Collective Intelligence in Web 2.0

José Luis de Vicente | jl@elastico.net |

Why 2005 may be as important for the Web as 1995 was

This year marks an important anniversary for the Web. It's not the anniversary of its creation or its mass popularization. In 1995, Netscape became the first Internet company to go public, thus opening the door to a new economic era and the start of a new way of conceiving the Web: not just a as a space reserved for the few who passed its complex initiation rites, but as a medium for the many; a mass medium.

Ten years down the line, many visionary consultants and bloggers see 2005 as a kind of second chance for the Web. Or at least for the kind of Web that was born in 1995 and seemed to die for good in 2001, when the risk capital tap in Silicon Valley ran dry and the famous "dot com bubble" burst, taking with it dozens of entrepreneurs in casual dress and offices furnished with ridiculously overpriced Aeron chairs. Obviously the decline of the dot-com era wasn't the end of anything truly important (in fact, it was the beginning of a much more active and interesting web, consisting of a blogosphere, wikis and smart mobs). But unlike the 1995 web, the new web that is being shaped today may have truly far-reaching effects. The promises are exciting, the technologies spectacularly promising. And no one really knows yet what the results will be.

On the face of it, the symptoms are familiar. An excitable stock market. (Google, the true star of the new economy, is turning out to be much more profitable after going public than the doomsayers predicted). A familiar dynamic: three giants of the information economy competing to be the first to get their hands on the small company (like Flickr and Konfabulator for Yahoo, Keyhole or Dodgeball for Google) that has developed an innovative service that could turn out to be the next *killer app*. An eye-catching, revolutionary technology being held up as the solution to all the Web's problems (then it was called Flash and everyone seemed to hate it; now it's called AJAX, and for the moment, it's not getting bad press). With its own brand new lexicon (folksonomies, RSS, tagging, social software, APIs) and a catchy label that sums it all up as a marketable brand. Forget the dot-coms; welcome to Web 2.0.

Web 2.0 is the dream that, little by little and without making too much noise, has been taking shape in the kitchens of the Internet industry over the last two years. An in-depth re-invention of the strategies and architectures that are the bases for online services and promise to lay the web's foundations for the next decade. A model in which 'library of Babel' metaphors will be obsolete, because there will less and less closed documents to store and distribute. In the new web, the metaphors to work with are the radar for monitoring the dynamic evolution of objects, the control panel full of potentiometers, the barometers that provide a real-time reading of the state of things. But maybe we can say it without leaving Borges: The new web is much more like The Aleph than the infinite library or the book of sand.

The good news is that the industry seems to have learnt a lot from its mistakes the first time around, and the new revolution is not being built behind the backs on internet users, but rather with their indispensable collaboration and complicity. The 2000-2001 debacle clearly showed that the strategy of considering users as simply passive consumers, whose level of participation can be limited to selecting checkboxes and completing forms, was almost certain to fail. Specially when allowing users a degree of active participation turns them into much more efficient consumers (Amazon, Ebay). The digital lifestyle promoted by Apple and the self-organised revolutions of the Blogosphere and Peer-to-Peer have convinced the industry that people love to create and share content, and are prepared to do most of the work (generate, distribute and classify) if they are given the appropriate tools to do it with. The ethic of the remix and the derivative, helped along by the boom in initiatives such as Creative Commons licences and their widespread support, found itself before an architecture that is open to a certain point, which allows me to combine and re-create my data with that of others using attractive, flexible and dynamic interfaces that I can configure to my taste, courtesy of the major online services. Of all of the Internet's incarnations, Web 2.0 is the closest to the vision of the Internet as a shared nervous system, a distributed global intelligence, where a structure of meanings emerges from collaborative processes developed by all its users. Even when these processes are as banal as labelling millions of photographs and assigning key words to them.

Three steps towards Web 2.0

Dan Gillmor, an expert in participatory journalism and author of the excellent *We the Media* report, gives a clear explanation of the different historical stages of the Web, and how they differ from the transition stage that is opening up now.

«The first web was fairly static, and it was basically a "read only" affair. For the most part, we'd simply download text and images from remote sites that were updated periodically with new text and graphics. »

Thanks to the combination of different technologies that have led to the AJAX (*Asynchronous JavaScript and XML*) standard, Web 2.0 is no longer static, to the extent that the pages we download no longer exist in a final and fixed state. Where before it was necessary to reload a page in order to replace one version of a file with another, now its is possible to update pages *as they are loaded*, so that the status is modified in real time, based on the user's decisions. See Google Suggest , for example, a service in which, as you type a query into the search box, the search engine suggests the most popular terms beginning with those characters, together with the number of results generated by each search. Or Google Maps, a satellite and maps service in which the images are loaded and displayed in real time, as we move around in a specific direction.

«[...] The first big shift came when the web became more of a read-write system. This was a huge change, and it's still in progress. The big change in the read-write sphere came about because of applications such as weblogs and wikis. Not only could people make their own sites, but they could update them easily and rapidly. »

After assuming the revolution of content publishing systems like weblogs and wikis, the web 2.0 focus is moving from information to metainformation. The volume of data generated is becoming so large that it is worthless unless accompanied by other data that assigns a hierarchy and meaning to it. The strategy of giving users the tools to collectively classify information has been

defined as 'folksonomy', and it's most popular implementation are tags or labels. As "super blogger" Jason Kottke sees it, if blogs democratised content publishing, then folksonomies are democratising information architecture. Users of Flickr, for example, don't just share their photographs through the service. By assigning different labels that associate meanings to the photographs, they are constructing a large semantic structure of images that can be explored in different directions. Users of the social bookmarks manager del.icio.us use keywords to label their personal collection of links, thus generating an accurate thematic classification of the daily growth of the Web. The del.icio.us community is implementing the most effective simulacrum of the old dream of a Semantic Web, a Web that understands itself.

«The emerging web is one in which the machines talk as much to each other as humans talk to machines or to other humans. As the Net is the rough equivalent of an operating system, we're learning to program the Web itself. »

The most profound transformation of Web 2.0 lies in the reinvention of the way in which information circulates through the Web. The possibility of programming the behaviour of different data flows is being democratised and made available to all users, and this information can then interact together in ways that were unimaginable until recently. In the new Web, a new architecture of information channels is being built, which can direct any specific set of data (a satellite photo, a sound archive, tomorrow's weather forecast for any city in the world) from a server to any type of interface that the user chooses; a html web, a *widget,* a program for playing music on stage in real time.

The adoption by blogs of the RSS content syndication standard on a mass scale has been the first important step towards an automated and programmable web. To illustrate it with an image, RSS allows you to extract the juice (the content) from a web page and throw away the peel (the design). Once all the content in a page is codified in this feed (data flow), it can be periodically transferred to any other Web interface designed by a different user. Initially, net users have mainly used RSS to inform them when a website is updated and what the new content is, but it is possible to do many other things with this standard: from providing the latest timetable incidents for the London underground, to real time monitoring of share prices on the stock exchange.

Following the popularisation of RSS, the next important step has been to make the "application programming interfaces", or APIs, of the most popular services available to net users. An API allows information to be extracted from the database of a major online service (Google, Amazon, Flickr) and added to any other application that we create. It's what allows us, for example, to include a Google search box in another page. The opening up of the Google map service API, for example, has allowed a whole community of amateur programmers to emerge and create applications in which all kinds of data are superimposed on the map images: from apartments available to let in North American cities (Housing Maps) to a list of those injured in each running of the bulls at the last San Fermin festival.

Folkosonomies, AJAX, RSS, APIs...are being combined in the first, pioneering applications that are introducing the functionality of Web 2.0. Some are confronting, like the Chicago Crime Map, which projects on a map of Chicago the crimes committed each day in the city; some are magical, such as Flickr Color Pickr, which can be used to extract images of a type of object or category (such as flowers) and a specific colour from the Flickr

database; or poetic, such as Yugo Nakamur's Amaztype , a completely new way to discover books on the Web before buying them.

Old dreams and disturbing signs

The terminology is new and the technologies are only just beginning to be explored, but many of the underlying ideas in the discourse of those who are shaping this new situation, we've heard before. Web 2.0 seems to be the latest incarnation of cyberculture's favourite fantasy, foreshadowed and longed for in texts such as Kevin Kelly's "Out of Control" or Stephen Johnson's "Emergence". The idea that the Web will end up becoming a global nervous system, an enormous brain in which each net user is a neuron, and which will end up generating some kind of collective intelligence that produces thoughts and ideas beyond the capacities of each individual part.

It is beyond the scope of this text to asses the possibilities of this theory, or how it fits into a positivist and utopian discourse that has developed in northern California since the beginning of the 90s. But the model that is being assembled is emitting some disturbing signals.

All of this will increasingly happen within the playgrounds of the Net's giants. The degree to which the different conglomerations of interests allow their APIs to be used for specific applications that reveal specific realities or allow access to sensitive information - such as Casualty Maps, which shows the backgrounds of the American soldiers killed in the Iraq conflict - is yet to be seen, and it's obvious that sooner or later these strategies will generate conflicts of interests between users and service managers.

Nobody really managed to control the expansion of the blogoshphere or what went on inside it, not even when Google bought Blogger. But what users can do in Flickr or Google Maps will be determined by what its architects allow. The future of Web 2.0 as a social and political space is inextricably linked to the evolution of the "terms of service", those endless licences that we usually skip without paying much notice each time we install a program or subscribe to a service. Perhaps its time we started reading them.