

## INFORMACIONE TEHNOLOGIJE: POKRETAČKA SNAGA PROGRESA NOVE EKONOMIJE

### INFORMATION TECHNOLOGIES: DRIVING FORCE OF NEW ECONOMY

RADISLAV JOVOVIĆ

**Sadržaj:** *Danas informacione tehnologije povećavaju brzinu, snagu i postaju veoma sofisticirane, a mogu povezati zajedno široki dijapazon uređaja u mrežu koja okuržuje globus. One omogućuju nove načine učenja, rada, zabave, kao i nove načine vođenja biznisa. Po nekima te promjene su revolucionarne i one mijenjaju svijet, dok drugi tvrde da su promjene evolutivne. U ovom radu se polazi od toga da tim promjenama ne treba prilaziti kao revolucionarnim ili evolucionističkim već kao pokretačkoj snazi progressa nove ekonomije. Razumno je izučavati pojave koje su kreirale jedan novi svijet i novu ekonomiju kroz tehnološke inovacije, povećanje ekonomske performanse i povezivanje svijeta na globalnom nivou. Rad se bavi relacijam između informacionih tehnologija, promjena i njihovog uticaja na društvo i ekonomiju. Analizira se paradigma koja je najadekvatnija novoj ekonomiji.*

**Ključne riječi:** *nova ekonomija, informacione tehnologije, mrežni programi, infrastruktura, globalizacija.*

**Abstract:** *Today, information technologies are increasing in speed, power, and sophistication, and they now can link together a vast array of devices into a network that spans the globe. They offer new ways of learning, working, and playing, as well as conducting global business. Some contend that these changes are revolutionary and will change the world; others argue that the changes are evolutionary. In this paper I take the view that these changes are neither revolutionary nor evolutionary but driving force of new economy. It is reasonable to research phenomena which have created a new world emerging, new economy through technological innovation, enhance economic performance and link the world at the global level. This paper is devoted relationships between information technologies, changes and its influence on society and economy. The adequate paradigm which is the most suited to a new economy is analysed.*

**Key words:** *New Economy, Information Technologies, Netware, Infrastructure, Globalization*

*JEL clasification: D83; O33; Original scientific paper; Recived: November 21, 2006*

### 1. Intorduction

Since the publication of Daniel Bell's *The Coming of Post-Industrial Society: A Venture in Social Forecasting* (New York: Basic 1973) and Fritz Machlup's *The Production & Distribution of Knowledge in the United States*

(Princeton: Princeton Uni Press 1962) we've been living in a 'post-industrial' 'information society'. That's one in which information is a primary commodity, data processing and communications technology is of fun-

damental importance, and 'knowledge workers' drive growth in a global economy marked by volatility and constant innovation. As Frank Webster points out in *Theories of the Information Society* (London: Routledge 1995) many have come to see the information society and information economy or new economy as synonymous. Nowadays pervasive term is the new economy.

Information technologies are the basis of the new economy. They provide possibility that governments, businesses, communities, and individuals can cooperate to link the world's telecommunication and computer networks together into a vast constellation capable of carrying digital and analog signals in support of every conceivable information and communication application. The promise is that this constellation of networks will promote an information society that benefits all: peace, friendship, and cooperation through improved interpersonal communications; empowerment through access to information for education, business, and social good; more productive labor through technology-enriched work environments; and stronger economies through open competition in global markets.

Information technologies are advancing at a rapid pace and becoming ever more ubiquitous. Changes wrought by these new technologies are revolutionary and will result in profound transformations of society. They compress space and time. More and more human activities in working, learning, conducting commerce, and communicating will take place via information technologies. Online access to information resources will provide a depth and breadth of resources never before possible. Fundamental changes are predicted in the relationships between different institutions, with authors less dependent on publishers, information seekers less dependent on libraries, and universities less dependent on traditional models of publication to evaluate scholarship. Networks will grease the wheels of commerce, improve education, increase the amount of interpersonal communication, provide unprecedented access to information resources and to human expertise, and lead to greater economic equity.

Besides revolutionary perspective, others argue that we are in the process of evolutionary, not revolutionary, social change toward an information-oriented society. Which of these scenarios is more likely to occur? Many other scenarios exist, some between those presented above and some at the far ends of the spectrum. The extremes include science-fiction-like scenarios in which technology controls all aspects of daily life, resulting in a police state where every activity is monitored, and survivalist scenarios in which some catastrophe destroys all technology, with the result that new societies are reinvented without it. Choosing between the revolutionary, discontinuity scenario and the evolutionary, continuity scenario described above is more problematic. Each has merit and each is the subject of scholarly inquiry and informed public debate.

My view is that it is reasonable to speak of a new world emerging. That new world has been created through wave of changes in information technologies, and their influence on the society. It is not reasonable, however, to conclude that these changes are absolute, that they will affect all people equally, or that no prior practices or institutions will carry over to a new world. Nor is it reasonable to assume that any individual institutions, governments, or businesses, will survive unscathed and unchanged into the next millennium. Upon close examination, it will often be found that strong claims about the effects of information technologies on society, and vice versa, are based on simplistic assumptions about technology, behavior, organizations, and economics. None of these factors exists in a vacuum; they interact in complex and often unpredictable ways.

Information technology makes possible all sorts of new activities and new ways of doing old activities. But people do not discard all their old habits and practices with the advent of each new technology. Nor are new technologies created without some expectations of how they will be employed. The probable scenario is neither revolution nor evolution, but co-evolution of information technology, human behavior, and organizations. Technology pushes, while demand pulls.

## 2. Converging Tasks and Technologies

The new economy is associated with the impact of technological innovation over the last several decades that appears to have begun to bear fruit by the mid-1990s. These include the impact of sharply lower prices and increased efficiency in computers, cell phones, and the Internet; a host of other new goods and services, innovation in financial markets, and new methods of payment; and reductions in costs and improvements in quality and efficiency associated with the use of these technologically based changes in other goods and services.

Information technologies have caused changes at macro and micro level, management and organization of business. People use computer networks for a vast array of activities, such as communicating with other individuals and groups, performing tasks requiring remote resources, exchanging resources, and entertainment (whether with interactive games or passive media such as videos). Predictions (see, e.g., "The Next 50 Years", 1997 and Pontin, 1998) is that we will see more convergence of information and communication technologies, blurring the lines between tasks and activities and between work and play. We will have "ubiquitous computing" (Pontin, 1998) and "pervasive information systems" (Birnbam, 1997). We will become "intimate with our technology" (Hillis, 1997), and "information overload" (Berghel, 1997a) will be more of a problem than ever.

An underlying theme of such predictions is "digital convergence," indicating that more and more information products will be created in digital form or will be digitized, allowing applications to be blended more easily. Digital technologies will co-exist with analog and other forms of information technologies yet to be invented. Analog technology is based on continuous flows, rather than the discrete bits of digital technology. Computer and communication networks are an example of the bridge between these technologies. Predictions of ubiquitous computing are based on an increasing reliance on small communication devices and embedded systems such as those that control heating and lighting in homes and offices. Future com-

puter networks are expected to link these devices just as they now link personal computers, data storage, printers, and other peripherals (Pontin, 1998).

## 3. Modes of Communication

No matter what technologies gird the framework of the global information infrastructure, human activities involving the network will be intertwined. A new interface for electronic media are being born. What they share are ways to move seamlessly between media you steer (interactive) and media that steer you (passive). They work on the emerging universe of *networked* media that are spreading across the telecosm.

Distinction between "pull" technology (which requires explicit action by the user) and "push" technology (which comes to the user without the user's explicit action) is useful. Some activities are easily categorized by this dichotomy, but others have characteristics of each. Composing and sending an e-mail message and searching a database require explicit "pull" actions, for example. Although both the broadcast mass media and the emerging media services that deliver tailored selections of content to workstations during idle time can be classified as push technologies (editors of *Wired*, 1997), the latter form also could be considered "pull," because the user presumably took action to subscribe to the service. Similarly, if composing and sending e-mail is pull technology, then receiving mail can be viewed as a form of "push." Opening and reading messages requires explicit actions, but users can decide what to read, delete, or ignore. They also can sort desirable and undesirable messages by means of automatic filters. Because subscribing to desirable content and filtering out undesirable content require parallel actions, both can be viewed as forms of push technology if one accepts the *Wired* definitions of "push" and "pull."

Push and pull combine in other ways as well. People subscribe to distribution lists, which then send messages at regular or irregular intervals. They also subscribe to services that alert them

---

when new resources are posted on a specific network site, but they must take explicit action to view or retrieve the resources from that site.

Truly interactive forms of communication are difficult to categorize as push or pull. People engage in conversations in “chat rooms, and hold conferences, meetings, and classes online in real time. All require explicit actions, but the characteristics of these two-way or multi-way conversations are far richer than the solo-action pull of searching a database or sending a message. Some of these are the “demassified” communication technologies that Rogers (1986) predicted more, tailored to individual users and to small audiences. However, the “push” technologies of customized desktop news delivery touted by *Wired* in 1997, in which messages continually scroll across the subscriber’s screen, have yet to become the commercial success that was predicted. Perhaps they were not sufficiently customized or “demassified.” Perhaps people found them too disruptive, preferring “pull” modes in which they could acquire the desired content at their convenience.

The intertwining of communication modes in electronic environments adds new dimensions to information access. Although more study has been devoted to “active” than to “passive” information seeking, even these categories are problematic in this new environment. These are but a few of many communication definitions and concepts being reconsidered in the light of new information technologies. One important concept is globalization supported by global information infrastructure.

#### 4. Globalization

Information technologies support openness and concept such as globalization. The main future of the new economy is globalization. Globalisation as a concept is often left undefined, defined as ‘internationalisation’, used as a shorthand for transborder (especially transregional) flows of capital, goods, services and expertise or derided as “an economic term used by the neoliberals to reinstitute a low-wage labor policy”. Globalisation includes:

- regional and global integration of markets (with production, research, product development, manufacturing and investment dispersed across a range of countries);
- sourcing by major enterprises of capital and services (eg accounting, advertising, fulfilment) on a global rather than national basis;
- the proliferation of global consumer brands, continuing a trend first apparent in the 1870s;
- international networking of enterprises through joint ventures, alliances and asset sharing;
- export of production outside the First World;
- an emphasis on advanced communications for the management of dispersed enterprises and for dealing with global capital flows;
- growth of an international class of experts (operating within business enterprises, NGOs, governments and academia) with English as the lingua franca;
- strengthening of regional and global agreements (ranging from technical standards through to commercial law and beyond to human rights) that harmonise and in practice often drive legal regimes within individual jurisdictions;
- a concurrent revitalisation of some ethnic or other polities within states.
- Globalization means more connections, more cooperation, more intertwined task and activities. It is opposite isolation. It overcomes borders, with support of information technologies and a global information infrastructure.

#### 5. Creating a global infrastructure

The integration, interaction, and interdependence of information-related tasks and activities leads us to think in terms of an information infrastructure. Rather than relying on separate devices for producing text (e.g., typewriters and personal computers), producing images (e.g., personal computers, photo-

copy machines, drawing pads), communicating with individuals (e.g., telephones, telefacsimile (fax) machines, mailboxes and stamps), and searching for information resources (e.g., personal computers, local servers, print technologies), all these tasks can be accomplished via a personal computer connected to the Internet. Conversely, these tasks can be divided up in many new ways by means of specialized devices such as cell phones, pagers, palmtops, and other "information appliances" that can share information. Computer and communication networks enable the integration of tasks and activities involved in creating, seeking, and using information, increase the interaction between these activities, and make them ever more interdependent.

In considering the premise and the promise of a "global information infrastructure," we must determine what is meant by this phrase. Already it is used in variety of contexts, with meanings that include a set of technologies, a set of principles for an international computing and communications network, and a loose aggregation of people, technology, and content.

Terms such as "national information infrastructure" and "global information infrastructure" are being bandied about with minimal discussion of what is meant by "infrastructure." Social scientists and historians are beginning to take a research interest in this concept, particularly as it relates to organizational communication and work practices. Star and Ruhleder describe infrastructure as follows: It is both engine and barrier for change; both customizable and rigid; both inside and outside organizational practices. It is product and process. ... With the rise of decentralized technologies used across wide geographical distance, both the need for common standards and the need for situated, tailorable and flexible technologies grow stronger.

Star and Ruhleder are among the first to describe infrastructure as a social and technical construct. Their eight dimensions can be paraphrased as follows: An infrastructure is *embedded* in other structures, social arrangements, and technologies. It is *transparent*, in that it invisibly supports tasks. Its *reach or scope* may be spatial or temporal, in that it reaches

beyond a single event or a single site of practice. Infrastructure is *learned as part of membership* of an organization or group. It is *linked with conventions of practice* of day-to-day work. Infrastructure is the *embodiment of standards*, so that other tools and infrastructures can interconnect in a standardized way. It *builds upon an installed base*, inheriting both strengths and limitations from that base. And infrastructure *becomes visible upon breakdown*, in that we are most aware of it when it fails to work - when the server is down, the electrical power grid fails, or the highway bridge collapses.

Star and Ruhleder's (1996) set of eight infrastructure dimensions highlights the complex interaction of technology, social and work practices, and standards. They also emphasize social context by noting that infrastructure builds upon an installed base. An information infrastructure is built upon an installed base of telecommunications lines, electrical power grids, and computing technology, as well as on available information resources, organizational arrangements, and people's practices in using all these aspects. An installed base establishes a set of capabilities and a set of constraints that influence future developments. For example, mobile telecommunications must interoperate with land-based networks, and new computers should be able to read files that were created on the preceding generation of technology.

## 6. Increasing economic performance

According to general trends which we pointed out, we are seeing a shift in the economy from localized physical markets and physical interchanges to digital networks of all kinds: business-to-business networks, peer-to-peer networks, web auctions, the digital brokering of commodities, genealogy groups, chat networks, and outsourcing networks. All of these networks are made possible by connectivity, and backed by computers. Most people are aware of this shift. Manuel Castells of Berkeley has pointed out that in a sense this is not new: formal and informal networks have been around for a long time, but we are currently entering an electronic age of competing digital networks.

Networks are the first emergent structure, the first dominant pattern, that we are seeing in the digitally-based economy. Factories with inputs and outputs are the dominant patterns of the old manufacturing economy. The network is the dominant pattern of the new digital economy. However, this economy of competing networks will be overlaid onto the old economy of factories and inputs and outputs. The old, manufacturing economy will not be entirely replaced. Competition in networks will shake out according to what I believe can be almost called a Law: "Of networks, there will be few." I believe we will have only a single-digit number of digital-banking virtual networks in the future. Perhaps three, perhaps half-a-dozen. One reason is that digital networks by definition will have global reach, and this will diminish greatly the importance of locality. So a very few networks can cover a full global clientele. A second reason that there will be few networks in any market niche is the number of networks that can maintain viability. My strong belief is that in nearly all digital-network niches, increasing returns effects will overcome network differentiation effects. And therefore, of networks there will be few.

Relationships between information technologies and knowledge and economic performance have been obvious during recent years. One sign that there has been a fundamental shift is that direct production of goods and services no longer absorbs the preponderance of workers' time. In 1975, production of goods and services ceased being the occupation of the majority of U.S. workers. Never before had a society been so productive that it could afford to assign most of its workers to white-collar tasks such as management, paperwork, sales, and creativity. As recently as 1900, production workers in goods and services accounted for 82 percent of the U.S. workforce. Over the course of the century, that number declined by large steps, to 64 percent in 1950, and to 41 percent in 1999. Managers, professionals, and technical workers, who are increasingly involved in creative activities, have risen from 10 percent of the workforce in 1900 to 17 percent in 1950, to 33 percent in 1999 (Nakamura, p. 16).

Perfect competition is the central paradigm economists have relied on to describe capitalist economies. This paradigm, which underlies Adam Smith's "Invisible Hand" theorem, focuses on production processes and abstracts from the informational tasks that managers, professionals, clerks, and sales workers perform. The paradigm of perfect competition was formulated by William S. Jevons, Leon Walras, and Carl Menger in the late 19th century, a time when direct production of goods and services dominated work. Is this paradigm still appropriate in an age in which innovation is such an important economic activity; millions of workers are employed in *creative* activities, such as designing, inventing, and marketing *new products*; and more and more economic activity is devoted to creating technical progress? Is the theory set by Adam Smith appropriate for waive of changes. It is not explain why economics changes! Theory set forth by Joseph Schumpeter and often referred to as creative destruction is a better paradigm for the emerging "new economy".

## 7. The new economic paradigm

Schumpeter argued that what really made capitalism powerful was profits derived from creativity. He believed that the force of habit was extremely powerful in work life and that since economic development required implementing creativity, overcoming this inertia was crucial. In his masterwork, *Capitalism, Socialism, and Democracy* (1942), Schumpeter constructed a paradigm for economic theory in which creativity was the prime mover in a modern economy, and profits were the fuel. He argued that what is most important about a capitalist market system is precisely that it rewards change by allowing those who create new products and processes to capture some of the benefits of their creations in the form of short-term monopoly profits. Competition, if too vigorous, would deny these rewards to creators and instead pass them on to consumers, in which case firms would have scant reason to create new products. These monopoly profits provide entrepreneurs with the means to (a) fund creative activities in response to perceived oppor-

tunities; (b) override the natural conservatism of other parties who must cooperate with the new product's launch as well as the opposition of those whose markets may be harmed by the new products; and (c) widen and deepen their sales networks so that new products are quickly made known to a large number of customers. The drive to temporarily capture monopoly profits promotes, in Schumpeter's memorable phrase, "creative destruction," as old goods and livelihoods are replaced by new ones. Thus, while Adam Smith saw monopoly profits as an indication of economic inefficiency, Joseph Schumpeter saw them as evidence of valuable entrepreneurial activity in a healthy, dynamic economy. Indeed, Schumpeter's view was that new products and processes are so valuable to consumers that governments of countries should encourage entrepreneurs by granting temporary monopolies over intellectual property and other fruits of creative effort. Thus, in contrast to Adam Smith, Schumpeter argued that government action to prevent or dismantle monopolies might harm growth and the consumer in the long run. In practice, temporary intellectual property protection has been adopted by all advanced industrial economies, suggesting that this reward system is indeed valuable in promoting economic growth. To this extent, modern economies have not obeyed the law of the invisible hand. We have made monopoly, albeit temporary, an important instrument of national development policy. On the other hand, the temporary monopoly protections of intellectual property law are not the only way modern societies reward innovators. For example, much scientific research is generated by grants made by public agencies or private foundations. Development of military products is often done for a fixed payment, which is determined by a bidding process, or on the basis of the incurred and audited costs of the developer. However, these alternative reward systems are employed only where a normal market does not exist for the product. For consumer products, it appears that, in general, the marketplace is the best measure of the value of an invention. The more valuable the product, the greater the reward to its creator should be. And that's exactly what a patent or copyright does

— gives the creator a reward that rises with consumer value, because the greater a product's consumer value, the more profit a monopolist can realize from its sales, since the monopolist can charge more for it. At the same time, it remains true that the temporary monopoly itself deprives society of the full value of the creation, since to secure their monopoly profits, firms limit supply. Thus, the full value of the creation is realized only when the monopoly ends. While Schumpeterian theories tell us some form of intellectual property protection for creators is desirable, they do not yet tell us how much protection to award, for instance, how long patents should last. There are two important drawbacks to an economy of creative destruction. First, an economy of creative destruction knows only one pace — hectic. There is no way to know who created something except for priority — whoever says or does it first. Once something is discovered, it is easy to copy. Someone who independently creates something, but does so belatedly, does not get credit and does not share in the reward. The rewards of creativity go to the swiftest. It is thus no accident that long hours are a frequent correlate of creative activity. Second, creative destruction, as its name implies, involves risk and change. Those whose products are outmoded by a new product lose their livelihoods. Even those who create a new product can predict but a small part of its consequences. The forces that oppose creativity are not irrational; they are the natural concerns of economic participants as to how they will be affected by creativity. The new rules for new economy are:

- **Embrace the Swarm.** As power flows away from the center, the competitive advantage belongs to those who learn how to embrace decentralized points of control.
- **Increasing Returns.** As the number of connections between people and things add up, the consequences of those connections multiply out even faster, so that initial successes aren't self-limiting, but self-feeding.
- **Plentitude, Not Scarcity.** As manufacturing techniques perfect the art of making copies plentiful, value is carried by abundance, rather than scarcity, inver-

- ting traditional business propositions.
- **Follow the Free.** As resource scarcity gives way to abundance, generosity begets wealth. Following the free rehearses the inevitable fall of prices, and takes advantage of the only true scarcity: human attention.
  - **Feed the Web First.** As networks entangle all commerce, a firm's primary focus shifts from maximizing the firm's value to maximizing the network's value. Unless the net survives, the firm perishes.
  - **Let Go at the Top.** As innovation accelerates, abandoning the highly successful in order to escape from its eventual obsolescence becomes the most difficult and yet most essential task.
  - **From Places to Spaces.** As physical proximity (place) is replaced by multiple interactions with anything, anytime, anywhere (space), the opportunities for intermediaries, middlemen, and mid-size niches expand greatly.
  - **No Harmony, All Flux.** As turbulence and instability become the norm in business, the most effective survival stance is a constant but highly selective disruption that we call innovation.
  - **Relationship Tech.** As the soft trumps the hard, the most powerful technologies are those that enhance, amplify, extend, augment, distill, recall, expand, and develop soft relationships of all types.
  - **Opportunities Before Efficiencies.** As fortunes are made by training machines to be ever more efficient, there is yet far greater wealth to be had by unleashing the inefficient discovery and creation of new opportunities.

## 8. How to think about a change in paradigm for economics

What should the fundamental paradigm of economics be: creative destruction or the invisible hand? This is an empirical matter that depends on the importance of creativity. It is, indeed, hard to measure creativity precisely. But if we fail to recognize it in our economic

theory or in our economic measures, we are doomed to be precisely wrong rather than approximately correct. Alan Greenspan made this point when he said, "But the essential fact remains that even combinations of very rough approximations can give us a far better judgment of the overall cost of living than would holding to a false precision of accuracy and thereby delimiting the range of goods and services evaluated. We would be far better served following the wise admonition of John Maynard Keynes that 'it is better to be roughly right than precisely wrong.'" How should economists and noneconomists think about the possibility of a paradigm shift in economics? British Nobel laureate economist John Hicks took up this topic in his 1983 paper on "revolutions" in economics: "Our special concern [in economics] is with the fact of the present world; but before we can study the present, it is already past. In order that we should be able to say useful things about what is happening, before it is too late, we must select, even select quite violently. We must concentrate our attention, and hope that we have concentrated it in the right place. "...But it is obvious that a theory which is to perform this function satisfactorily must be well chosen; otherwise it will illumine the wrong things. Further, since it is a changing world that we are studying, a theory which illumines the right things now may illumine the wrong things another time. This may happen because of changes in the world (the things neglected may have grown relative to the things considered) or because of changes in our sources of information (the sorts of facts that are readily accessible to us may have changed) or because of changes in ourselves (the things in which we are interested may have changed). There is, there can be, no economic theory which will do for us everything we want all the time." Put succinctly, Hicks argues that economic science must adapt to the nature of the economy. The growing importance of creative endeavors appears to be what's new in the New Economy. If so, the New Economy represents a significant change in the nature of the economy, one that is difficult to align with the paradigm of perfect competition. The New Economy is highly competi-

ve, but creative destruction, not production, is the center of the competition. This implies, in line with Hicks's views, that for understanding the New Economy, Joseph Schumpeter's creative destruction paradigm may be superior to Adam Smith's invisible hand.

## 9. Conclusions

This paper is focused on a new economic reality. These are exciting times. Information technologies offer new ways of learning, working, and playing, as well as conducting global business. Some contend that these changes are revolutionary and will change the world; others argue that the changes are evolutionary, and that individuals and organizations will incorporate networked information technologies into their practices just as they incorporated many earlier media and technologies. I take the view that these changes have created new structures which are the base of a new economy. New technologies are based on perceived needs and available capabilities. We are in the process of creating a global information infrastructure that will interconnect computer networks and various forms of information technologies around the world. An information infrastructure is only one of several infrastructures that are essential to a well-functioning society. But this infrastructure is in the fundament of globalization.. Many aspects of daily life depend on the emerging global information infrastructure. According to general trends which we pointed out, we are seeing a shift in the economy from localized physical markets and physical interchanges to digital networks of all kinds: business-to-business networks, peer-to-peer networks, web auctions, the digital brokering of commodities, genealogy groups, chat networks, and outsourcing networks. What should the fundamental paradigm of a new economics be: creative destruction or the invisible hand? This is an empirical matter that depends on the importance of creativity. Joseph Schumpeter's creative destruction paradigm may be superior to Adam Smith's invisible hand.

## Literature:

Agre.E. and Rotenberg M. (editors), 1997. *Technology and Privacy: The New Landscape*. Cambridge, Mass.: MIT Press.

Arthur, W. B., 2000, *Myths and Realities of the High-Tech Economy*, Talk given at Credit Suisse First Boston Thought Leader Forum, Sep 10, 2000

Berghel, H., 1997a. "Cyberspace 2000: Dealing with information overload," *Communications of the ACM*, volume 40, number 2, pp. 19-24.

Berghel H., 1997b. "E-mail - the good, the bad, and the ugly," *Communications of the ACM*, volume 40, number 4, pp. 11-15.

Birnbaum, J., 1997. "Pervasive information systems (The Next 50 Years: Our Hopes, Our Visions, Our Plans)," *Communications of the ACM*, volume 40, number 2, pp. 40-41.

Borgman, C.L., Hirsh, S.G., and Hiller, J., 1996. "Rethinking online monitoring methods for information retrieval systems: From search product to search process," *Journal of the American Society of Information Science (ASIS)*, volume 47, number 7, pp. 568-583.

Bowker, G., Star S.L., Turner W., and Gasser L. (editors), 1996. *Social Science, Technical Systems, and Cooperative Work: Beyond the Great Divide*. Hillsdale, N.J.: Lawrence Erlbaum.

Drašković, Veselin (2002), *Kontrasti globalizacije*, Beograd-Kotor: Ekonomika i Fakultet za pomorstvo.

Hicks, John. "Revolutions' in Economics," in John Hicks, *Classics and Moderns, Collected Essays, Vol. III*. Cambridge: Harvard University Press, 1983, pp. 3-16.

Hillis, D., 1997. "A time of transition," *Communications of the ACM*, volume 40, number 2, pp. 37-39.

Jovovic, R, 2005, *The Distinct Differences Between Old and Emerging Economy*, *Montenegrin Journal of economics*, N 1

Krugman, Paul, 1991, "Increasing Returns and Economic Geography," *Journal of Political Economy*, June, 99(3), 483-499.

Nakamura, I. Leonard, (2000) "Economics and the New Economy", *Business review*, July/Avgust, p. 15-27

Measuring Growth Wrong” Federal Reserve Bank of Philadelphia Business Review, March/ April.

Nelson, Richard R. and Sidney G. Winter, 1982, *An Evolutionary Theory of Economic Change*, Cambridge: Harvard University Press.

Nelson, Richard R., 1992, “U.S. Technological Leadership: Where Did It Come From and Where Did It Go?”, in F.M. Scherer and M. Perlman, eds, *Entrepreneurship, Technological Innovation and Economic Growth: Studies in the Schumpeterian Tradition*, Ann Arbor: University of Michigan Press, 25-50.

Nelson, Richard R., 1995, “Co-evolution of Industry Structure, Technology and Supporting Institutions, and the Making of Comparative Advantage,” *International Journal of the Economics of Business*, 2(2), 171-184.

Neumann, Manfred, 1993, “Review of Entry and Market Contestability: An International Comparison,” *International Journal of Industrial Organization*, 11(4), 593-594.

Stiglitz, Joseph E., 2000, *Globalization and Its Discontents*, Penguin Book.

Olson, Mancur, 1982, *The Rise and Decline*

*of Nations: Economic Growth, Stagflation and Social Rigidities*, New Haven, CT: Yale University Press.

Pontin, J., 1998. “The post-PC world. The new era of ubiquitous computing,” *Red Herring*, number 61 (December), pp. 50-66, passim.

Rogers, E.M., 1983. *Diffusions of Innovations*. Third edition. New York: Free Press.

Star S.L. and Ruhleder K., 1996. “Steps towards an ecology of infrastructure: Design and access for large information spaces,” *Information Systems Research*, volume 7, number 1, pp. 111-134.

Schumpeter, Joseph A., 1942, *Capitalism, Socialism and Democracy*, New York: Harper and Row.

Varian, Hal, 1999, *Information Rules*, Harvard Business School Press

Williamson, Oliver, 1968, “Economies as an Antitrust Defence: The Welfare Trade-offs,” *American Economic Review*, 58(1), 18-36.

Wired editors, 1997. “Kiss your browser goodbye” *The radical future of media beyond the Web*,” *Wired*, volume 5, number 3 (March), pp. 12-23.

---