

Wikipedia: Chaos and Order

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"The online encyclopaedia Wikipedia is an impressive example of global collective intelligence in operation. Its entries aggregate editorial interventions according to a simple stochastic mechanism. This study shows that there is a strong correlation between the number of interventions and the quality of the entries. Topics of particular interest or relevance are thus brought to the foreground quite naturally. This is particularly significant since 1) Wikipedia is often used as a source of information and 2) other major collaborative phenomena such as software development, industrial design and total quality are all known to be a source of increasingly ambiguous results as the size of the project grows".

D. M. Wilkinson and B. A. Huberman, Assessing the value of cooperation in Wikipedia, February 2007.

The Social Brain at Work

Anyone who has logged on to the Wikipedia site and navigated, worked, discussed, and contributed a few infinitesimal percentage points to the chaotic growth of this recent phenomenon will have noticed its strange anti-dissipative behaviour. While almost all organised systems suffer from the law of diminishing returns, i.e. they become less efficient with increasing size, the Internet encyclopaedia, on the other hand, seems (so far) to be gaining in efficiency and accuracy precisely as it grows. And in terms of size, the phenomenon is far from negligible. Millions of people are adding tesserae to the mosaic, joining together in spontaneous research communities or making bad blood with those whose heads are full of clichés. It is worth talking about it before it is devoured by the market and becomes one commodity among many, as some symptoms already show.

Wikipedia is 'simply' an Internet encyclopaedia. Its main characteristic lies not only in its lack of a paper medium, but also in the fact that no one has written it according to a traditional plan, no one sells it or makes money from it, no one controls its content, and no one owns it. There has never been a paper encyclopaedia, no matter how well-edited, professional and reliable, that has been able to mobilise millions of user-editors for its free creation, attract billions of hits on millions of entries, and generate a super-production of articles in newspapers all over the world.

In strictly technical terms, Wikipedia is a programme, a series of strings of code that organise content according to rules. But the content is entered from outside, by strangers. It is not part of the programme, nor is the programme

able to address it. And the rules can be changed as the work on the content itself proceeds. Wikipedia is thus an autopoietic, self-made phenomenon. As Kevin Kelly said when he was editor of *Wired*: it is technology beginning to take on biological characteristics. A network of machines and men that is no longer simply a technological contraption with its users, but a living organism, complete with genetic code and evolutionary capacity.

For us, as readers of this magazine know, it is one of the many manifestations of the social brain, identified since the origins of industrialisation in machines understood not as mechanical singularities but as a system. If a century and a half ago it was only Marx who pointed this out, today there are many who recognise it. Wikipedia is a good example of a machine-like organism with a collective intelligence, which far surpasses the old model of the beehive as a disaggregated body made up of cells-individuals differentiated by tasks. Like all complex phenomena in this world, it has something to teach the communists. Take impersonality, for example. Each contribution is anonymous, and no one can know whether the authors of, say, the entries on Greta Garbo and Einstein are respectively a famous physicist having fun and an actress dabbling in physics. Certainly, the famous physicist who writes nonsense about his own subject would be very likely to be corrected by some amateur. And the Wikipedian community is ready to defend a conclusion when it is debated and checked.

In the Wiki World, There is not only the Encyclopedia

Wikipedia is by no means the realm of anarchy, as some have claimed. Far from it: it is a highly centralised organism with its own genetic programme to which one must submit. Nor is it the realm of democracy, as others have claimed. Democracy is an ideological abstraction, whereas the wiki method is as pragmatic as a production system: each user contributes according to his or her specific knowledge and gains 'authority' with his or her expertise, so he or she is not 'equal' to the other; no one needs to delegate his or her work to others, and there are no representative offices; no one gets his or her way 'politically', i.e. by a priori adopting a label of some kind above his or her actual capabilities; there is no elected government, nothing resembles a state, and no classes either. Moreover, the law of the net establishes without any consultation who or what should represent a hub, i.e. a sensitive node of the system. Finally, the statistical distribution of labour among the voices manifests itself with a classic exponential curve, which is certainly not a sign of ideological egalitarianism.

The system is organic in its own way and ability does not translate into meritocracy, the other stupid face of intellectual property, the worst there is. Everyone who earns his authority in the field of knowledge cannot profit from it, he can only make it available to others. Freedom is total, including the freedom to damage accumulated knowledge. However, since the purpose of the system is the accumulation of knowledge, its genetic code allows for collective remedial

action, and usually the damage is eliminated within minutes. If 'voting' is used, it is not to elect a government on the basis of representations: those who can do a job do it without fuss and do not need to be 'governed'. And in any case, rather than votes, it is more a matter of appeals for a shared solution, as happens between people who have to work (and not chat about politics). This is within a classless system, or one formed by a single 'class' (the class of Wikipedians, of course), as in trade unions or soviets (the only places where the communists of the revolutionary era admitted the democratic method). It can happen - and does happen - that camarillae are formed on the basis of ideological prejudices, but one would be surprised if it were the other way round. There are also former enthusiasts who abandon everything, disappointed that Wikipedia reflects society too much as it is and does not resemble the ideal model they had in their heads. If it also produced collective splits, it would resemble a party altogether. Among other things, much more organic than the propertied ones.

Everyone can go and read the history of its birth, which took place just six years ago, written by the encyclopaedia itself. Of course, in the foundation myths, there is still the individual, or several individuals; but no 'inventor' could ever have 'created' such a phenomenon out of nothing. On the contrary, legend has it that it was prompted by what was already going on among code compilers in working groups; even the name derives from an example of self-organisation noted at the Honolulu airport (wiki is a Hawaiian word), where passengers were untangling their luggage themselves with less confusion than in traditional sorting systems. Perhaps it can be traced back to the beginnings of collective computer work, when, in the early 1980s, Hewlett Packard introduced the concept of team computing, a design model in which separate knowledge of even distant individuals was pooled for the development of any given product via the first rudimentary networks.

The Skyscraper and the Termite Mound

Today, Wikipedia is a bubbling reservoir of knowledge that 'contains' six and a half million 'entries' in 250 languages and dialects, compiled with 236 million entries by 5.8 million people and consulted at an average of 16,500 times per second 24 hours a day. The figures concerning the dynamics of growth show an exponential curve that has not yet reached its inflection point. This means that, as happens to living organisms, it is still in its infancy, i.e. far from the typical 'logistic' curve studied by auxology, the science of biological growth.

We don't know how long the phenomenon will resist the onslaught of capitalism: servers cost money, that amount of traffic has to be managed, the market is pressing for its use for value, there is already fund-raising, and someone is already suggesting selling some services for self-financing. Maybe we start with the innocuous gadget like the sponsoring T-shirt and end up in the vortex of capital. We shall see. Of course, society as it is is also reflected in its

intelligent and self-organising subsystem. An entry on Michelangelo is less of a problem than one on Lenin or Mussolini, and the scientific entries are particularly well-edited, on a par with those in the Encyclopaedia Britannica, as a study in Nature points out. By the way: the prestigious mother of all encyclopaedias will still be printed, but it has had to adapt to appear also on CD and on the Internet, where it can be consulted for a fee (a reduced version is free).

As we have said, Wikipedia's work is diffuse but centralised, not by someone but by a programme, i.e. by a set of simple rules by which chaos becomes order. And there is plenty of chaos. One of the rules is not to write opinions but facts. Or state that they are opinions. Big deal. And yet, in most cases, as in a beehive or better still in a termite mound, a result is eventually achieved. With the same spontaneous criteria we observe in those collective organisms, a technical division of labour is formed on the basis of automatic cooperation where no 'political' hierarchies are needed. Thus, the social division of labour is completely outdated in fact. In this context, the summation of interventions to make items, to expand them, to modify them or to eliminate them is statistical in nature, so that knowledge at the highest and most shared level tends to prevail, over and above what individual agents think.

There is of course abundant input of nonsense, pranks, vandalism, sabotage, self-sponsorship, opinions of madmen and other background noise that the system struggles to metabolise. But while snubbing the system itself is easy, it is also perfectly pointless. It is obvious that other encyclopaedic systems born with a scientific-editorial project are better organised and every single entry is written in good language by paid specialists, but the comparison can only be made between compatible phenomena. And Wikipedia is not compatible with traditional encyclopaedias. It would be like comparing a termite mound with the Empire State Building, perhaps looking down on the former because it is... less architectural than the latter. The termite mound is a chaotic life form that knows how to give itself an internal holistic harmony, unknown to a heap of steel, glass and concrete that acts as a shell for the offices of companies each of which exists to mind its own business.

Phenomenology of a Network

What seems strange to us is the lack of systemic studies on this phenomenon, studies à la Leroi-Gourhan or à la Kelly, to be precise (see bibliography). Searching on the Internet we have not found any, which makes us think at least of their rarity. There are studies from network theory, complexity and chaos science, sociology, statistical mathematics, content analysis and their credibility, but we have not found an evolutionary theory of the system. When, for example, the journal Nature did its survey of a range of scientific entries comparing them to those in the Encyclopaedia Britannica and found them to be at a not too dissimilar level, it provided us with a fact, but not an explanation of their genesis within a system that is constantly producing and improving them.

The study we quoted at the beginning is limited to a mathematical demonstration of the mechanism of entry formation. And it is cited on Wikipedia itself, in one of its parts devoted to joint work. In it, an attempt is made to analyse the evolutionary structure of the system, a structure that goes beyond the simple original compilation of each entry, and which consists of interventions on the entry itself, which give rise to subsequent interventions, etc. All of this immersed in an environment that exchanges information swirling through multiple paths, from individual projects for thematic areas, to the technical structures of the system, to the 'bar' where management/information problems are discussed, to other areas where one enters into relations with the system on the basis of a complex of ramifications and where - at least in theory - one is all at the service of all. The number of new interventions on a given item at a given time is a percentage (variable at random, given the complexity of a system in which reactive human beings interact) of the total number of previous interventions. This simple feature of the system produces a statistical distribution of interventions with an exponential trend: in the face of a large number of entries with few interventions, there is a disproportionately small number of entries with many and very many interventions. As time increases, this characteristic becomes more pronounced: the more interventions on an entry, the more interventions it attracts. And so far, there does not seem to be the slightest hint of stabilisation, showing that the evolution is still ongoing (see n+1 no. 20).

Analysing the correlation between the number of interventions on the entries and their quality according to certain parameters (completeness, reliability, grammar and syntax, illustration, layout, etc.), the authors noted that quality improves as the number of interventions, editors and time increase. Moreover, this happens as a rule on the most important entries rather than on 'minor' entries. That is to say, we are not confronted with a simple doing and undoing, nor even a chaotic growth, but that the system gives itself an orientation; and the increase in interventions due to the increase in the number of individuals intervening produces order and information instead of disorder and 'noise'. The formalisation gives rise to an equation describing the statistical properties of the system, whereby, once the starting conditions are known, it is possible to predict, within not too long time limits (relationships are linear, but human behaviour is not, so unpredictable factors intervene over time), a future condition. The formula is verified, say the authors, on 50 million interventions due to almost 5 million people out of 1.5 million entries for the duration of five years.

Although the studies and articles consulted tell us little enough about Wikipedia's quasi-Darwinian characteristics of evolution, this is enough for us. We are not interested in competing with the Encyclopaedia Britannica in whose analysed scientific entries Nature found 'only' 123 errors against the 162 of the

corresponding Wikipedia entries. We are interested in the 5 million and more anonymous strangers who worked for free to bring to life a phenomenon whose scope we can only guess at. We are interested in the mechanism we have explained that resembles a living organism in evolutionary growth. We are interested in the relationships established between the cells of this organism, the conflict between the individualism inculcated by capitalist society and the anti-individualism inherent in the system. Let someone try to change a comma in the great well-paid professor's voice! High cries of lese authority will be heard, in defence of the usual intellectual property. On Wikipedia, anyone who participates in the great game knows very well that he or she will not be the owner for even a minute of what he or she writes, that anyone else can correct, delete, improve, mock or appreciate the work that has just been done. Obviously, if he insists on asserting his own opinions, he will stir up a hornet's nest by clashing with other opinions, but in the end, a kind of collective antivirus comes into play, whereby, more or less elegantly, more or less painfully, the encyclopaedia evolves in spite of the individualistic phenomena it cannot suppress.

The Toilet Theory

One of the former editors of the Britannica, with very little English fair play, likened Wikipedia to a public restroom where one could find dirt and have to be careful not to catch an accident. Even when freshly cleaned, safety in use would only be apparent, since one would not know who had sat on the toilet a moment before. The image is folkloristic but quite correct. Nevertheless, public toilets in cities, trains, restaurants and planes will not disappear. Even the prestigious paid encyclopaedias are for public use despite being privately owned. They are always clean and only publish author's crap (i.e. the knowledge passed on by bourgeois society), but by no means guarantee that the author himself does not have some contagious disease. They function like a clean public toilet: you still don't know who sat down a moment before. Nature found 'only' 123 errors in the entries it sifted through on Britannica, but the fact is that it did find some, and they happen to be mostly errors of opinion and omission by scientists with well-stocked wallets. On the other hand, those amateurs at Wikipedia have so little appetite for the laurels of glory that they simply edit their entries more with facts than opinion. No matter how formally perfect, any encyclopaedia of today, official or freakish, always transmits the deadly virus of the dominant ideology, but if it is compiled by academics, the pathology usually gets worse.

Of course, from this point of view, Wikipedia cannot but adhere to today's social reality: after all, those who compile and edit entries copy them from other encyclopaedias or remember what they have read in books. Not much changes, the circle seems absolutely vicious. But what breaks this chain is another factor: the dynamics of the open system, of the 'public toilet', dirty as much as you like but public; full of microbes against which antibodies can however develop; even self-fertilising, in certain cases. It is able to evolve because it is an organism that

struggles to survive in its environment, which is society as a whole, whereas a traditional encyclopaedia is a company that only struggles to survive its competition. This is why genuine Wikipedians are beginning to fear, with good reason, that the organism will become contaminated in contact with the market.

Where Wikipedia really looks like a shithole is in the relations between Wikipedians, often also between those invested with responsibilities in the management of the system. In this area, there is no difference to condo meetings and party feuds. To the outside observer, it seems immensely ridiculous that those who rinse their mouths with great principles of freedom, democracy and community should fall so low. But this fall from grace, which seems a capital flaw, reveals instead a kind of miracle. Wikipedia works in spite of the individualistic and animalistic capitalist man, who is incapable of rising to the heights of the social brain that he himself contributes to. The discriminating factor is therefore not the birth of a new community, for that will have to wait a while, but the evolutionary potential, the growth of a system that is not just the encyclopaedia. It is not only the number of entries that grows, those are quickly increased (for example, there has been a proposal to automatically enter all the names of asteroids on Wikipedia Italia). And there are thousands of kids writing an entry perhaps on a song or a single comic strip, or isolated individuals writing a review of their favourite book. The fact is that all over the world, wiki communities are multiplying at a rapid pace. The online encyclopaedia is not the only wiki-experience. Many working groups, dedicated to the most diverse activities, have adopted the wiki method. Software groups, mechanical design groups, logistics groups, even writers and musicians produce evolving material through interactivity and shared knowledge. Even the 'Italian' Communist Left has always worked with the wiki method, although it obviously did not call it that (the working groups were called 'Negroes', taking up the joking definition used by Alexander Dumas the father, who for his novels assembled the collective product of several writers grouped together in an atelier). As The Economist pointed out, there are now millions of people working with this method and the phenomenon seems unstoppable. Wiki communities are the collective complement of blogs, the individual websites, which have also now become millions. While the blog often has even narcissistic characteristics, the wikigroup is now part of a further socialisation of production, the set of blogs also produces information that would otherwise not exist. There is of course a risk of overdose, but there is no doubt that we are at the beginning of a second neozoic era where the new organisms in evolution and extinction are no longer men and mammoths but cyborgs, cybernetic organisms, a complete hybridisation of man and industry, in continuity with Marx's intuitions. So much for those who still believe that his was a '19th century philosophy'.

"Let us now assume that we have produced as men..."

Wikipedia could also die engulfed by Capital. According to Il Sole 24 Ore, an operation for a search engine in competition with existing ones is underway. A big company like Amazon would also be interested. Wikipedians deny this, but at the same time are perplexed. It will be interesting to see what they will do, because it would be easy for them to blow up the system they themselves set up. Force it to armour itself and thus to self-segregate, i.e. to die. Because in the meantime, other online encyclopaedias have sprung up, better edited and with signed articles, such as Citizendium, and others existed before, such as Encarta and Britannica itself (published online since 1999). Without the free labour that gives a Darwinian character to the wiki system, competition would be ruthless, and capitalism kills those who cannot or do not compete. However, as we have seen, the material substratum from which Wikipedia was born is an order that has not only spawned the 'online encyclopaedia' phenomenon, and each scion of these material determinations will continue to evolve regardless of the extinction or otherwise of one of the Species that make up its offshoot. The extinction of Australopithecus, a species that was moving on one particular evolutionary branch, did not prevent the advent of Sapiens, which was moving on another: once a bifurcation has taken place, the evolutionary branches become independent and march on their own way.

So Wikipedia may die, but there are other evolutionary branches that anticipate the advent of human beings. The crude communist, as Marx says, sees in today's social phenomena nothing more than a possibility of reform within this society, while in it one can already observe phenomena inherent to the future one, certainly by managing to place oneself on a level with it and not allowing oneself to be engulfed by the present one. Capitalist man today produces as a dehumanised appendage of Capital for Capital, and thus reflects this fact in everything he sees and touches. He produces, and immediately alienates the product from himself. But this is not necessarily always the case:

"Suppose we produced as men. Each of us would have doubly affirmed in his production himself and the other. I will have: 1) materialised in my production both my individuality and its particularity, and will have enjoyed both an individual manifestation of life and the contemplation of the object produced. 2) In your satisfaction and enjoyment from the use of my product I will find immediate enjoyment, both from the knowledge that I have satisfied a human need with my work and from having materialised my human nature by providing another human being with the object that corresponds to his. 3) That I have been for you the intermediary between you and the human species, and by this fact of being felt and recognised by you as a complement to your own being and as a necessary part of yourself, thus of knowing that I am affirmed as much in your thought as in your love. 4) That I have produced in my individual life manifestation your life manifestation and have thus affirmed and realised in my

activity, directly, my true essence; that is, my human being and my social being'
(Marx, Extracts etc. from Mills).

Many - it is well known - are those who wonder for what purpose and in what spirit 5.8 million people have created the strange social brain that is Wikipedia. Without particular satisfaction, without gain, without glory, for the sheer pleasure of collaborating on a collective project. Probably the closest answer to the truth is that they started 'producing' as men for other men instead of as alienated men for capital.

Recommended readings

- DM Wilkinson and BA Huberman, *Assessing the value of cooperation in Wikipedia* (e-brochure), Hewlett laboratories Packard, Palo Alto, California, February 22, 2007. The brochure, available at The Internet contains an impressive bibliography.
- For the behavior of the systems they have characteristics that can be analyzed according to network theory see: *The law of growing poverty*, $n + 1$ n. 20, in the chapter "Una parallel demonstration".
- André Leroi-Gourhan, *The gesture and the word*, Einaudi, 1977.
- Kevin Kelly, *Out of Control*, Apogeo, 1996.
- Kevin Kelly, *New rules for a new world*, TEA, 2002.
- Robert Axelrod, *Reciprocity Games*, Feltrinelli, 1985 (the emergence of rational collaborative phenomena from reiteration of interacting individualistic behaviors).
- *The Economist*, "The Wiki principle", 20 aprile 2006.
- *The Economist*, "Battle of Britannica", 30 marzo 2006.
- *The Economist*, "Wikipedia, fact or fiction?", 10 marzo 2007.
- Roberto Reale, "The world wonders about Wikipedia", *Il Sole 24 ore*, 12 March 2007.
- Karl Marx, "Excerpts from the Book of James Mill", *Marx-Engels Complete Works*, vol. III, Editori Riuniti, 1976 (quoted here in the translation by Amadeo Bordiga).