Information overload faced by Internet users

An Ocean of Information

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As the amount of online content grows, Internet users' attention span decreases. This brings an acute need for social and technological solutions that enable users to select the most important and relevant information

The amount of information available to us is growing exponentially. At the Techonomy Conference in August 2010, Eric Schmidt, CEO of Google at the time, said that people are nowadays generating as much information in just two days as had been created from the dawn of human civilization up to 2003. In mid-2008, Google announced that the number of unique URLs in its databases had exceeded one trillion.

More and faster

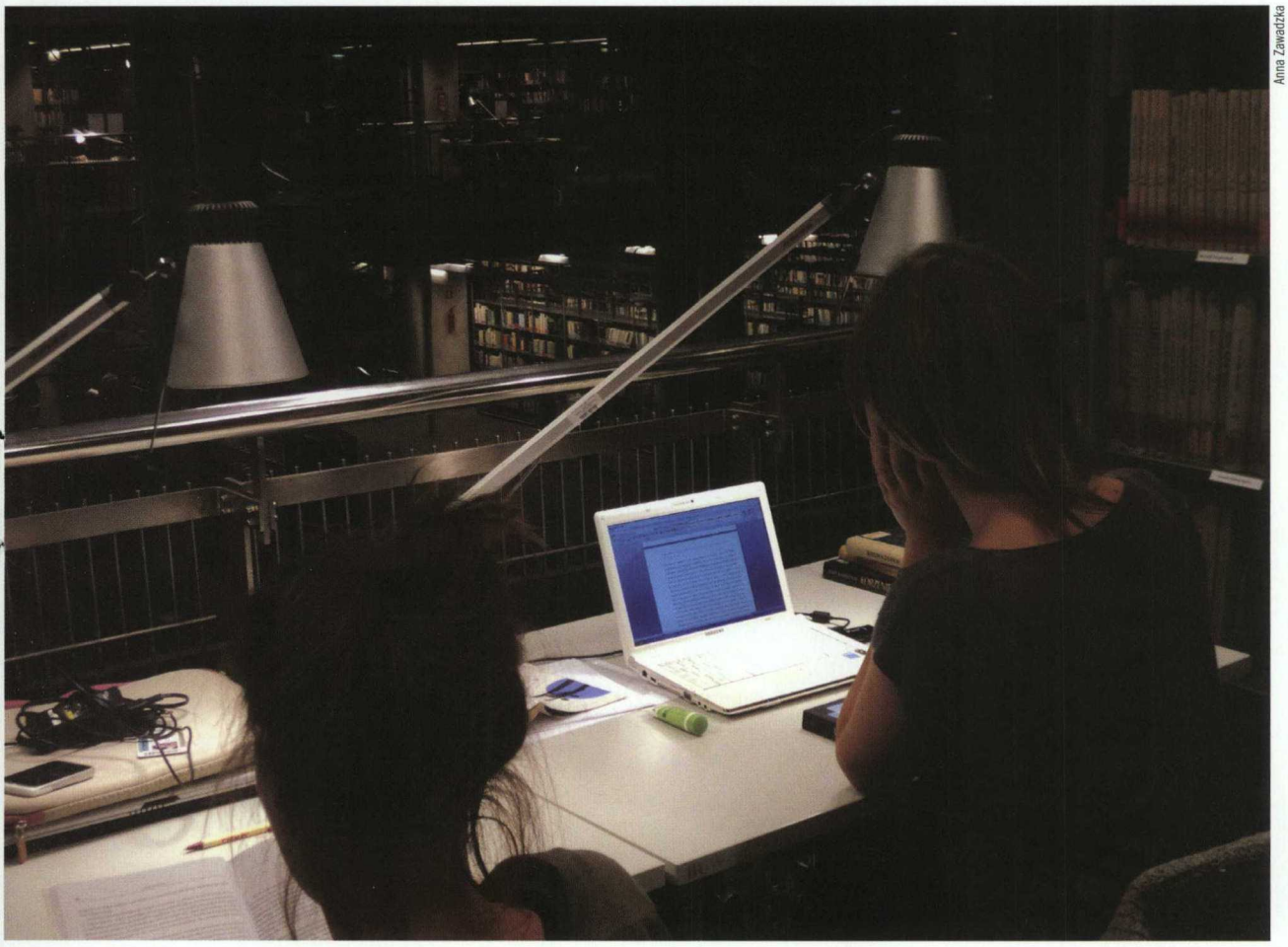
The number of webpages available online is growing rapidly, as is the ability to create and publish content by ever-growing circles of users. Netizens are no longer just recipients of content; they are also creating it on an increasing scale. The Internet allows anyone to be a broadcaster: companies, organizations, and individual users create their own media, such as blogs and YouTube videos. According to official YouTube statistics, over 13 million hours of film material was added in 2010; over 48 hours is uploaded every minute, which translates to nearly 8 years of material every day.

Not only is the amount of information growing, but it is also becoming more widely accessible; the increasingly widespread use of mobile technologies is also making it available all the time. The abundance of information resulting from the generation of a huge amount of content and data, and its growing availability, are a real problem of today's world. Information overload makes it virtually impossible to understand the subject at hand and hinders decision-making processes. When individuals find themselves in a new or rapidly changing situation and they are overwhelmed with information, their ability to appropriately assess the situation decreases. As a result they find it increasingly difficult to make the predictions that are necessary to take appropriate action.

The problem of information overload is not new, although it is becoming more widespread with the development and growing availability of the Internet. This is compounded by the "fear of missing out" (FOMO), a term coined by Kelley J. Watson and Diane E. Meyer in 1985. On one hand Internet users appreciate their incredible access to knowledge and the ability to find practically anything in seconds, but on the other they are drowning in a deluge of information. According to some researchers, this means that instead of focusing on reading, they take less in and instead simply scan the text. Additionally, a greater quantity of information does not translate into greater quality. The problem of reliability and quality of information available online brings the need for more thorough verification, which in turn means users need to find additional information and confirm it using other sources, which requires more time. Another problem is the accuracy of search results and their usefulness. A lion's share of information is also unwanted: of the over 300 billion emails sent every day, a vast majority (over 80%) are spam.

The attention economy

Our cognitive abilities remain largely unchanged, yet they need to somehow cope with the information overload. The law of information, formulated by Herbert Simon



Anna Zawadzka

These readers at the University of Warsaw Library are using both traditionally catalogued and online resources

in 1971, states that rapid growth of data translates into deficit of attention. As a consequence, the problem of information overload leads directly to the "attention economy" - a field that treats attention as a rare commodity, and uses the economic theory of rare commodities to try to solve information management problems. Some researchers, including Goldhaber (1997) and Franck (1999), indicate that attention is becoming a kind of currency, that financial transactions are partially being replaced by paying with attention. An example of this can be found in various free online services and social media, such as Google and Facebook, where users "pay with their attention" by viewing advertising.

As the amount of available information grows, our limited attention span restricts our ability to process data. This creates a problem of attention deficit, which means we need to decide precisely what to focus on. The problem of information overload creates the need to develop tools that allow us to manage ever greater amounts of information and to cope with its low quality.

Algorithms as curators of content

One way of managing excessive amounts of information involves the personalization of content, tailored to the users' individual requirements. Personalization can be done by the users themselves, or performed on the basis of information transmitted by them. This process is becoming increasingly automated, using algorithms that process information about a given user, his or her interests and the hardware they use. This is something many people are not even aware of.

This problem is described by Eli Pariser in his book The Filter Bubble. He notes that results produced by search engines such as Google vary between users; different people can receive very different results to the same query. The situation is similar for Facebook, which by default displays content in the Top Stories stream from the people we interact

with most frequently. This means that we could miss out on information from friends we have not been in contact with recently. According to Pariser, algorithms are starting to perform the role previously played by the editors of traditional media.

Such personalization mechanisms also come under criticism from people concerned about privacy issues, disturbed by the quantity of information collected by websites about their users. However, this data is required by algorithms that decide which content is displayed; they are necessary to adjust the content to the users' requirements and interests without overloading them with irrelevant information.

Social filtering

"Social" methods are another important mechanism responsible for organizing information. Internet users are active participants in the circulation and dissemination of information. Of particular importance here are social media (such as blogs, microblogs, and social networking sites), which allow users to share information, either by creating their own content or recommending content created by others. This social sharing is an extremely powerful mechanism of directing attention.

The significance of social media as a source of traffic to webpages is growing extremely rapidly. Data from compete.com show that for certain major websites, such as Yahoo, MSN and AOL, by the end of 2009 Facebook had become a more important source of traffic than Google: it generated as much as 13% of their traffic, while the search engine produced just 7%. While for other website categories Google still had the advantage, results generated by Facebook remained impressive. At the same point in time, comScore indicated that 25% of all hits were generated in the largest social networks, and that this value had increased by 83% between December 2008-December 2009.

In the latter half of the 1990s, the main nexuses organizing access to online information were the catalogues of web pages that later evolved into Internet portals. Towards the end of the last century, with the growth in number of web pages, search engines were gaining significance, and in recent years they amassed a major portion of online searches for data. However, they key role has now been largely taken over by social media.

The trends discussed here are extremely important. The value and profits of most Internet services are based on attracting the attention of users and making money by directing them to other online destinations. Social networks perform this function extremely well. Analysis of research carried out by Megapanel PBI/Gemius in February 2010 shows that Internet users in Poland spend as much as 10% of their time online on networks such as NK.pl (a Polish version of Friends Reunited) and Facebook. The latter is especially useful for recommending content using the "share" and "like" buttons found on myriad other websites. They operate as web actions, since clicking them generates a change in a different online location. The fact that this given user now "likes" this given content is displayed to their friends on the relevant social networking platform.

Looking to the future

Existing mechanisms of managing information, such as social tagging/bookmarking, personalization, work carried out by editors of portals, social networks and mechanisms for suggesting information do not fully solve the problem of information overload. In fact they frequently amplify the issue by creating additional channels of information. Most such systems being created seem to assume that their users' problem is a shortage of information rather than low attention or a lack of time. This results in the creation of solutions (media, portals, information services) which provide an increasing amount of information, whereas what people really need is better methods of aggregating information and filtering irrelevant or inadequate content. There is a great demand for interdisciplinary research integrating the social sciences with information and computer sciences, seeking to explain the mechanisms governing the distribution and consumption of information online on one hand, and on the other - to create tools for organizing and filtering information by making use of theories of attention economy. ■

Further reading:

Iyengar S. (2007). *Choice Overload and Simplicity Seeking.* Columbia University, Graduate School of Business.

Pariser E. (2011). *The Filter Buble. What the Internet is Hiding from You.* Penguin Group USA.