

INFOXICATION 2.0

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We're drowning in information and starving for knowledge.

Rutherford D. Rogers (Campbell, 1985, The NY Times, February 25)

ABSTRACT

This chapter reviews the issue of information overload, introducing the concept of 'infoxication 2.0' as one of the main downsides to Web 2.0. The chapter describes some of its potential effects on the learner, on the one hand, and puts forward some solutions to deal with the informational and communication barrage worsened by Web 2.0 plethora, on the other. The review of the issue reveals that although the problem of information overload has existed for many years, the massive abundance of fragmented Web 2.0 informational and communicative resources for the language learner becomes an obstacle, i.e. it is often difficult to find what's useful. Two kinds of solutions are identified, those based on common sense and time management and those based on technology agents such as RSS readers and especially the future generation of RSS mash-up tools. An emphasis is placed on the role of the teacher as the facilitator to provide the know-how on these tools.

INFOXICATION 2.0

The idea that computer technology introduced the age of information is completely misleading and fallacious. The printing press began that age (Dewar, 1998; Borgman, 2000; Darnton 2000a). But, computer technologies enlarged it exponentially. One of the most overwhelming features of present Western society is the rapid sequence in which events, thoughts, and products occur due to technological progress (Bolter, 1984). If *Google* is handling the processing of exabytes of information with difficulty, users, consumers and producers of information (i.e. prosumers) are being surpassed by the amount of time devoted to absorb and, in the process, to purge gigabytes of information. After all, when searching for information what is actually being done is to filter contents in order to keep only what is interesting or that what is agreed with. Whatever it is that is being processed, e.g. audio, text or video, a conversation, a newspaper article or a TV documentary. The human brain, whose mechanisms science would like to emulate, is then responsible for processing, tagging and storing information on our cognitive servers.

But there is so much to see and read in the web and time is too short. There is no Web 2.0 site that gives vouchers to get more time for free. Learners need to handle all that draws their attention in Web 2.0 without feeling dizzy or overwhelmed by their own information/communication eagerness. This eagerness to know more is not a new thing.

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As Shenk (1997) explained, human beings have always pursued information and contact, but nowadays the problem is not so much getting hold of it as it is differentiating what we expose ourselves to. It is that ancestral desire to know more and to communicate with others that took society to our current situation. Thus, the stimulus is not new - as will be seen later - but the available answers to that stimulus are indeed new in terms of quantity, quality and accessibility. In the current information glut, learners have to differentiate what is useful from what is not. At this point, it should be emphasized that in this chapter the discussion is not about deontological distinctions such as 'what is good vs. what is bad' because who can define the inherent 'goodness' of information? From a pragmatic viewpoint, this chapter will refer to that sort of information that is somehow useful to language teachers and learners. It is not concerned with the process of accessing information but the process of accessing by means of which we can *find* useful knowledge, whatever this may be.

In a normal studying day, a learner will have to pick up calls, read emails, read the press, chat through an Internet messenger, answer SMS, read web feeds and carry out their job, as well as pay attention to their social and personal life. And although there are some mechanisms, which will be seen below, to help with some of these tasks, there is no way to control this flood of data that comes increasingly as a commodity. As Postman noted, 'data is now a commodity that can be bought and sold, or used as a form of entertainment, or worn like a garment to enhance one's status. It comes indiscriminately, directed at no one particular disconnected from usefulness; we are glutted with information, drowning in information, have no control over it, do not know what to do with it' (Postman, 1990). What could Postman's view be now, 17 years later, when there are millions of web pages, blogs, wikis, and social networks?

The University of Berkeley (Lyman, 2003) attempted to quantify in bytes the information available in our society. Their first attempt dates from 2000 (with data from 1999) and their most recent attempt was in 2003 (with data from 2002). It might be interesting to know if the reason why there have not been further attempts was the tsunami of information created by the wide adoption of blogs (a significant application of Web 2.0) in 2004. In any case, the numbers identified by the 2003 study are already staggering - all production information in various formats for the year 2002 occupies a trillion and a half gigabytes of storage or about 250 MB per person. However, from the amount of information produced in 2002, 'only' 1.75% came from Web pages. For example, email generated much more information with 8% of the total. But, although talking about these figures creates a certain impact on us, it will not help us see the forest (Seely Brown and Duguid, 2000), because 'storage' does not mean importance, or 'volume' value. Some times figures lead to 'tunnel vision'.

Web 2.0 is said to be a fuzzy concept that has been carrying a lot of hyperbole (Anderson 2007, Spool 2007) since the moment it was introduced by O'Reilly (O'Reilly 2005). When Berner-Lee (IBM developerWorks, 2006) argues that Web 2.0 is a jargon term nobody can grasp and that provides no advance compared to Web 1.0 technologies, his reasoning is questionable because, nowadays, with Web 2.0 tools, non

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tech-savvy people can create and distribute content on the web without needing to become experts. Web 2.0 is not a piece of software or a tangible thing, but a conceptual framework or approach with different characteristics, as shown in Table 1 (O'Reilly 2005; JISC, 2007, Spool, 2007).

Table 1 Web 1.0 vs. Web 2.0: Different Ecologies

<i>Web 1.0</i>	<i>Web 2.0</i>
Web as Read-only	Web as Read-Write
Web as Medium: Where content is transmitted from a webmaster or company to an audience	Web as Platform: Where content can be stored, created, shared, remixed and commented by each user
Web of large documents	Web of small pieces of data
Web of Software: The success of the software company does not depend directly on the end-user. If the user bought and downloaded the piece of software but doesn't use it, they still make a profit.	Web of Content: If people do not use the web-based application (i.e. by sharing, rating, uploading, networking), the application does not exist (nor the company or startup behind).
Web of geeks and techies: Html knowledge needed	Web of anyone willing to try: Web-based publishing platforms (<i>Wordpress, Blogger, Wikispaces</i>), no need of technological language
Web as Broadcast: One to many	Web as Conversation: Social participative nature of web 2.0 tools, users can share comments, posts, trackback other users' comments. Many-to-many
Web as Static: Applications and Web sites are closed	Web as Dynamic: Applications are open and remixable via APIs (Application Programming Interfaces), recombining and deconstructing web
Web of Search Engines: You go to the web to find what's out there	Web of RSS: Content and data are subscribable They get to your computer
Web of Copyrighted Content	Web of Copyleft and Commons: Content can be licensed for re-use and derivative works

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Web of Categories: Content organized and stored in large and fixed categories by webmasters.	Web of Tags and Folksonomies: Smallest units of content tagged by anyone in the online community. It is the people organizing web content.
Web of Forums	Web of Blogs and Social Networks
Web of “Stable” Releases	Web of Beta Releases

Thus, the emergence of Web 2.0 over past years, with blogs, wikis, social networks and ‘youtubes’ has radically changed the overall availability of publications, notes, documents, opinions and resources in general and more specifically in education and foreign language learning. Indeed, resources are not only in libraries or bookstores, but one click away. The main question that motivated this chapter, then, is how all this affects language teaching and language learning and what can language teachers do about it? How will, for instance, English for engineering students face an assignment on ‘diesel engines’ when *Google* yields 1,970,000 hits on this? Or if asked to practice their listening skills with podcasts in English, where do they start from with current 13,800,000 results at *Google*? Moreover, now that Personal Learning Environment (PLE) (Kelly, 1996) is such a fashionable term, how can a learner integrate web and mobile information and communication tools in a useful way that does not consume all their time?

Therefore, this chapter is specifically aimed at introducing and discussing the scenario of a viral syndrome here referred to as ‘infoxication 2.0’ as one of the main downsides to Web 2.0 and its educational application. Firstly, the medical history of this process evolved from ‘information overload’ is analyzed, then the chapter moves into the diagnosis, showing most recurrent symptoms, i.e. possible consequences on the cognitive system and the performance of the learners. Finally, a treatment 2.0 is suggested, that is, always in upgradeable beta status in order to combat data smog (Shenk, 1997). Currently the treatment is the use of RSS readers. The final sections will then identify not only the advantages of RSS readers in terms of helping teachers and learners keep their language resources organized, but also some of the main limitations of current RSS technologies and the need for a new generation of truly semantic RSS will be explained.

MEDICAL RECORDS

Is information something gradable? If there’s a statement such as ‘there is little information’ then ‘there is too much information’ should be accepted as well. However, there is something negative in the latter, as if there were an interest in limiting the information. Can there be something like too much information? The issue of how to access and organize information has been a topic of discussion for more than two

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decades, begun initially by librarians and information specialists, who focused on the improvement of information retrieval (Allen, 1969; Brookes, 1975; Belkin, 1978; Bates, 1979; Atherton-Cochrane, 1981; Hiltz & Turoff 1985; Ingwersen 1992). However, archives and library funds are tangible and therefore more manageable and classifiable by information retrieval (IR) systems. The unstoppable growth of websites makes the same information retrieval task a much more complex process.

Following the advent of the Web, various buzzwords have been coined to address the issue of information growth and specifically the effects of such growth (Toffler, 1970; Bell, 1973; Shenk, 1997; Johnson, 1997; Ganzel, 1998). The growth of information caused by the web has been named in the following ways, more or less denotative: the widespread Information Society, data flood and information explosion. The Information Society (Bell, 1973) refers to the necessity and future of knowledge-driven societies. It was a hegemonic concept that hit the global political agenda in the nineties; the G-8 summits were focused on the diffusion of Information Society as the buzzword to be included in any institutional and educational report. There are some other connotative and negative terms referring to the impacts of information expansion. The most widely used associated term is 'information overload' (Toffler, 1970), which refers to too much change in too short a period of time. Information overload is a term that has been nowadays related to computer-mediated communication to describe the condition of having too much information to make a decision or be informed about a topic. That excessive amount of available information on the Web 1.0 and 2.0 implies a low signal-to-noise ratio (Berghel, 1997), which makes relevant information difficult to find.

Once we go deeper into the effects caused by the exponential growth of data in the network, i.e. that there is so much noise that we do not see / hear the signal, we turn to loaded concepts such as Shenk's (1997, pp.30-1) 'data smog' and 'data obesity'. Web usability expert J. Nielsen found that smog fell too short and coined the phrase 'information pollution' as information overload taken to the extreme, occurring when the information overload ceases to be a burden and becomes crippling, 'an impediment to your ability to get your work done' (Nielsen, 2003). This happens when web users are littered by a lot of anecdotal data that keeps them from their original intention (Grossberger, 1998). If this often happens to language teachers, it should not be very difficult to imagine that a similar fate can happen to language learners who are forced to do a certain assignment and enter, for instance, *Wikipedia* or the blogosphere to work on it.

In general, a distinction is drawn between two kinds of information overload depending on the etiology. Jordan (2000) identifies two types, one that occurs due to quantity and that which occurs due to organizational matters. The former arises from excessive volume and the latter from information so badly organized that it turns out to be useless. In other words, the first implies that the technology is volume, and generates huge amounts of data, and the second refers to the functionality of the system, i.e. if it can organize, sort and effectively deliver the generated volume. Can search engines effectively index every generated piece of content? Can users tag each multimedia

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resource efficiently? Do those engines index these tags wisely? Do prosumers have to learn complex Boolean search, for example? Web 1.0 and Web 2.0 contents (either a post in a blog on EFL, a community of photos on *Flickr* or an article on RP in *Wikipedia*) are often affected by inconsistencies, errors and broken links. When looking for something, it is common to get misinformation or something that does not relate to what was initially sought. Therefore, language teachers and language learners face a twofold task: searching abilities and finding abilities (which also should include discriminating skills).

Nevertheless, the language learning community is not the first one to deal with those tasks. Even before Gutenberg's press, it was all about keeping up with the fast pace of knowledge acquisition and dissemination. As stated at the beginning of this chapter, the information society was not born today. Neither are scholars' worries about the amount of information and the effects of new technologies (i.e. written code, a book, a printing press, a telephone or the net) on society. Blair (2003) cites Seventeenth Century French scholars fearing that the multitude of books would make their society fall into an uncivilized state. Rozek (2007) cites Sixteenth Century scholar Gesner, known to librarians as the creator of the bibliography, forewarning on the confusing and harmful overabundance of books. Several scholars tried to implement solutions to respond to this trend. Ramelli's bookwheel, for instance, would be a hefty *Google* predecessor from the Sixteenth Century. On the other hand, commonplace books, born in the Fourteenth Century as scrapbooks to be filled with writings of any kind, are seen as the originary forms of blogs and wikis (McDaniel, 2005). These commonplace books were used by writers, artists, scientists, etc. as an aid to remember any sort of acquired knowledge. According to Darnton,

Whenever they came across a pithy passage, they copied it into a notebook under an appropriate heading, adding observations made in the course of daily life. Erasmus instructed them how to do it. ... The practice spread everywhere in early modern England, among ordinary readers as well as famous ... early modern Englishmen. ... [They] broke texts into fragments and assembled them into new patterns by transcribing them in different sections of their notebooks ... they reread the copies and rearranged the patterns while adding more excerpts. Reading and writing were therefore inseparable activities. They belonged to a continuous effort to make sense of things, for the world was full of signs: you could read your way through it; and by keeping an account of your readings, you made a book of your own, one stamped with your personality. (Darnton, 2000b)

As a step toward a working definition of infoxication 2.0, it should be emphasized that the above definitions have the concept of 'information' in common, a fuzzy or rag bag concept onto which we can actually dump almost anything. However, it should be acknowledged that this concept implies the existence of data or facts as an informational flow. Like Himma pointed out, it can be agreed that:

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strictly speaking, we can define ‘information’ in a number of ways to discuss the concept of information overload, what the content of this concept is depends on what the content of the concept of information turns out to be. Indeed ... given the ordinary meaning of ‘information’, ‘information overload’ is something of a misnomer for the affliction with which information scientists are becoming increasingly concerned. ‘Content overload’ is ... a more accurate characterization of the problem. (Himma, 2007, p. 4)

Indeed, to speak of ‘content overload’ is perhaps the most accurate and the least ambiguous option but it is not the aim of this chapter to trigger a definition debate and therefore this chapter conveniently starts from the commonly known concept of ‘information overload’.

Thus, climbing up in the hyperonymic ladder, a more comprehensive further distinction between types of overload must be included: communication overload and information overload. This distinction draws upon the belief that information and communication are related aspects but not synonymous. Information may be a true or false fact; it can be a reified experience; it can be the illocutionary force of a given communicative act. It could be the target of communication, but not all communication is aimed at informing. The very choice of the term Information and Communication Technologies (ICT) proves that point. Communication implies some sort of dialogue, not always intended to share information or representational or propositional content. Therefore, if information overload is agreed to be the simple notion of receiving too much information, communication overload would relate to the excess or overload of verbal exchanges in various ways that a person bears during a normal day. The worst thing is that both overloads are compatible. Facing the unread feeds is part of the information overload; coping with the emails, SMS, messages on the *Facebook* wall, *Flickr* comments, blog posts and comments are part of the communication overload.

If Web 1.0 is the web of information, the Web 2.0 is the web of communication and participation, as seen in Table 1. Every day we hear of new applications and mash-ups to communicate with people around the globe and of applications that do nothing more than reinforce the phatic nature of communication such as *Twitter*. The more applications we embrace, as teachers or learners, the more prone we are to suffer symptoms of communication overload. As of November 2007, the blog search engine *Technorati* was tracking 112.1 million blogs and over 250 million pieces of tagged content. This is all obsolete data by the time you are reading this. Technological advance always brings a jack-in-the-box: a new device and a challenge to add. Some people may think that the best solution is to give up all these new media. If western society got here, it is because it was needed and consequently created. Accordingly, the possible consequences must be faced.

Thus, as stated previously, it seems that human beings’ medical history proves that we have always been stirred up by our desire to know more, to create more and yet, to keep the outcome under control. Millennia ago it was the written code; centuries ago, the

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book; then came the printing press, the telephone, the radio, the television, the consumer Web and now the prosumer web or Web 2.0. They are all cumulative, that is, Web 2.0 adds more overload to that caused by everything else and it raises this overload to exponential levels. Before the advent of Web 2.0, that information overload was therefore set to status 1.0. With the Web 2.0, infoxication 2.0 has come, i.e. information pollution taken to the extreme and with wide open flanks, a malady affecting the cognitive and interactional schemata. Infoxication 2.0 is a viral process, a ripped, mixed and burned virus coming from our most essential needs - infoxication standing for information and communication - exponentially worsened by the myriad of Web 2.0 communication and networking possibilities. It refers to an intoxication of excessive informational and communicational demands. The more engaged with Web 2.0 a person is, the more time s/he will have to spend to meet the various demands: website syndication, reading feeds, reading comments, responses to comments, searching and filtering tags, communicating with other members of a social network, listening to podcasts or watching uploaded videos.

Consequently, language teachers have to confront a twofold challenge: on the one hand, to introduce and guide learners in terms of the benefits of using web 2.0 resources in their language learning process (blogs, wikis, podcasts, vodcasts) and, at the same time, to implement strategies aimed at fostering critical time management skills as well as at learning available technologies to facilitate this process in order to keep them/us from dying of infoxication 2.0.

DIAGNOSIS

At this point, innumerable metaphors could be thought of to diagnose the current situation, it is no longer about surfing the web (back to the 90s and Web 1.0) but about being deluged by a churning wave, or being definitely lost in *the long tail*. Educational institutions (NCTI, Council of Europe, etc.) are currently promoting innovation in the classroom, at least theoretically. On the one hand, traditional language teachers and lecturers have to unnervingly embrace new technologies and figure out a methodology to use them in class. Tech-savvy language educators, on the other hand, have to catch up with the fast pace of Web 2.0 tools and their mash-ups. Many authors have claimed the benefits of the use of Web 2.0 in education (Prensky, 2001; Anderson, 2007; BECTA, 2007; Warlick, 2007; Downes, n.d.) and in foreign language learning in particular. The belief underlying this chapter is that Web 2.0 is a framework that offers enriching possibilities for the foreign language classroom (Godwin-Jones, 2003; Campbell, 2003; Johnson, 2004; Kennedy, 2003) due to its social tilt (social networking) and to its participational nature (e.g. learners/readers become writers, anyone can upload content and tag it, like-minded people can link each other through matching filters, etc.).

Web 2.0 is the latest stage of CALL (Davies, n.d.). If one of the objectives of CALL is 'to orchestrate challenging activities that involve and empower students, stimulate thought and production, and create more instances of authentic interaction between students using the target language than might be the case in the analog lab or

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conventional classroom' (De Szendeffy, 2005, p. 5), then the age of Web 2.0 shows a more powerful potential than any other prior CALL stage because it offers possibilities for authentic communication and cultural exchanges; it fosters peer-to-peer learning, connections and communities. Moreover, Web 2.0 is basically multimedia (text, podcasts, vodcasts, audio and video sharing, etc.) and most of its services are free, lightweight and ubiquitous, i.e. software runs on the server not on the learner's computer and it can be accessed anytime anywhere (teachers/learners do not depend on the language lab anymore). Nowadays language learners have a myriad of Web 2.0 resources in which they can interact, leave comments and socialize in the target language.

Then, it is very common to meet language learners asking questions such as *how can I practice my listening skills? Can I practice with other native speakers?* A 'short', straightforward answer would be: use the Web 2.0, i.e. read blogs in the target language and leave comments or start your own; subscribe to podcasts and vodcasts in the target language and download them to your mp3 player; sign up for *Facebook* and join web-based language exchange communities such as *My Language Exchange*, *Mixer*, *xLingo*, *LiveMocha* or *Worldia*, where you can interact with other native speakers as well as language learners for free; create your own dictionary and share definitions and tags with other users with the so-called (web 2.0) social dictionaries such as *Lingoz* or *Wordsource* or simply read the teacher's blog where she has already posted hundreds of resources addressing these issues. But then, wouldn't it have been easier to tell those inquisitive language learners the simple truth? *Get lost*. Literally.

Indeed, as hinted at the beginning of this diagnosis of infoxication 2.0, they will be lost in the long tail, since to combine their learning process with learning assignments and Web 1.0 and Web 2.0 can be somewhat dangerous in terms of teaching and learning objectives. Of course, in case there isn't any remedial method behind. The hyperlinking nature of Web 1.0 and the social hyperlinking nature of Web 2.0 resources foster centrifugal serendipitous wanderings, serendipity being a wonderful fulfilling faculty we should not put down. However, untrained serendipity in the Web 2.0 can lead to learners' procrastination, to start with. As it can be read at the Web site of the Information Technology department of The College of William & Mary 'the last year has seen an explosion in the number of internet tools that allow students to collaborate, communicate and **procrastinate** in ways that previous generations could only dream about!' (*The College of William & Mary*, <http://www.wm.edu>). Everyone procrastinates to some extent, as the aphorism goes 'there is much pleasure to be gained from useless knowledge'. Then, it is easier for learners, when there are so many interesting and funny things out there in the web, to push boring learning to the bottom of the to-do list.

However, procrastination is not the only potential symptom of infoxication 2.0. There are some other downsides to be considered here. Since the rate of change of web 2.0 resources is faster than Web 1.0's, learners will have to filter obsolete resources from updated ones and in a rapid fashion. They will have to develop multi-tasking and multi-literate skills (Benito & Bonamie, 2007) based on autonomy and strict time

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management in order to avoid what British psychologist D. Lewis (Waddington, 1996) coined Information Fatigue Syndrome (IFS), i.e. the inability to 'keep up' with the ever increasing amounts of available information. On the other hand, technology is not neutral and as McLuhan (McLuhan, 1964) stated, the medium shapes the message. The 'less is more' philosophy behind web 2.0 mediated communication messages - perhaps originally aimed at avoiding information overload - has changed the way people approach texts, making them shorter so that people do not tune out (e.g. tumbleblogging, blogging posts meant to be short, etc.). Thus, information and communication become nuggetized and 'the less is more' becomes 'a lot more of hundreds of less' which they will have to skim, once again. In some learners, this could lead to *fragmentia*, i.e. a cognitive disorder based upon gestalt theory where one feels cut off from a sense of wholeness due to excessive exposure to incomplete information (Shenk, 1997). This is probably the reason that explains why most language learners prefer to work with a textbook rather than learning only with classroom handouts, they need to feel that wholeness instead of dealing only with parts and never completing wholes.

Furthermore, there are two apparently opposing forces: on the one hand, classrooms and on the other, Web 2.0 with its blogs, wikis, social networks, podcasts and the vast array of resources many language teachers recommend their learners to resort to for further practice. Apparently opposing forces because as Shenk (1997, p. 211) put it:

Schools are stringent filters, not expansive windows onto the world. Teachers and textbooks block out the vast majority of the world's information, allowing into the classroom only very small bits of information at any given time. When organized well and cogently presented, these parcels of data are metamorphosized into building blocks of knowledge in the brains of students. The computer, by and large, is designed for a very different purpose. It helps access and deliver enormous stores of information at high speeds. It is not a filter, but a pump.

The solution, however, should not be to block the pump or to filter it somehow, but to let language learners become critical independent learners by letting them know the advantages and disadvantages of that pump in their learning process and providing them with know-how on existing tools that may help them to save attention for other things. In a world in which we talk about renewable and non-renewable resources and foster the use of the former, what will language teachers do concerning a sustainable use of a non-renewable resource such as learners' personal time?

The main problem suggested in this chapter is that people's and more specifically language learners' attention is continuously being distracted by messages and gizmos (Wakin, 1998) which compete for it and that, consequently, it could be claimed that both learners' and teachers' attention has become a scarce commodity, i.e. 'what information consumes is rather obvious: it consumes the attention of its recipients [and therefore we] need to allocate that attention efficiently among the overabundance of information sources that might consume it (Simon, 1971, p. 40). In the following

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section, some solutions aimed at allocating attention and time efficiently will be outlined.

TREATMENT AND PROGNOSIS

As stated in the introduction, this chapter is not only intended to pinpoint ‘infoxication 2.0’ as the downside caused by the plethora of web 2.0 resources for language learning but also to outline a possible treatment 2.0, that is to say, a beta version. Needless to say that if the ‘beta’ concept were rendered in this chapter as many current Web 2.0 startups do, i.e., their ‘beta’ meaning that *we* will have to diagnose *their* bugs and in some cases altruistically work them out on *our* backs, the chapter would end here.

However, beta is here understood as a state of iterative revision which becomes a need due to the aforementioned fast pace of technical change. Some of the solutions offered here may be outdated in a couple of years or even less, that is why the only way to treat infoxication 2.0 is to be ready for newer versions of the solutions provided to deal with the problem, which may, funnily enough, worsen the infoxicating process.

At this point, it is necessary to distinguish two sorts of treatments, subjective and objective. The subjective approach is not a beta but a gold release. It is retail-ready and does not depend on any sort of technology whatsoever because it refers to common sense. Indeed, there are some ways to keep oneself somewhat away from the infoxication barrage which are basically based on the logic of common sense and refer to DIY time management (Lively, 1996; Shenk, 1997; Rosen and Weil, 1997; The University of Hull, n.d; Krill, 2000). The most commonly used techniques mentioned are:

- Language learners should create a study plan and organize their schedule
- Language learners must know what they need, and consequently, what they want and where to find it
- Language learners should establish boundaries, avoid interruption overload (i.e. when communication disrupts, such as a phone call, SMS, a messenger message, an unread email pop up window, etc.) especially when talking about young learners. As proven by UK’s Ofcom annual reports (Ofcom, 2006), youngsters love doing multi-tasking, such as writing an e-mail, listening to mp3 tracks and talking on the phone, all at the same time
- Language teachers should facilitate this process by telling them how and showing short-cuts

The objective approach relies on the technological advances throughout the last decades to beat informational deluge back. In the Web 1.0 era, the brand new technologies devised to close the spigot of the informational firehose were filtering email clients and firewall software and www search engines, such as *Google* or *Yahoo!* (Lake, 1998). In the Web 2.0 or ‘participation era’, RSS was seen as the new breed of applications to

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help manage information overload. The objective of this section is not to describe the complicated history of RSS, though. RSS (Really Simple Syndication) refers to a family of Web feed formats that are used to publish frequently updated content such as blog entries, news headlines or podcasts. An RSS document, 'feed' or 'channel,' contains either a summary of content from an associated web site or the full text. RSS therefore makes it possible for users to stay up to date with the latest information in an automated fashion rather than manually downloading it. In order to use any site RSS feed, an RSS reader (also called RSS aggregator) is needed, which can be desktop-based or web-based. Just like an email program does with incoming emails, RSS readers display news from various sources (from all the feeds you have registered with, or subscribed to). Unread entries are typically in bold, just as unread emails. Therefore, instead of language learners going to different websites to check for any new uploaded content, any new uploaded content goes directly to their RSS reader account. To do so, all they have to do is to look for the RSS logo (an orange button) in a given site (for instance, *English Baby!* lesson channel or the *British Council* podcast archive) and subscribe to the feed in various ways, like dragging the URL of the feed into the RSS reader or by cutting and pasting the same URL into a new feed in the RSS reader.

RSS cannot only be used to organize information (e.g. websites, blogs posts or wikis) but also communication (e.g. people's comments on blogs). There are many popular and free web-based readers such as *Google Reader*, *Bloglines*, etc. RSS advantages for learning and teaching have been outlined showing different ways that RSS feeds can add to a learner's and teacher's knowledge base (Richardson, 2005; D'Souza, 2006). Language teachers working with learners' blogs can use RSS to track their learners' work in a simpler way, i.e. instead of checking out all learners blogs every day one by one, they can subscribe to their blogs and get their work compiled in just one place, the RSS reader. On the other hand, the benefits of using RSS for a language learner are also very obvious since RSS can assist them in collecting Web 2.0 resources in just one place. For instance, a Business English student can gather all the posts and comments left by learners or tutors and all the podcasts from the Blogosphere, all the videos from *Youtube* and all the PowerPoint slides from *SlideShare* tagged as 'Business English' in just one place - a web-based RSS reader such as *Google Reader* - and get updated content automatically.

Other RSS application into language teaching can be to create digital content in the target language with Web 2.0 tools such as *Odeo* (to create, upload and share audio) or *Youtube* (to create, upload and share video), tag the new content in those sites (i.e. describe it with keywords) and ask learners to subscribe to the feeds associated to the new tagged content. Learning a foreign language requires multimedia, audio and video to foster aural and comprehension skills. For decades, CALL experts have been creating a myriad of multimedia materials. Nowadays, by uploading those creations to blogs or other Web 2.0 tools (for instance, mixed media channels such as *SplashCast*), language teachers are putting their media into blog search engines and therefore their material becomes feedable (they can create a RSS or subscription channel for your learners). Thus, any teacher's uploaded material can easily be accessed and followed through RSS

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readers. It is about letting the content go to the learners' computers and not the other way round. Teachers can make their PowerPoint presentations, their podcasts or audio files, everything subscribable and that is the first step to lessen learners' infoxication (as well as teachers'). Indeed, instead of creating a Web 1.0 static website in which grammar explanations and multimedia files are uploaded on a regular basis but cannot be tracked and subscribed, language teachers should gather all that content in dynamic Web 2.0 sites such as blogs, wikis or social networks, which are written in a different code and are therefore subscribable. Once there, the next step is to show language learners how to make the most of RSS tools for their own learning process. To do so, language teachers have to delve themselves into the analysis of these tools since the best way to know how RSS readers and remixers can work for teaching and learning is to play around with their interfaces; if a mistake is made or what has been tried doesn't work, it is as simple as closing the browser window and trying again.

There are also downsides to this Web 2.0 tool. RSS readers were hailed as the indispensable tool to combat information overload (Singel, 2003), but when subscribed to many RSS feeds (maybe hundreds), the same and old overwhelming feeling of overload may turn up again if the RSS folder is filled with piles of unread posts. This is being referred to as 'RSS Stress' or 'RIO', i.e. RSS Information Overload (Agarwal, 2007). Some of the possible RIO effects are the following:

- Scanning reading skills: since there is a pile of unread posts or comments, the RSS user has to scan through the swamped posts and comments for keywords
- Skimming reading: if there's a post or a comment with a snappy title that pulls the learner in, the feeling of hastiness (i.e. *I have to hurry up otherwise I won't be able to slog on through the unread pile*) leads to superficial reading, selecting the lines in the beginning and the end of each paragraph; skimming and predicting content. The hurriedness of web 2.0, that feeling of *there's a lot to see and read, I won't be able to know it all*, may be causing a decrease in reflection skills, as A. Lightman, a Humanities professor and Physics lecturer at the M.I.T., points out: 'I think that the high-speed information technologies, while very useful in many ways, have robbed us of our necessary silences of time to reflect on values on who we are and where we're going.' (Krill, 2000)
- More time spent: although the all-in-one place sort of advantage saves time, the fact of screening through hundreds of posts and comments titles in order to end up reading only those of interest may take more time than before
- Missing potential interesting resources: when scanning and skimming RSS entries, the learner may involuntarily miss interesting and useful data, concepts, ideas or resources. Relatively new launched RSS services such as *aideRSS* use postrank systems to score and filter your RSS feed entries, as their logo claims 'only top stories and read what matters'. In this case, they render as 'intelligent assistance' to equate top ten ranked stories (one of the main characteristics of web 2.0 compared

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to web 1.0 is that readers and writers can vote content through ranking 2.0 systems such as *Digg* and others) with information that matters. However, this is a dangerous and misleading approach to RSS since a lot of users voting for a given entry should not grant this entry 'a must' status. There are thousands of potentially interesting online resources for language learners that may have not been ranked or voted yet

- Procrastination tendencies: or *I will keep on catching up tomorrow*

However, there are some ad hoc solutions that can be shared with language learners such as:

- Numbering the feeds in order of relevance (what's important and relevant to them)
- Creating a 'Pending Content' folder to be read on a weekly basis, for instance

Therefore, RSS readers are a critical daily tool to filter information but they are being seen as a short-term solution by many web technologists (Eggertson, 2005; Eisenstadt, 2005) precisely because the swamped effect of unread or undone tasks kicks in again. In the long run, it is all about adjusting RSS technologies to users' specific semantic needs i.e. if a learner is only interested in reading feed entries related to 'EFL podcasts', they should only get mp3 tracks and not theory on EFL podcasting. Besides, current RSS technologies do not avoid semantic duplication. To post entries that are links to other posts, or entries that comment on something that has already been discussed on some other sites is a very common habit in the blogosphere. The blogosphere behaves somehow like a big mirror. Thus, RSS readers do not eliminate similar stories or duplicates to whittle down the feed, which means our language learners can end up reading more or less the same type of content from different entries, which doesn't help them to struggle with their time crunch. Quite often, if entries which have been marked as read are republished in the site for any reason whatsoever, the RSS will show them up as new again. Of course, there must be a reason that explains why the general public and many so-called 'digital natives' that do not know what RSS is.

Nonetheless, new RSS tools have come into existence in 2007 and the trend seems to be growing. Nowadays, for instance, one of the new RSS tendencies is to move all the feeds in just one place to all the feeds in just one feed through RSS mixers. On the other hand, we have the self-proclaimed 'intelligent RSS readers' such as *RSSbrief*, a service that tries to give an overview of specific blogs' entries, extracting an executive summary about the content to help you determine whether the full content is relevant, so that it somehow helps you avoid skimming or predicting entries' contents. Some of the drawbacks are that short entries are not considered and that it is not a real feed aggregator but a briefing piece of software. Besides it only summarizes entries in English, so it would be only useful for EFL learners.

Most interestingly, there are new Web 2.0 tools that allow the end-user to remix and reformat the content of different sources (blogs, wikis, *Flickr*, *YouTube*, *GoogleMaps*,

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etc.) in a countless different ways, adding more customization. It could be described as Web 2.0's mash-up approach on RSS technologies. The most interesting RSS mash-up tool is probably *Yahoo!Pipes*. It is a hosted service launched by *Yahoo!* at the beginning of 2007 that allows the user to play with the Web 2.0 as database, to munge different multimedia sources together in just one place by dragging and dropping blocks, connecting them and applying different filters. Web 2.0 guru O'Reilly claimed that *Yahoo!Pipes* 'democratizes web programming, making it easier for people to have more control over the internet information services they consume, and providing a general-purpose platform for interacting with sites that is more powerful than the browser or feed-reader alone, but without requiring full programming skills' (O'Reilly, 2007). Any foreign language teacher, with no programming knowledge, can plumb into *Pipes* and notice that despite its nifty visual programming environment (just like WYSIWYG editors), it is not as user-friendly as it could be. It may end up being a tool for a novice or in a hurry programmer rather than for common people, like language teachers or learners. Nevertheless, the idea is to mash-up the content you like from feedable Web 2.0, to tweak it and filter it and then you get a customised remix feed you can subscribe to in your favorite RSS reader.

On the plus side, this Web 2.0 rewire service does a fairly good job in mashing up contents and its power relies on its filtering and replacing options. After tinkering with *Yahoo!Pipes* explanation on what their drag and drop modules offer, some benefits or applications of *Yahoo!Pipes* for foreign language educators or learners could be the following:

- A teacher of a language course for specific purposes, for instance *English for Tourism*, working with blogs, *Flickr* pictures and *GoogleMaps* can create a customised feed for learners which will collect any data from the web tagged 'famous tourist destinations' and replace the texts with related pictures from *Flickr* and put those texts and pictures on a *Google* map. So instead of getting just a feed with texts including those keywords, they will get a customized feed for their learning purposes which will save them time and effort
- On the other hand, if interested in videos as a resource for language learning, a feed which replaces blog posts tagged as 'Spanish accents' with *Youtube* videos tagged as such can also be customized with this sort of service
- With *Yahoo!Pipes* different sources can be translated to different languages, with the translation module. Therefore, a language teacher can create a feed getting the news from different newspapers in English and ask the feed to offer a translation into a chosen language of key terms, or let the learner select the target language, which is quite useful for multicultural classes
- If the teacher owns a blog or a Web 2.0 site where course-related materials are uploaded, s/he can tell his/her learners to subscribe to the site through an RSS reader. However, the students of following semesters, when subscribing to the site,

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will not be able to see the old posts in their brand new subscription in their RSS reader. With *Yahoo!Pipes* that teacher can create an RSS feed of his/her own content and add an update interval, which will tell the pipe to update and refresh old content at the beginning of each semester allowing new students to get old posts freshly baked

- A very simple application can be the typical merging or gluing of feeds, e.g. the combination of all the learners' and teachers' blogs just like the BBC pipe does

The possibilities, thus, seem to be endless, and they depend mostly on the teacher's imagination and attitude towards web-based assisted learning and technology in general. Moreover, the problem of duplicated stories in one feed is said to be solved with the 'unique module' of *Yahoo!Pipes*. Its main caveat from the language teaching/learning viewpoint is that, as it stands right now, it requires technical knowledge and, definitely, technological multiliteracy to be understood and used efficiently. Getting wide adoption outside the technological community will be difficult if they do not offer more how-to tutorials and change the language of modules.

Web 3.0 and next generation RSS technologies for human-like semantic distribution and classification of knowledge should focus on integrating informational and communicative content, i.e. information and relationships. As pointed out before, the overload is twofold, as infoxication stands for information and communication overload, what happens then with the second side, i.e. communication overload? Current tools such as the ones explained so far are aimed at filtering, gluing and delivering information. With so many communications channel options there is nothing to control the sequencing or interaction between different channels. It would be a great advance if we could integrate and filter our communicative demands (emails, messages in social networks, online chat, blog comments) just like we can do with informational chunks. A promising tool such as *Twine*, presented in October 2007 at San Francisco's Web 2.0 Summit, may turn out a fairly good advance since it brings these issues into sharp relief. This is to be said the first semantic social network in which people can share, organize and find information with people they trust. Google and the like can help language learners to find information on Spanish verbs or English conditionals but they can't help them realize what other learners and teachers have found or are saying on these topics and which are the most downloaded and shared in that network. This is what *Twine* as a social semantic network aims at providing as it can be read in their site: 'Get more organized. *Twine* provides one place to tie everything together: emails, bookmarks, documents, contacts, photos, videos, product info, data records, and more. And, because *Twine* actually understands the meaning of any information you add in, it helps you organize all your stuff automatically. Finally, you can search and browse everything and everyone you know, about anything, in one convenient place' (<http://www.twine.com>). At the moment of writing this chapter, *Twine* is unfortunately a beta-invite only.

In the meantime, RSS remix feeds are the future of RSS and certainly one way to try and filter information overload, at least one of the sides of the coin, for our language

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learners. The future of RSS is to reach a wider target once and for all, to become a killer app like email used by everyone not only by bloggers or web 2.0 savvy users. The future of RSS is that people, like language teachers or learners, do not have to subscribe exclusively to a list of bloggers or authors but to tags and keywords through remix feeds that do their skimming/scanning for them. Language teachers may or not use/read blogs, but language learners do use the web as a database, as companion to their language textbooks and in that database they have to find knowledge (signals) among the informational deluge (noise) and dialogue among the communication channels barrage.

Language teachers have a final say on this previously mentioned noise-signal ratio. Teachers often require language learners to learn a myriad of facts and structures and tell them to resort to many web resources for further practice instead of teaching them how to cull, interpret, use and organize those resources, and to develop multi-literate skills (Becta, 2007). To do so, language teaching communities need to develop more flexible syllabi (Russell, 2000) which integrate and foster the teaching of these tricks and tips, some of them outlined here, in the foreign language classroom. When asked those questions outlined in Diagnosis, language teachers should not only tell learners where to go but how to do it and integrate those tools in normal language lessons whenever possible. Teachers should help language learners become critical readers in order to see the forest through the trees by developing 2.0 reading skills (a sort of transversal knowledge which will not be only useful for their language learning process) and teaching them how to *chew the tags* (Bonamie & Benito, 2007). Team work and task-based approaches as a filtering method to cope with the excess of Web 2.0 resources should be used, e.g. organizing tasks in groups which are focused on finding web resources to practice a specific skill or language structure; creating groups working on different blogs or wikis in which they compile resources about previously assigned language skills. As a common-sense measure, only those 2.0 tools which are really useful for their learning needs should be explained, i.e. meaningful and with a purpose, such as the RSS technologies explained in this chapter that will help them keep their findings more organized. Further research could be conducted to determine quantitatively language learners' attitudes towards the use of web 2.0 and RSS in their language learning process and the extent to which they contribute to their infoxication, if any.

CONCLUSION

Even though the approach shown in this chapter regarding the benefits of using web 2.0 in foreign language learning is clearly positive, the objective of this chapter is focused on introducing one of the threats of web 2.0, i.e. the feeling of not knowing where to start and how to keep organized. This chapter could have become a book-length treatment due to the labyrinthine nature of the information overload concept and the massive volume of literature on the issue. However, obvious spatial needs imposed a selective look at the situation. Hopefully, a few of the more crucial aspects of information and communication overload facts and effects have been highlighted. On the one hand, the relatively new linguistic forays to name the problem; on the other the

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fact that the human feeling of frustration over our limited information processes is not a new thing; some examples have been provided. However, it has also been claimed here that it is the rapid changes and the fast and easy access provided by computer networks which have complicated the situation. As predicted by Toffler (1970), it is the sense of inadequacy caused by rapid changes in Western society. Facts have been accumulating for centuries and the Web 2.0 mass of multimedia resources has increased the volume of available data and the pace at which these appear. On top of that, Web 2.0 is not only data and propositional content such as videos or podcasts that may be useful for the language learner, but also a network of communications, comments, messages and relational links. Thus, there is not only an informational volume increase but also a communicative one.

This is the reason why the concept infoxication 2.0 is introduced as well as some of the effects, such as learners' overwhelming feelings, low performance and procrastination and Shenk's *fragmentia*. Infoxication 2.0 can be a manageable problem though. Some of the solutions referred to personal time prioritization and others to technological mechanisms such as RSS technologies like RSS readers. Moreover, a cursory glance is taken at the future generation of RSS, i.e. RSS mash-ups using web 2.0 as a database (e.g. *Yahoo!Pipes*). These RSS technologies can offer some direction and support but there are also some caveats. They might be too difficult to learn and, on the other hand, they do not address the issue of excessive communication channels. Next generation RSS technologies should allow learners to connect to each other, even if they avoid public blogging, and to let them gather all communicative messages in just one place along with the filtered informational content in the easiest possible way. Finally, the foreign language teacher also has a say to stop overload by creating subscribable learning materials and by showing the ways to cut through the noise to discover knowledge and communication possibilities within web 2.0. As the aphorism would say, 'knowledge is a process of piling up facts; wisdom lies in their simplification.

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WEB 2.0 TOOLS CITED

aideRSS: <http://www.aiderss.com/>

BBC Pipe for EFL:

http://pipes.yahoo.com/pipes/pipe.info?_id=9P27GLrT2xGG6EEfJxOy0Q

Bloglines: <http://www.bloglines.com/>

Digg: <http://digg.com/>

English, Baby!: <http://www.englishbaby.com/>

Facebook: <http://www.facebook.com/>

Flickr: <http://flickr.com/>

Google: <http://www.google.com>

Google Reader: <http://reader.google.com>

Lingoz: <http://www.lingoz.com>

LiveMocha: <http://www.livemocha.com/>

Mixxer: <http://www.language-exchanges.org/>

MyLanguageExchange: <http://www.mylanguageexchange.com/>

Odeo: <http://odeo.com/>

Rssbrief: <http://www.rssbrief.com/>

Slideshare: <http://www.slideshare.net>

Splashcast: <http://web.splashcast.net/console/>

Technorati: <http://technorati.com/>

Twine: <http://www.twine.com/>

Twitter: <http://twitter.com/>

xLingo: <http://www.xlingo.com/>

Yahoo!Pipes: <http://pipes.yahoo.com>

Youtube: <http://www.youtube.com/>

Wikipedia: http://en.wikipedia.org/wiki/Main_Page

Wikispaces: <http://www.wikispaces.com/>

Wordsource: <http://word.sc/welcome>

Worldia: <http://www.worldia.net/>

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KEY TERMS

Beta version: a stage of the software release cycle. A beta version is the first version released outside the organization or community that develops the software, for the purpose of evaluation or debugging. In the world of web 2.0, beta stage is almost a must so that web 2.0 tools should be always in a perpetual beta or developed in the open.

Feeds: A feed refers to syndicated website content; a feed is a document (based on XML) including a headline, a short summary of the content and a link back to the place on your website where the content resides (if it is a partial feed) or the full article/content (if it is a full feed). Orange or gray icons in websites indicate that the website's content is available in a feed, and therefore, that can be syndicated (or subscribed using an RSS reader).

Information Fatigue Syndrome (IFS): The cognitive inability to keep up with the ever increasing amounts of available information.

Infoxication 2.0: Infoxication 2.0 is a viral process, a ripped, mixed and burned virus coming from our most essential needs -information and communication-, exponentially worsened by the myriad of Web 2.0 communication and networking possibilities. It refers to an intoxication of excessive informational and communicational demands.

Long Tail: An expression coined by was first coined by Chris Anderson in an October 2004 *Wired magazine*. Although intended as a business principle, The Long Tail is also being used to discuss information retrieval on the www to emphasize the fact that information is being fragmented into thousands of blogs, feeds, social networks, etc.

Mash-up: a web application that combines data or content from more than one source into a single integrated tool. It's based upon the Rip, Mix and Burn philosophy of web 2.0. E.g.: *Flickrvision* (<http://flickrvision.com/>), as a mashup ripping, mixing and burning content from two different sources: *Flickr* photos and *GoogleMaps*.

Multiliteracies: A term coined by The New London Group in 1996. This terms refers to the "*understanding and competent control of representational forms that are becoming increasingly significant in the overall communications environment, such as visual images and their relationship to the written word - for instance, visual design in desktop publishing or the interface of visual and linguistic meaning in multimedia*" (New London Group 1996).

Personal Learning Environment (PLE): A PLE is not a piece of software but a learning model which refers to the integration of all the tools used by a learner into a single learning experience, including both formal and informal learning systems (e.g. P2P, messenger, social networks, mobile communication).

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RSS readers: Also called RSS aggregators. RSS is the acronym used to describe Really Simple Syndication. Just like any email software, RSS readers are a piece of software, either web-based or desktop-based, that compile feeds from those sites the www user has subscribed to, i.e. with a RSS reader you can see what's new in your favorite site without visiting that website. You get all the new content right away to just one place without having to search the web.

RSS remixer: RSS tools that take multiple feeds and re-mix them into one new feed.

Tag: A tag is a keyword or label. People can tag their posts, photos, videos and any content uploaded to web 2.0 with any keyword that makes sense. While categories tell you the specific location, i.e. where a given piece of content is, tags tell you what that content is about. They offer another way to navigate content on a site, showing how popular different keywords are. Tags that are large are mentioned a lot, tags that are smaller have only been written about a few times.

Web 3.0: Probably another buzzword like web 2.0 for marketing purposes. Web 3.0 is referred to as the Semantic Web, in which the web itself will be used as a database with more intelligent search engines, filtering tags and where the information will be widgetized.

WYSIWYG: An acronym for What You See Is What You Get, an interface in which content during editing appears as the final product.

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