ZARZĄDZANIE W KULTURZE
2012, nr 13, z. 4
doi:10.4467/20843976ZK.12.025.1129
s. 381–390

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THE TWO KEY POINTS IN THE HISTORY OF THE INTERNET IN THE CONTEXT OF THE IDEA OF ENVIRONMENT

KEY WORDS: Internet, economy, business, Web 2.0, dotcom bubble, technology, WWW

Abstract

The article tries to describe two key points of the Internet's history in the context of the notion of environment: the emergence of the World Wide Web and the *dotcom* bubble. The first was the effect of Tim Berners-Lee's invention but also the source of rapid growth in the commercial sector on the Internet, which can be proved by the number of enterprises registered in the web. The change also expressed itself as a massive, ubiquitous participation of people, which has been constituted by the numerous communities of retail clients. The second key point was the Nasdaq stock market crash, when many companies from the ICT sector lost their assets or even failed. It was also the beginning of a new phase of the Internet and a fundamental change in its functioning. User changed its character to the participant and co-worker – an active element. The effects of this change can be observed as a fundamental change of nature of most web processes. Thanks to this analysis one can see the convergent and complicated nature of the Internet, based mostly on two forces coming first from the technology and then inevitably from the economy.

The Internet is a complex, fluid environment and a set of different dominants of many types: economic, social and regulative[1]. Manuel Castells describes as a key factor of net development the conquer for new markets, what is heavily supported by new communication technologies working in the global range[2]. Internet in the second half of the 1990s opened new perspectives before the business and also has become itself a platform for many yet unknown forms of business. It fits well with the idea

[1] Described by many authors, Manuel Castells or Jan van Dijk for example.

[2] M. Castells, *Społeczeństwo sieci* [The Rise of The Network Society], transl. into Polish by M. Marody at all., Warszawa 2010, p. 126.

prevailing in the contemporary economic environment, which stresses such qualities as "turbulence" (P.Drucker), "dramatic changeability" (M. Leontiades), "Hyperturbulence" (J.E. McCann and J. Selsky), or "continually growing turbulence" (H.I. Ansoff)[3]. In this dynamically perceived reality, certain net forces appear which lead to violent events, and which can be detected as certain key points of special significance.

This text tries to describe two moments of this kind: the events at the turn of the 1980s and 1990s and the burst of speculative stock exchange bubble, known as the *dotcom bubble*, which took place in March 2000. The first breakthrough in the history of the Internet was shaped by a set of events, which took place around 1990. It involved the technological, regulatory and economic issues simultaneously but the main direction of the changes which resulted from it was of economic character. Among the underlying convergent processes and events that provided the basis for it were: Tim Berners-Lee's invention of the World Wide Web, the release and privatization of the management of network addresses and the rapid development of the Internet retail sector, linked with trade and services, based on both of these factors.

The second key fact, which became a significant turning point in recent Internet history – a speculative stock exchange bubble, known as the *dotcom bubble*, which burst in March 2000. Analyzing its circumstances, Manuel Castells excludes a simple concept of determinism but he quotes the idea of the financial market as a

> ... machine performing sudden movements and not guided by economic logic, but by the logic of the chaos resulting from the millions of decisions taken at the same time across the globe, in response to the information spinning from various sources, including the publication of data on profit[4].

By rejecting a trivial, mechanistic approach he reaches for more complex models, trying to capture processes in a state of imbalance or chaos, in which simple determinism collapses. Owing to this dynamics, a new shape of the Internet emerged, which a few years later became a new phase, called Web 2.0.

Rhetoric figure used here – talking in terms of "breakthroughs" – cannot be taken too literally, as is stipulated by Castell's argument quoted above. What we are dealing with here is more a certain interpretation – a cognitive process, which involves the selection and adoption of intuitions to previously accepted premises, still at hand. In the case considered here, an approximation lies in the fact that, although we qualify the object of our research historically, it is, in fact, impossible to distinguish any one of the events of final significance; it is more likely we are dealing with phases here, charged with causes and pregnant with effects. In the case of the first point, the breakthrough resulting from the appearance of www, certain earlier motifs are also signif-

[3] K. Wach, *Regionalne otoczenie małych i średnich przedsiębiorstw* [Regional Environment of Small and Medium Enterprises], Kraków 2008, p. 24.

[4] M. Castells, *Galaktyka Internetu, Refleksje nad Internetem, biznesem i społeczeństwem* [Galaxy of the Internet. Reflection on the Internet, Business and Society], transl. into Polish by T. Hornowski, Poznań 2003, p. 103.

icant, such as those of an economic nature and the condition of customer services on the Internet, and even the beginnings of the idea of freedom on the 'net back in the 1960s, the later development of commerce which lasted uninterrupted until 2000. In this way it marked out a direct foreground for the dotcom crash, which was the second turning point, with the still continuing deregulation trends that had begun much earlier. Also the period after the crash slowly formed the new reality of the Internet, whose symbolic inauguration happened with Tim O'Reilly's text of 2005. Based on the interpretations set out here and on the turning points defined in this way we can distinguish three key periods of the Internet: the first, until 1990, the second between 1990 and 2000, and the third which started at the beginning of the 21st century.

The Internet is already mature enough as to be treated as an incredibly complex environment that also renders itself available to conceptualization. In this way it becomes a key source of organizational variables[5]. Among the tools, which could be helpful for analyse of its complex reality founded mostly on the economical base is the category of *environment*, which I use here in the meaning attributed to it by David Baron. His continually expanding handbook *Business and its Environment* defines this basic concept in a slightly different way than is commonly used. The main change here is in the removal of the idea of organization from the schematic idea of the environment; this conceptual move serves the purpose of establishing a new central point, which is a manager facing certain reality.

The environment as understood in this way is divided by Byron into two main segments: market and non-market. The former, as Baron says, involves "those interactions between firms, suppliers, and customers that are governed by markets and contracts"[6]; the latter consists of "the social, political, and legal arrangements that structure interactions outside of, but in conjunction with, markets and private agreements"[7]. In this way, a certain fundamentalism in management sciences is shaken, which accepts the opposition between the organization and its environment as a given. This view is not isolated and it appears especially in researches which place emphases on the subject as a source of the process of establishing an organization, for example, through certain symbolic social processes[8] or as a result of the realization of previously held beliefs or common epistemic or interpretative schemes[9].

In his handbook, Baron is mostly dealing with the nonmarket segment comprising social, political and legal systems (*arrangements).* These are analyzed by the use of a method based on the "four 'I's": *issues, interests, institutions and information*[10].

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[5] What can be used as a pretext for the reconstruction of the identity of the academic discipline of management science, particularly in its humanities-oriented part.

[6] D.P. Baron, *Business and its Environment*, Pearson 2013, p. 2.

[7] *Ibidem*.

[8] Linda Smircich and Charles Stubbart in their article published in 1985 *Strategic Management in an Enacted World*, "The Academy of Management Review", Oct., 1985, Vol. 10, No. 4, p. 725.

[9] This is how Hugh Willmott describes the concept of Marjolijn Dijksterhuis, Frans Van den Bosch and Henk Volberda, originating in the text: *Where Do New Organizational Forms Come From?* (1999); p. 98, in his book *The Oxford Handbook of Organization Theory.*

[10] D.P. Baron, *Business and its Environment*, Pearson 2013, p. 4.

Further, he quotes five main sources of challenges that managers commonly face: technological development and scientific progress; the so-called *new understandings,* which stand for new types of understanding of various kinds of elements of reality; changes – even slight ones – within institutions; changes caused by market and non-market activities of organization and, finally, moral issues[11].

This review emphasizes the author's very broad perspective, which has proven to be very useful in the case of the Internet. The primary literature attempting to describe the reality of the Internet, by such authors as Jan van Dijk, Yochai Benkler, Manuel Castells, and others, is also based on adopting a broad view, taking into account technological, economic, social, political and other issues; all those already mentioned by Baron. So in this situation, it seems not only justified, but also potentially fruitful to base an analysis of the Internet on the broadly understood category of environment, as defined by the Stanford University researcher. By using the concept of environment, whose holistic interpretation serves as Baron's base, it becomes possible to look at the Internet synthetically, and avoid breaking it into smaller spheres of scientific investigation. In this way, its synthetic wholeness is captured. It becomes clear, as we are also taught by the literature mentioned above, that we are dealing with a compound of intermingling influences, functioning at various levels of reality.

Even though the last topic takes us beyond the framework of this text and deserves a separate paper, it sets out a preliminary premise of this argument: the discussion on the Internet has to take us down a few routes simultaneously and, as a result, produce different yet concurrent narratives. They are not isolated from each other, but to the contrary, they determine each other and are intertwined. There are, however, some dominants of this mercurial environment which are more essential than others, and which include such areas as economic phenomena, a complex texture of social, political and regulatory events and technology, playing a fundamental role in this context. The first is, more than anything, the story of the Internet as an economic environment and it takes top position as far as the extent of its impact is concerned; the third is based on a banal perception that the Internet is a cluster of software and hardware solutions. But the most conceptually complex is the second dominant, comprising a complicated game among the main social players of institutional character at various levels, with the state as a source of regulations and standards at the top, but also including certain transitory social facts, such as sets of common beliefs, cultural habits, etc. Their presence in the Internet context is dominated by the idea of the existence of a new, extra-territorial, sovereign social and cultural space, different from the real world or even opposed to it. This last motif is older than the Internet itself and functions as a concurrent, continually active source of activity for its participants.

[11] *Ibidem*, p. 13.

The first turning point: Internet vs. WWW

The events at the turn of the 1980s and 1990s, which changed the Internet and gave it the shape that it continues to have today, took place against the background of three pre-eminent, simultaneous and different, although converging, processes. First, historically the earliest, which happened in the 1960s and in the case of hacking in the 1950s, was the trend of an ideological nature, expressed through various social and political events. It interprets the net through a specific ethos, based on values drawn from the American counterculture present both in a spontaneous form – as a set of beliefs that perceive the Internet as an expression of freedom, exterritorialism and egalitarianism – and also steering such distinct phenomena as the hacker movement or creating foundations for such social networking phenomena as partnership production. Second, a deep background which is also provided by a broader, global economic situation and third, a separate set of actions with related regulatory decisions with regard to the Internet, undertaken by the US, which to a certain degree feels it is its "owner" having financed that invention. The final event that made the turning point possible is the appearance of a new technology, the invention of the World Wide Web by Tim Berners-Lee.

In 1988, Ronald Reagan used the term "new economy"[12]; a term that stands for the idea of the reconstruction of the theoretical basis of the economy, including basing it on the new concept of resources. As Fred Turner, whom we have already quoted here, declared, most of the circumstances mentioned in Daniel Bell's idea of postindustrial society[13] (1973) had appeared earlier, among them those characteristic for the cooperation between academic, industrial and military circles during World War II and the Cold War period, and so much earlier. In his text, written in 1970, entitled *The War and its Effects: The Military-Industrial-Academic Complex,* Senator William Fulbright called this cooperation the MIA complex (*military-industrial-academic*)[14]. In 1991, business appeared on the Internet. To begin with, thanks to the privatized market of addresses and names, which were handed over by the National Science Foundation, the independent federal agency founded by the USA Congress, to the private company Network Solutions[15]. Since 1992, further to new transformations in the net's architecture, the commercial market in Internet access has gradually moved to numerous competing commercial service providers (ISP – *Internet Service Providers*). The new architecture took over the entire movement in 1995[16].

[12] F. Turner, *From counterculture to cyberculture: Stewart Brand, the Whole Earth network, and the rise of digital utopianism*, Chicago, London, 2006, p. 175.

[13] D. Bells, *The Coming of Post-Industrial Society* (Polish translation: *Nadejście społeczeństwa postindustrialnego: próba prognozowania społecznego*, Warszawa 1975).

[14] J. McKenzie, *Performuj albo… Od dyscypliny do performansu* [Perform or Else. From Discipline to Performance] Transl. into Polish by T. Kubikowski, Kraków 2011, p. 351.

[15] M.L. Mueller, *Ruling the Root: Internet Governance and the Taming of Cyberspace*, Massachusetts 2002, p. 105.

[16] *Ibidem*, p. 106.

Deregulation of Internet access resulted in a boom in the registration of commercial firms, as indicated by the number of domains registered with the ending ".com", which stands for "commercial activity". As Mueller wrote, "the transformation of domain names was stirred by rational economic issues, resulting from the need of exposure on a growing global market"[17]. By the end of 1993, the number of domains of the .com type was less than 5%, and at the beginning of 1996, almost 70%[18]. This trend could also be observed on the US information technology (IT) market, which allowed for the recovery of the effectiveness of the American economy in the second half of the 1990s[19]. The transformation was deep in nature, as it was not only about investment purchases, but also led to fundamental structural changes, converting companies into digital organizations[20].

Nicholas Carr in his book *The Big Switch* concludes that Internet in its WWW form was free of commercial activity for a brief moment, immediately after Tim Berners-Lee announced his invention[21]. His idea changed and simplified the way the web worked, as it made documents, databases, graphics, sounds, etc. available to everyone, regardless of their hardware and location[22]. The aim of navigation is not a specific computer but a resource, which is the idea Berner-Lee borrowed from Ted Nelson and his idea of hypertext[23]. With the improved system of locating such resources (within the URI – universal resource identifiers system) and a special form of information presentation (with a special language HTML – hypertext markup language), their finding and presentation become easy and impressive[24]. The first computer working in the Internet, communicating based on World Wide Web technology started under the address info.cern.ch on Christmas Eve of 1990[25].

The webification of the net[26] was followed by a change in the way it was used and the development of the commercial side of it, targeting a retail client; which does not mean that it had not explored this earlier. A little-known motif, which might be an excellent example, confirming Clayton Christensen's concept of the failures of new technology companies, explained in his book *The Innovator's Dilemma*[27], is recollected by

[17] *Ibidem*, s. 109.

[18] N. Carr, *The Big Switch: Rewiring the World, from Edison to Google*, New York, London 2008, p. 110.

[19] E. Brynjolfsson, A. Saunders, *Wired for Innovation, How Information Technology Is Reshaping the Economy*, Cambridge, Massachusetts, London 2010, p. xi.

[20] *Ibidem*, s. xii.

[21] N. Carr, *The Big Switch: Rewiring the World, from Edison to Google*, New York, London 2008, p. 110.

[22] T. Berners-Lee, *Weaving the Web, The Original Design and the Ultimate Destiny of the World Wide Web*, Harper 2000, p. 37.

[23] *Ibidem*, p. 20.

[24] *Ibidem*, p. 36.

[25] *Ibidem*, p. 30.

[26] M.L. Mueller, *Ruling the Root: Internet Governance and the Taming of Cyberspace*, Massachusetts 2002, p. 109.

[27] C.M. Christensen, *The Innovator's Dilemma. When New Technologies Couse Great Firms to Fail*, Boston, Massachusetts 1997.

Jonathan Zittrain. In the 1980s, the US market for consumer and public access to the Internet was dominated by large firms, but in spite of a million subscribers, their business model failed. The operations of such Internet barons as AOL, Compuserve and Prodigy were based on providing a service with a terminal. In this way it was reminiscent of telephone service providers[28], and it led to creating proprietary, closed "territories", denying the idea of the openness of the Internet. These companies offered packages of services and their own software that allowed for control over access and content. The latter was linked with a certain specialization and became a source of difference between them: Prodigy was considered family-friendly, CompuServe – available to all[29]. This situation was changed by technological innovation of development, and the availability of new software[30], which let PC computers connect to the Internet based on an end-to-end structure. The software appeared at the end of the 1990s and became a part of the default settings of the Windows system, allowing consumers to access the Internet via a telephone line, without a specific operator, such as AOL or Prodigy. In the first half of the 1990s this monopoly was effectively broken.

Dotcom bubble and *WEB 2.0*

A publication entitled *The American Economy: A Historical Encyclopedia* summarizes the second half of the 1990s by saying that "between 1995 and 2001 electronic trade became the fastest growing form of trade in the world" [31]. The year ending this period was marked, in the history of the Internet, by a spectacular crash of US stock market quotations for new technology companies. The scale of the crash can be only truly appreciated by looking at the data. From 22 December 2000 the total capitalization of public Internet companies was down 75% throughout the year, which meant the disappearance of a billion dollars from the market; for 378 companies, 211 reported a decline in the value of their shares above 80%, and 130 companies disappeared from the market altogether[32]. Among them were a number of very well-known brands, such as *Yahoo* (88% drop) and *Amazon* (86% drop). In this context Manuel Castells quotes the example of *Cisco.* At a stock market value of USD 555 billion, in 2000, *Cisco* was the most expensive enterprise in the world. The following year its share price fell by 78%[33].

However, in spite of the spectacular crash, a strong belief in the power of the Internet economy is still very much alive. The advanced technologies sector main-

[28] J.L. Zittrain, *The Future of the Internet — And How to Stop It*, New Haven, London 2008, p. 7.

[29] *Ibidem*, p. 24.

[30] Based on *Windows Sockets API* (WSA) solution which has existed since 1991. The first software that implemented it was *Trumpet Winsock*.

[31] *The American Economy: A Historical Encyclopedia*, C. Clark Northrup (ed.), Santa Barbara, California Denver, Colorado Oxford, England 2003, p. 96.

[32] M. Perkins, A. Perkins, *The Dotcom Bubble*, Revised Edition, HarperBusiness, 2001, p. 16.

[33] M. Castells, *Galaktyka Internetu, Refleksje nad Internetem*..., p. 82.

tains its position as an attractive sector of the economy, in which a significant role is still played by the Internet[34]. Also back in 2001 Manuel Castells undertook an attempt to interpret the events accompanying the investment bubble, perceiving it as a result of a broader systemic situation, resulting from many co-operating factors: "a chaotic structural behavior linked with globalization, deregulation and electronic trade"[35]. Under these circumstances, the entire market takes on a shape of "information turbulence"[36], in which all types of more or less credibility is chaotically mixed. Against this background, Castells tried to identify certain significant circumstances that contributed to the crisis and which were also of a considerably varied nature[37].

The rebirth of the Internet economy, which was then transformed into its latest, still developing phase, known as Web 2.0, was symbolically inaugurated by Tim O'Reilly's article published in September 2005, entitled *What Is Web 2.0, Design Patterns and Business Models for the Next Generation of Software*[38]. David Easley and Jon Kleinberg, in their book of 2010 called *Networks, Crowds, and Markets Reasoning about a Highly Connected World*, identified three basic forces, which made the development of the Internet possible at the beginning of the 21st century. These are:

> (i) the growth of Web authoring styles that enabled many people to collectively create and maintain shared content; (ii) the movement of people's personal on-line data (including e-mail, calendars, photos and videos) from their own computers to services offered and hosted by large companies; and (iii) the growth of linking styles that emphasize on-line connections between people, not just between documents[39].

In view of these findings one of the most important, and emphasized by them, guidelines is a requirement for respecting the social feedback effect for the information published, which pushed the issue of information itself and correctness of its transmission into the background[40]. In this way, a feature appears that begins to shape the Internet of the 21st century, which will manifest itself as complex and variable forms of social networking, participating and used in various organizational processes, with their most developed variant: social business[41].

O'Reilly's text, aimed at summarizing and promoting the most important opportunities offered by the Internet begins with the sentence: "The bursting of the dot-com

[34] M. Perkins, A. Perkins, *The Dotcom Bubble*, p. 21.

[35] M. Castells, *Galaktyka Internetu, Refleksje nad Internetem*..., p. 106.

[36] *Ibidem*, p. 102.

[37] *Ibidem*, p. 124–126.

[38] Available at: http://oreilly.com/web2/archive/what-is-web-20.html [accessed on: 01.05.2013].

[39] D. Easley, J. Kleinberg, *Networks, Crowds, and Markets Reasoning about a Highly Connected World*, Cambridge University Press, 2010, p. 347.

[40] *Ibidem*, p. 348.

[41] This new way of thinking about organisation and its strategy is proposed in Diona Hinchcliffe's and Petera Kim's book *Social Business by Design: Transformative Media Strategies for the Connected Company*, San Francisco 2012.

bubble in the fall of 2001 marked a turning point for the web"[42]. This led to an essential reorientation of its workings, turning its users into active and creative participants, enlivening existing, historic and similar ideas[43] and giving them a tremendous impetus. This had far-reaching social and political effects, which are still developing. In its latest version, with the developing technology, they also manifest themselves as interference with the untouchability of users' identity and new forms of governance[44]. O'Reilly, it is worth remembering, also discussed new, fundamental features of the new Internet functioning under such ideas as "the web as platform", describing a new dimension of its functioning, going beyond individual computers or data being in the next »*Intel inside*«, locating in them the source of competence which produces an advantage. The latest tools and techniques which are the effect of rapidly developing technologies, such as cloud computing or IOT – Internet of Things, seem to continue these ideas. Their effects mean not only changes in organization and management but also have far-reaching civilizational impact.

The two turning points in the history of the Internet described here, though separated by a decade, have one basic thing in common – they changed the way the Internet functioned, and so in a way they are of the most general characters. Detailed causes are varied in their configuration, which is a convergence of economic, technological and social factors, though it is clear that the former, as confirmed by the facts, revealed itself most dramatically in both cases and served as the driving force behind the changes spurred by technical innovations. The two key points were selected precisely because they allow us to see the convergent existence of the Web, and its development as a composite, often chaotic and accidental, made of a wide range of causes of varying intensity and creating a complex environment.

Because of the last fact and also because of some tendencies repeating in the both defined turning points, the Internet fits very well with the dual nature of model proposed by David Baron, which opposes the market and nonmarket sides in the environment. This duality is evident in the Internet and make the economic aspect of the net the primary factor but on the other hand it also emphasises the other side: so called "the social, political, and legal arrangements" David Baron write about. Precise identification of the issues, interests, institutions and information demands separate analysis, but some of them are evident. Problems connected with the regulation, freedom or privacy fit with the first category: issues. Web functions within the set of well described interests represented by users, commercial organizations or government agencies and is based upon incrementally described institutions of many kinds like the Open Source System, which is very well constructed structure devoted to cre-

[42] http://oreilly.com/web2/archive/what-is-web-20.html [accessed on: 01.05.2013]. The period of decline in the NASDAQ index, excluding local adjustments, took almost until the end of 2002, which can be traced to a number of charts available online, for example here: http://news.bbc.co.uk/2/hi/business/8558257.stm [accessed on: 01.05.2013].

[43] Such as Alvin Toffler's idea of *prosumer.*

[44] M. Castells, *Władza komunikacji* [Communication Power], transl. into Polish by J. Jedliński, P. Tomanek, Warszawa 2013.

ating the software based on the work of volunteers[45]. The phenomenon of the information and its circulation are the base of the concept of the information society created by Manuel Castells many years ago. These examples prove that theory and the model by David Baron seems to be promising proposition in the case of the Internet analyse performed in the perspective of management studies and let to catch the dynamics of development of the Internet especially in its turning points: at the turn of the 1980s and 1990s and in the beginning of the 2000 year.

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[45] Ch.M. Schweik, R.C. English, *Internet Success: A Study of Open-Source Software Commons*, Cambridge 2012.