utterances, nonverbal communication and web pages. Besides, it is this evolved disposition that allows for the prediction of the mental states of others, which is crucial in human communication (see Yus, 2006, section 2.3).

The aforementioned communicative principle of relevance predicts a basic procedure for users when they make hypotheses about contextual extensions required for the interpretation of the content of a web page and also about and the hypothetical reward: to consider interpretive hypotheses in order of accessibility (following a path of least effort) and to stop when they arrive at an interpretation which satisfies the expectations of relevance raised by the content of the web page. Relevance, then, is a matter of balance between the interesting information that the web page might provide (in terms of so-called “positive cognitive effects”) and the mental effort that obtaining this information demands. On paper, optimal conditions of relevance would derive from a combination of the highest possible number of cognitive effects in exchange for the least mental effort, but in reality humans are ready to devote supplementary cognitive resources if, in return, they expect supplementary cognitive effects to offset this effort.

The definition of relevance of an input to an individual (e.g. a web page) involves two clauses:

(a) Everything else being equal, the greater the positive cognitive effects achieved in an individual by processing an input at a given time, the greater the relevance of the input to that individual at that time; and

(b) Everything else being equal, the smaller the processing effort expended by the individual in achieving those effects, the greater the relevance of the input to that individual at that time. (Wilson & Sperber, 2002b, p. 602)

In theory, the balances of these clauses may be explained both in quantitative and qualitative terms. There has been a lot of discussion on whether relevance theory can provide a “purely quantitative” explanation of how relevance is measured. Wilson & Sperber (2004, p. 610) explicitly argue for a qualitative notion of relevance when they state that “while quantitative notions of relevance might be worth exploring from a formal point of view, it is the comparative rather than the quantitative notion that is likely to provide the best starting point for constructing a psychologically plausible theory”. To support this claim, they stress that it is highly unlikely that individuals have to compute numerical values for effort and effect when assessing relevance “from the inside”. This computation would be too effort-demanding. Besides, it is really difficult to assess “from the outside” issues such as the number of contextual implications, the strength of implications, the level of attention, etc., but it is easier to conclude which competing interpretations are more likely to be selected (and why) by
resorting to a qualitative notion of relevance. Also, in Sperber & Wilson (1986, p. 129-132), they also argue that it seems preferable to treat effort and effect as non-representational dimensions of mental processes: they exist and play a role in cognition whether or not they are mentally represented; and when they are mentally represented, it is in the form of intuitive comparative judgements rather than absolute numerical ones. The same is true of relevance, which is a function of effort and effect.

However, for an explanation of the processing of information that is obtained from different pieces of discourse that are link-related and on several web pages (typical in today’s use of Internet), we can still predict two types of relevance conditions involving cognitive effects and processing effort, one qualitative (condition b2) and one quantitative (condition b1):

Condition (a): Information from link-related discourses on the Net is relevant to an individual to the extent that the cognitive effects achieved when it is optimally processed are large.

Condition (b1): An assumption is relevant to an individual to the extent that the number of clicks that the user has to make in order to obtain these effects is small.

Condition (b2): An assumption is relevant to an individual to the extent that the level of coherence obtained from linking different bits of information is optimal despite the non-linear arrangement of the linked texts.

Certainly, the main complaints of web users refer to the difficulty in obtaining the expected information, to how tiring it is to click on links that lead to irrelevant information, to the feeling that certain chunks of discourse have little to do with previously processed pieces of text. This difficulty - related to unnecessarily increased processing effort - can be measured in terms of number of clicks but also in the maintained or missing coherence between the different pages or texts that the user accesses, although this measurement is indeed difficult (Smith et al., 1997, p. 69). No doubt, the user will expect that newly accessed chunks of text will add information or combine with information already processed in relevant ways, that is, information that will combine in relevant ways with the information that has already been accessed and is still active in the user’s short memory store. Moreover, the users will get angry if a substantial number of clicks does not lead them to the expected information, to the extent that the users might even end up lost after sustained incoherent clicks, not really knowing why they ended up on a particular web page.

ISSUES: THE RELEVANCE GRID

When is the content of a web page relevant to the user? According to relevance theory, when the content alters the user’s cognitive environment is positive ways. Cognitive environments are made up of all the information that is manifest to the user in a specific context. What is ‘manifest’ is what the user is capable of inferring or capable of perceiving, even if he or she hasn’t done so yet and the sum of all the manifest assumptions is the user’s cognitive environment. A set of assumptions manifest to several users constitutes their shared cognitive environment. When it is manifest to all the users who are sharing a cognitive environment that they share it, this is a mutual cognitive environment, made up of mutually manifest assumptions. Communication is a matter of making certain assumptions mutually manifest to both communicator and addressee and of using these assumptions to alter the interlocutor’s cognitive environment in relevant ways (for instance, by combining with information that is already in the user’s cognitive environment to produce certain relevant conclusions). In fact, rather than being a pre-conceived notion during communication, interlocutors often resort to communication as a means to highlight, at a certain point during the conversation, that certain information is mutually manifest. Successful communication, then, foregrounds mutuality, rather than being built on a certainty of mutuality.
When surfing the Net, users will aim at enlarging or updating their own cognitive environments. There is, of course, no duplication of cognitive environments in the users, since each user has a very personal array of stored (i.e. encyclopedic) and manifest information that they can rely on as “context” when interpreting the new content provided on the web page. However, designers of web pages and those who fill them with content do make predictions on the quality and quantity of the users’ cognitive environments and design the pages according to the likelihood that the content itself and how it is arranged and link-related will end up being relevant to a majority of users.

Additionally, we could predict, on paper, that the most relevant information on a web page will be the one that systematically provides the user with the largest possible effects in exchange for the least mental effort, as proposed in the aforementioned clauses of relevance. In reality, though, users will readily invest a considerable amount of mental effort in processing the content of the page if the eventual reward, in terms of larger amount of cognitive effects, offsets this effort. Obviously, the opposite will also apply: users will be utterly disappointed if the investment of effort yields no positive outcomes, either in terms of number of clicks required to get the desired information (quantitative approach to users’ relevance) or in the level of inter-link coherence between chunks of texts (qualitative approach to users’ relevance). And in-between these possibilities there are more possible combinations of cognitive effects, mental effort required and quality of resulting relevance, as shown in table 1. This relevance grid shows that there is a good number of possible combinations and there would also be different degrees inside each case. On paper, positively relevant outcomes in the grid occur when the processing of an input in the context of existing assumptions improves the user’s knowledge. And this improvement can take place not only by adding a new piece of information to the user’s cognitive environment, but also by revising the user’s existing assumptions, or yielding conclusions not derivable from the new piece of knowledge alone or from existing assumptions alone.

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<th>case</th>
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<th>mental effort demanded</th>
<th>resulting relevance</th>
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<td>1</td>
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<td>2</td>
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Table 1. The relevance grid.

Case 1: High number of cognitive effects, high mental effort, positive relevance
Often the user will be willing to invest a great deal of mental effort. In this case, the reward, in terms of cognitive effects, offsets the effort. An example would be a user who is afraid of having cancer and is reading a long article on that topic, hoping to get relieved by the information, no matter what mental effort is involved in its processing.

Case 2: High number of cognitive effects, high mental effort, negative relevance
If cognitive effects are not “positive” to the user, the high mental effort invested will yield negative relevance outcomes. This may happen when the users access a lot of information on the Net that is
costly in terms of effort and, nevertheless, does not interact positively with their personal cognitive environments, thus producing irrelevance.

Case 3: High number of cognitive effects, low mental effort, positive relevance
This is the prototypical case of optimal relevance as envisaged by relevance theory. The user obtains a lot of positive cognitive effects but the mental effort expended remains low. In the case of web page processing, a design with an optimal organization of links that effortlessly leads to the important information and whose level of coherence remains high in the browsing or navigational process, will fit this case. And it also fits the basic claim in relevance theory that humans are geared towards maximizing relevance, in the sense that we are designed to look for as many cognitive effects as possible for as little processing effort as possible. Web pages that offer this trade-off between high interest and least mental effort are bound to be relevant.

Case 4: High number of cognitive effects, low mental effort, negative relevance
This case fits the typical situation in which the user can effortlessly gather a lot of information from the Internet but it does not interact positively with the user’s cognitive environment. In theory, relevant (i.e. positive) cognitive effects, are generated by strengthening an existing assumption, by weakening or eliminating an existing assumption, or by introducing a new assumption that combines with context to yield relevant conclusions. At this age of “information overload”, it can be predicted that simply browsing through a lot of web pages and accessing the information therein will not guarantee that the processing of that information will eventually be relevant to the user.

Case 5: Low number of cognitive effects, high mental effort, positive relevance
This case is, obviously, difficult to account for in relevance-theoretic terms, since it is very unlikely that a certain type of information whose processing demands a high level of mental effort and provides few cognitive effects in return will end up resulting relevant to the user.

Case 6: Low number of cognitive effects, high mental effort, negative relevance
On the contrary, this case is typically referred to as the canonical situation of irrelevance, in which the user invests a high amount of mental effort to process information on the web page that yields few cognitive effects in return. The predictable outcome is irrelevance.

Case 7: Low number of cognitive effects, low mental effort, positive relevance
This is one of the most puzzling cases in effects/effort/relevance combinations. Apparently, it can be predicted that no user will be willing to engage in the processing of information that demands little or no mental effort but, at the same time, produces no cognitive effects. But one of this combination has spread recently (see Yus, 2008) producing a minimally satisfactory level of relevance to the users. This “little interest in exchange for little effort” is the case of very popular web sites that are very boring but, for some reason, get thousands of visits every day. These include using a web-cam to watch how a Cheddar cheese matures (in http://cheddarvision.tv/) or how hens move about on a farm and lay eggs (in http://www.hencam.co.uk). In all of these cases, the effort demanded to obtain the information is minimal (or zero), but the information provided is also minimal. It may be, as suggested metaphorically by Burkeman (2007), that we suffer a lag in which the slow horse of human comprehension is unable to keep up with the fast horse of the information that is available on the Net, and maybe dull web pages are popular because they are a rebellion against information overload, a space for our slow horses to graze. But this trend is also a challenge for a relevance-based account of human communication, since the two conditions of relevance do not predict such unusual balances.

Case 8: Low number of cognitive effects, low mental effort, negative relevance
This case may also be found in the processing of certain types of information on the Net. Although the mental effort demanded is not high, the number of cognitive effects is also low, which triggers irrelevant processing outcomes.
To design or create a web page is to predict that its users will have certain processing needs, that they will resort to certain interpretive paths, that the way information is presented will be positively valued, etc. Indeed, according to the cognitive principle of relevance (Sperber & Wilson, 1995, pp. 260-266), the human cognitive system tends to allocate attention and processing resources so as to maximize the relevance of the inputs it processes. Therefore, Internet users will tend automatically to pick out potentially relevant assumptions that can be obtained from web pages, and will tend to process them in the most productive way. The role of web page authors and designers will be, in short, to aim at predicting what sources of information the users are likely to attend to, what contextual assumptions they are likely to use in processing it, and what conclusions they are likely to draw.

Sperber & Wilson (2002, pp. 14-15) acknowledge this ability to predict the mental states and inferential patterns of others as part of the general human tendency to maximize relevance. Specifically, speakers (and web page authors) can predict:

(a) Which stimulus in an individual B’s environment is likely to attract B’s attention (i.e. the most relevant stimulus in that environment). In the context of web page processing, these predictions would be interpreted as the author/designer expecting that a particular web page is bound to attract the user’s attention and, inside the page, that certain content is likely to interest the user or lead the user to click on the page links to obtain additional information or complete the one that has just been accessed.

(b) Which background information from B’s memory is likely to be retrieved and used in processing this stimulus (i.e. the background information most relevant to processing it). In the context of web page processing, authors/designers will predict that certain information will already be available to the users as background information (manifest information belonging to their cognitive environments) and that the information contained in the web page will interact fruitfully with this manifest information.

(c) Which inferences B is likely to draw (i.e. those inferences which yield enough cognitive benefits for B’s attentional resources to remain on the stimulus rather than being diverted to alternative potential inputs competing for those resources). Web page design and processing would follow the same prediction and drawing of inferences in search for the most relevant assumptions available.

Hence, users who create or design a web page make predictions of relevance for their eventual readers, which include predictions of manifest information, of inferential steps and of relevant outcomes of combinations of new and background information. However, even if some information is likely to be relevant, this positive outcome is not fully guaranteed. Indeed, authors and designers predict which information and which way of presenting it is bound to produce relevant outcomes in as many readers as possible, but these predictions are never fully accurate, since cognitive environments differ drastically from one user to another. Nielsen (2008) explains faulty predictions between authors and users in terms of three possible levels of relationships between the designers of web pages and their prospective readers. Firstly, when the designers are the users, they can make the page as obscure, jargon-filled, as they want. If no one else needs to understand the content or design of the page, then “you can safely toss the usability book out the window”. Secondly, when the designers understand the product, simply because the designers use the web pages they probably assume that they can accurately predict the users’ needs and optimally relevant information. In reality, there is normally a gap between designer’s predictions and users’ actual needs. Thirdly, when designers design for a foreign domain, they expect a level of domain knowledge by expert users which they often lack.

Livingstone (2007: 167) also points out that web pages, which are still mostly text-based, are open to interpretations not necessarily anticipated by the authors. She comments on a web page for adolescents
-The Epal Homepage- whose creators, predicting optimal interest, designed it with a Lara Croft-like character-mediated interface. Against the predictions, though, initially the teens were appreciative, but did not find the page too cool or sophisticated. To make matters worse, after the initial character-mediated interface, subsequent pages were loaded with plain information without any cool look. Hence, the home page was not relevant against the designer’s predictions and the subsequent pages were irrelevant, as anyone could have predicted.

In sum, designers and authors of web pages can (and have to) predict the users’ needs and relevance-seeking actions when surfing the web, but these predictions can never be fully accurate given the vast variability of cognitive environments and levels of relevance satisfaction that can arise among users. It is more realistic to assume that some designs or web content will satisfy some users’ while frustrating others. An example is described in Wu et al. (2008). They assessed the value of categories and directories provided by web designers and their effect on users’ satisfaction. Indeed, on paper these categories and directories are useful for browsing but, at the same time, users need to be able to move freely among them, without being imposed a predetermined reading path. These authors prefer a multi-faceted categorization system (a flat structure of categories treated as equal and independent), which allows users to move freely, an environment for dynamic, flexible and spontaneous information seeking. In relevance theory terms, this arrangement reduces the “intended” interpretation by the maker of the page, and leaves web page communication to simply making manifest information, and the user takes full responsibility of reading paths and eventual levels of relevance obtained. An immediate “backlash” of this design would be the situation in which the page makes manifest more information than the users can handle, thus reducing eventual relevance by increasing processing effort (perhaps due to reduced inter-link coherence between chunks of content accessed through multiple and parallel categories). Wu et al. (ibid.) propose some form of control over browsing options, but with an emphasis on predicted user needs, so that attributes deemed more relevant by users should be more accessible on the browsing interface:

Given that judgments about attribute relevance are highly context-dependent, user-centred organization of attributes should reflect such judgments. Multi-faceted categorization can still remain flat to support multi-dimensional browsing, which allows users to navigate information in any way they choose. At the same time, it would be easier for users to navigate the browsing interface because its organization matches users’ cognitive structure of the information at hand. (2008, p. 2874)

Again, these judgments can only be partly predicted due to the immense variability of users’ cognitive environments. This is clear in the two types of interface that these authors review: on the one hand, in the hierarchical structure, there is a pre-conceived subordinate relationship between elements, but users may fail to see the underlying structure providing coherence to the whole site, even though they are guided in their navigation:

A hierarchical structure would impose an unnecessarily rigid and arbitrary subordinate relationship on the attributes in order to determine the facets’ levels in the hierarchical tree. If the subordinate relationship defined by the web developer is different from that of the users, the latter may have difficulty finding the information they need; or they may need to browse the hierarchy up and down several times before finding the path that leads to the required information. (2008, p. 2875, slightly modified)

On the other hand, multi-faceted categorization adopts a flat structure treating each option as independent and equal. This provides users with total navigational freedom but they may end up lost in the vast array of options and paths that are available, thus reducing relevance.

Additionally, an in-between possibility can be proposed: the one in which web designers provide
readers with a graphical representation of the entire node system, a kind of map of the site and readers click directly on a selected area of that map instead of clicking on a link in the text itself (Engebretsen, 2000). In this way, the reader can have a clear picture of the intended hierarchical organization of nodes but, at the same time, be fully responsible of where to click and which navigational path to follow.

Web designs and choice of information content are, consequently, subject to constant hypotheses about eventual relevance for users. To these hypotheses, we must add other factors (e.g., technological) that may add to users’ dissatisfaction with the way information is presented and obtained. For instance, Rajani and Rosenberg (2000) list a number of what they call computational issues of web usability that may play a role in (un)succesful browsing: (a) Maintenance. Once posted, a page has to be frequently maintained to incorporate the ever-changing web technology (this demands, in parallel, the user’s update on how to use this technology, and relevance would depend on how skillful the user becomes). (b) Speed of access. Graphic images and flash animations may cause slower access to the page and hence user dissatisfaction at not obtaining what they need in due time. A balance between speed and design for usability should be established. (c) WYSIWYG (“what you see is what you get”). Although nowadays what one sees on the page is, supposedly, what the author designed, there are different browsers, different screen settings, different graphics cards and different computers that may produce unwanted visual displays. (d) Navigational aids. These include bars and frames, content indexes, or site maps and their use to aid navigation around a complex site that spans over many pages is essential in helping users find their way and reduce processing effort that can affect eventual satisfaction with the page. (e) Anonymity. Web designers are essentially designing for an ‘unknown’ audience. It is really hard to estimate cognitive environments and which new information will interact fruitfully with these environments. (f) Design traits. These include clarity, accessibility, consistency, simplicity, navigability, integratability, feedback, informativeness of displays and speed. (g) Limitations of html. HTML is the language of the web, but it has lots of design limitations, for instance when making complicated tables, frames and tags. Of course, html is an non-stop evolving language, so new capabilities are constantly added that make designing a more effortless venture.

Moreover, the picture becomes even more complicated when we take into account the fact that successful web communication is not only a matter of web designers and addressee users, but also involves other people, all of which have their own ideas on how to make the page relevant (often wrongly, as stressed already). An example is found in Chevalier and Bonnardel (2007), who explicitly differentiate -for e-commerce sites- between the designer’s clients (the persons who own the web site and fund its development) and the site’s future users (the future customers of the web site). Both may place the emphasis on different areas of page design, with substantial effects on the (ir)relevant outcome of page processing. In the case, for example, of a website selling cars, “client-oriented emphases” would include (a) site originality (in comparison to other competing car dealers), (b) branding usage (respect characteristics of the dealer’s brand), (c) sales improvement (information must lead to an increase in sales), and (d) site structure and content. In contrast, “user-oriented emphases” would include aspects of general interest for users. Also among these emphases, we would include those concerning usability -that Chevalier and Bonnardel (ibid.) call ergonomic constraints- such as (a) the aesthetics of the site, and (b) the attractiveness of content. Predictably, in their study these authors concluded that designers “focused mainly on the respect of client-oriented constraints in their web sites. In other terms, when they had to create the web sites, designers respected very few user constraints that they had articulated. Consequently, their web sites were not satisfying in terms of usability” (2007, p. 2459).

Rajani and Rosenberg (2000) conclude in their research that interesting information leads users to stay looking at a page, but more so if that information is coupled with a simple page layout, a ‘light’ and pleasant color scheme and clear navigational aids: “If navigational aids were confusing, they would spend more of their time planning how to move on as opposed to concentrating upon content. It was as
if they felt ‘trapped’ or ‘imprisoned’ within the page”. Counter-intuitively, the typical assumption that sites which are rich in color and animation and with multimedia applications are preferred by users was not supported in this study.

Abels et al. (1998) also list a number of suggestions for web design based on several criteria: (a) use (the page should be easy to use, with available navigation aids, etc.), (b) content (information should be updated and useful, concise, non-repetitive, not superficial, etc.), (c) structure (with an intelligible, straightforward organizing scheme, with text broken into appropriate and well-labeled sub-sections, etc.), (d) linkage (there should be integration with relevant information contained in other sites, and all links should function), and (e) search (there should be a “search support” on the page that provides relevant results with minimal effort).

Fuccella and Pizzolato (1998) opt for a three-step approach to web design intended to integrate user-centered design into the overall web page design process. Step 1 involves audience definition. The easiest way to gather data on future readers of the page is to give out surveys. Step 2 refers to requirements and task gathering, basically meaning “to gain a better understanding of the web site content”. Finally, step 3 has to do with information organization. At this stage, users are called upon to organize and structure the web content collected in the previous step.

Finally, Lim (2002) prefers to list a number of pieces of advice for web designers: (a) Follow a sequential progression: “information on websites unfold in a sequential manner where one hyperlink is an elaboration of a previous inter-connected hyperlink and so on” (p. 165). Users who are accustomed to this sequential progression of information may become frustrated when websites do not adhere to it, since mental effort is uselessly increased without an offset of larger cognitive effects. (b) Mimic real-life scripts. “As human beings, we understand our environment and remember discernable trends. We then utilize this knowledge to make assumptions about what will happen next.” (p. 165). In the same way as relevance is sought in every interaction with the surrounding world, be it verbal, visual, intentional or otherwise, also web users expect certain patterns to be repeated or to fit similar situations. These are pieces of information that we store as schemas or scripts and we use by default unless context favors (or forces) an access to different pieces of information. When accessing a web page, scripts and stereotypes are also at work. (c) Provide visual indicators. Especially for e-commerce, it is useful to provide visual information regarding the products available. (d) Place functionality above aesthetics. Again, this is a priority for shopping sites, whose main aim is to get as many purchasing clicks as possible. For instance, it is more important to make the functions of links and buttons clear than to make them visually appealing. In contrast, Mitra et al. (2005) underline the relationship between the attractiveness of a web page and perceived usefulness. Attractiveness also seems to play a role in perceived ease of use, enjoyment and actual use. Nevertheless, they also stress that the current trend in web design is to opt for simplicity and acknowledge that the eventual use of information crucially depends on how it is presented to the user and on the context of the user’s need for information. For instance, in the academic world content is more important than how content is presented and if the user is not browsing but really scanning for information, then information plays a much greater part than the mode of presentation.

CONCLUSIONS

Web page communication is a matter of designers or authors predicting which information is bound to interact positively with the eventual readers’ cognitive environments and achieve a satisfactory level of relevance. On paper, to generate a relevant interpretive outcome, the authors or designers will aim at favoring the highest possible reward in terms of positive cognitive effects in exchange for the least effort generated during processing due to the assessment of link-mediated chunks of discourse and the construction of inter-link coherence. Between this optimal level of relevance and the opposite, in which few or no cognitive effects are obtained to offset a high level of mental effort, there can be a lot
of possibilities, as the so-called relevance grid has shown.

Although no general design suggestions can be made, due to the great level of variability in the user’s cognitive environments, informational needs and background information, authors or designers can nevertheless predict that a certain type of information design or how information is presented will probably yield the expected results in terms of usability and loyalty to return to the web page in the future.

REFERENCES


**Key terms:**

Relevance Theory
A cognitive pragmatics theory of communication based on people’s assessment of relevance when understanding utterances.

cognitive effects
Inferential outcomes of interpreting other people’s stimuli (e.g. an utterance). These can be positive or detrimental to the person’s search for relevance.

web page
Verbal, visual or multimodal html-based pages found on the Internet.

cognition
Mental activity intended to improve the person’s information about the world. It mainly deals with getting knowledge, including perception and reasoning.

mental effort
Amount of cognitive resources that have to be devoted to obtaining relevant outcomes from processing inputs.

Pragmatics
Part of semiotics that deals with how people interpret utterances in a context.

Web usability
Qualities of a web page that help users get the information therein more easily and fruitfully.