
Telecoms in Transition: Survival and Success in the Global Internet Economy

PETER GUKOR, RAUL KATZ,
LEE W. MCKNIGHT AND PAUL M. VAALER

PETER GUKOR IS ADJUNCT ASSOCIATE PROFESSOR OF INTERNATIONAL TECHNOLOGY AND COMMUNICATIONS AT THE FLETCHER SCHOOL OF LAW AND DIPLOMACY. HE IS ALSO THE ADMINISTRATOR OF THE FLETCHER SCHOOL'S TELECOMMUNICATIONS BUSINESS LIAISON PROGRAM, WHICH LINKS BUSINESS EXECUTIVES, SCIENTISTS AND POLICY-MAKERS FROM LEADING FIRMS, GOVERNMENTAL AGENCIES AND NON-GOVERNMENTAL ORGANIZATIONS TO FLETCHER PROFESSORS, PAPERS, PROGRAMS AND APPLIED RESEARCH IN THE TELECOMMUNICATIONS FIELD. A FORMER RESEARCH SCIENTIST AND EXECUTIVE AT GTE LABORATORIES, DR. GUKOR'S CURRENT TEACHING AND RESEARCH INTERESTS FOCUS ON EMERGING TELECOMMUNICATIONS TECHNOLOGIES AND THEIR COMPETITIVE IMPACT ON INDUSTRY INCUMBENTS VERSUS NEW ENTRANTS.

RAUL KATZ (SYMPOSIUM CO-CHAIR) IS VICE PRESIDENT AND PARTNER AT BOOZ ALLEN & HAMILTON'S COMMUNICATIONS, MEDIA & TECHNOLOGY GROUP IN NEW YORK. DR. KATZ'S RESEARCH AND CONSULTING PRACTICE CENTERS ON BUSINESS STRATEGY, CONSUMER AND INDUSTRIAL MARKETING AND THE MANAGEMENT OF TELECOMMUNICATIONS COMPANIES IN THE U.S., LATIN AMERICA, EUROPE AND ASIA. HE IS THE AUTHOR OF SEVERAL ARTICLES ON TELECOMMUNICATIONS AS WELL AS A BOOK, *The Information Society: An International Perspective* (PRAEGER, 1988).

LEE W. MCKNIGHT (SYMPOSIUM CO-CHAIR) IS ASSOCIATE PROFESSOR OF INTERNATIONAL COMMUNICATIONS AT THE FLETCHER SCHOOL OF LAW AND DIPLOMACY. HE IS ALSO THE DIRECTOR OF THE EDWARD R. MURROW CENTER FOR INTERNATIONAL INFORMATION & COMMUNICATIONS. PROFESSOR MCKNIGHT IS THE AUTHOR OF SEVERAL ARTICLES ON TELECOMMUNICATIONS PUBLIC POLICY ISSUES. HE IS ALSO CO-EDITOR OF *Internet Economics* (1997, MIT Press) AND CO-AUTHOR OF *The Gordian Knot* (1997, MIT Press), BOTH DEALING WITH THE ROLE OF INTERNET-BASED TECHNOLOGIES IN TRANSFORMING TELECOMMUNICATIONS PUBLIC POLICY AND BUSINESS STRATEGY.

PAUL M. VAALER (SYMPOSIUM CO-CHAIR) IS ASSISTANT PROFESSOR OF INTERNATIONAL BUSINESS & STRATEGIC MANAGEMENT AT THE FLETCHER SCHOOL OF LAW AND DIPLOMACY. HE IS ALSO DEPUTY DIRECTOR OF THE FLETCHER SCHOOL'S HITACHI CENTER FOR TECHNOLOGY & INTERNATIONAL AFFAIRS. PROFESSOR VAALER IS THE AUTHOR OF SEVERAL ARTICLES DEALING WITH INTERNATIONAL MARKET ENTRY, PRODUCT INNOVATION AND FOREIGN INVESTMENT RISK ASSESSMENT. HIS RESEARCH INTERESTS IN TELECOMMUNICATIONS FOCUS ON NEWLY PRIVATIZING TELECOMMUNICATIONS FIRMS AND THEIR FOREIGN DIRECT INVESTMENT STRATEGIES.

What are the key technological, regulatory, organizational and competitive dynamics compelling change in the way telecommunications enterprises and their stakeholders conduct business in an increasingly global and Internet-centric society? The "Telecoms in Transition" symposium held at The Fletcher School of Law and Diplomacy at Tufts University on March 11-12, 1999, provoked lively discussion and debate about the current state and future trajectory of the industry, in both the U.S. and in developed and developing countries abroad. Economist Joseph Schumpeter's phrase "creative destruction" captured the main theme of the symposium. The accelerating pace of regulatory, technical and business innovation followed by competitive imitation is destroying the old telecommunications regime and creating, in its place, a more exciting though less predictable industry. Four points consistent with the theme of creative destruction emerged from the symposium presentations and commentary:

1. THE DESTRUCTION OF TRADITIONAL COMPETITIVE POSITIONING STRATEGIES. Strategies that rely on persistently profitable, protected market positions have been replaced by hyper-competitive strategies where telecommunications firms must frequently change their market positions, partners, products and pricing to meet competitive challenges from other traditional telecommunications firms, as well as firms whose experience in transport, media, computers and/or software has given them some cost or quality advantage in providing rival products and services.

2. THE DESTRUCTION OF TRADITIONAL TECHNOLOGICAL ASSUMPTIONS. The historical dominance of analog, narrow bandwidth, fixed-line technologies designed primarily for voice telephony has been challenged, if not displaced, by digital, wide bandwidth, wireless and Internet-based technologies capable of providing voice, video and data transmission at increasingly higher speeds and decreasingly lower costs to residential consumers and businesses worldwide.

3. THE DESTRUCTION OF TRADITIONAL INDUSTRY STRUCTURES. Clearly defined entry barriers, leading players and market segments within the telecommunications industry have been replaced, perhaps permanently, by blurred and fluid industry borders, rapidly shifting inter-firm alliances, and the unrelenting introduction of cost-reducing product and process innovations.

4. THE DESTRUCTION OF TRADITIONAL REGULATORY APPROACHES. Regulatory schemes limiting competitive entry and defining the specific prices, products and services of natural monopolist incumbent telecommunications firms have given way to lighter-handed schemes that promote competitive entry for

domestic start-ups and grant greater latitude to both start-ups and incumbents to re-price existing products and services, create new offerings and reconfigure their organizations through privatization, mergers and acquisitions and strategic alliances.

These points certainly confirm the destruction of the telecommunications field as we knew it even ten years ago. The symposium provided a forum for discussion and debate on the primary challenge now facing firms, governments and other players: how to exploit the new opportunities created by such destructive dynamics. For public policymakers, the symposium underscored the importance of national regulations promoting competition and contestable (not monopolistic) market structures and the importance of harmonizing such regulatory frameworks internationally. For business executives, it highlighted the centrality of new technologies such as the Internet in driving down the price of telecommunications and in allowing new entrants to circumvent traditional channels for distributing telecommunications products and services. For everyone, the symposium revealed how quickly the global telecommunications industry landscape had changed and, indeed, still is changing.

INTRODUCTION: THE DESTRUCTION OF OLD REGIMES IN THE UNITED STATES AND ABROAD

By almost any measure, telecommunications have changed dramatically over the last two decades. Consider the recent U.S. experience with telecommunications. At the beginning of the 1980s, the American Telephone and Telegraph Company (AT&T), along with the 22 local Bell companies it owned, dominated U.S. telecommunications. AT&T and the Bell companies sold local, domestic and international long-distance services as well as customer premise telephone hardware, providing both private and business customers with a single point of contact for all of their telecommunications requirements. AT&T and its Bell system formed a regulated, end-to-end monopoly serving more than 95 percent of all Americans. Demand for telecommunications services and products grew modestly, predictably and profitably.¹

At the end of the 1990s, however, the industry is quite different. Legal challenges and regulatory change in the 1980s divested AT&T of its twenty-two Bell operating companies (BOCs), and the 1996 Telecommunications Act has allowed the former BOCs to compete with AT&T for long-distance customers, after meeting certain conditions. The advent of fiber-optics, wireless and Internet-based voice, data and video telecommunications technology has opened the competition to players with previous industry experience in such diverse fields as pipeline construction and management, cable TV, film and computer software. Demand for telecommunications services has exploded, market share

has fragmented among AT&T's new competitors, industry productivity has shot up, industry prices have dropped and customer product and service offerings have expanded.²

AT&T now shares the long-distance markets with MCI, Sprint and hundreds of re-sellers and the former BOCs now share local markets with other local service providers. Through restructuring, mergers and acquisitions the number of BOCs has shrunk from 22 to only four. Their partners in Internet services, wireless and cable come from both the U.S. and from abroad. Yet amidst this competitive hurly-burly, AT&T has not disappeared. Indeed, through investments in firms like BBN Planet, wireless firms like McCaw Cellular and cable companies like Media One and TCI, AT&T may yet regain its preeminent position in the industry. But AT&T's strategy, as well as the strategies of other U.S. telecommunications competitors, is far from assured of success. Old telecommunications regimes have been destroyed with rapid speed replaced over the last two decades by regimes based on far different regulatory, technological, organizational and competitive assumptions.³

Looking beyond the United States, the changes are perhaps even more profound. Over the last two decades, many developed countries in Europe and Asia, and many developing countries around the world, have witnessed the transformation of their own state-owned and state-run telecommunications operations: France Telecom, Telstra (Australia), Telecom Argentina and South Africa Telecom, for example, have evolved in a few years from government departments into corporatized state-owned enterprises, public-private joint-ventures or fully privatized and deregulated firms with individual and institutional shareholders from around the world. The end of old telecommunications regimes outside the U.S. has implications far beyond the competitive strategies of incumbents and new entrants. Privatization and deregulation represent a fundamental redefinition of the role of the state in guiding economic development and furthering social justice.⁴

The upheaval we are now observing is not unexpected. More than half a century ago, economist Joseph Schumpeter argued that processes intrinsic to capitalist society engendered a "creative destruction" whereby innovations destroy existing technologies and methods of production, only to be assailed themselves by imitative rival products with newer and more efficient configurations.⁵ In the telecommunications and information industries alone, we have seen the displacement of the telegraph by the telephone; the radio by black-and-white and color television; mechanical calculators, typewriters and other office machines by computers, and so on. But such orderly, incremental transitions from older to newer technologies do not describe what is occurring in today's telecommunications field, where the rate of transition away from older technologies is accelerating, and the transition trajectories are still uncertain.

**COMPETITIVE DYNAMICS IN THE INTERNET AGE:
INTERNET PROTOCOL TECHNOLOGY CHALLENGES
TRADITIONAL SWITCHED-CIRCUIT TECHNOLOGY**

Internet-related telecommunications technologies are at once attractive and disconcerting to traditional telecommunications firms. The future promise of faster, cheaper and more interconnected networks is attractive. The present reality—an installed base of traditional circuit-switched technology, the prospect of substantial upgrade costs and the fear of new entrants already familiar with Internet-based technologies — is worrisome, however. Internet-based technologies undermine traditional technological approaches and by implication, force a rethinking of many competitive dynamics in the industry.

Commentary on these technology and strategy issues from the outgoing president of GTE Laboratories, David Decker, suggested that industry incumbents were in for great difficulty. He argued that legacy telecommunications firms in the U.S. and overseas are saddled with local networks that rely on old switching technologies that simply cannot handle current, let alone near-future, service demands. Internet Protocol (IP) switching technology, for example, has emerged as a low-cost alternative to traditional approaches. Introduced in 1996 by Ipsilon Networks, Inc., IP switching works with Transmission Control Protocol/Internet Protocol or “TCP/IP,” a set of protocols used for both the Internet and telecommunications between multiple networks within an organization. It is faster than router technologies because it does not have to “sniff” messages to identify the associated protocol. Faster, cheaper Internet-based switching technologies foretell shrinking margins and reduced market share for incumbents relying on yesterday’s technologies, with local telecommunications carriers perhaps the most disadvantaged. In Decker’s view, a substantial upgrade of network assets and workers is essential. The costs of such an upgrade, however, will almost certainly mandate substantial downsizing and more mergers. Even with such drastic action, Decker believes many local telecommunications carriers may not succeed in the new market being created by Internet-based technologies. Indeed, his final and rather ominous prediction is the gradual decline and replacement of legacy firms by a new generation of technologically adept carriers.

Randall Battat of Motorola also predicted the continuation of fast-paced technological change, offering several alternative technological scenarios. In one scenario, the traditional telephone switches and their legacy networks are displaced by digital, IP and packet switched networks without compromising perceived quality. A similar scenario might consist of a single cable line providing 500 TV channels, ten phone lines and PCS connection delivering multiple services over a wireless network. Battat’s scenarios do not describe some remote future; they are already being worked out in many cities across the U.S. In these

new technological regimes value is migrating from the older network core to the cutting edge of Internet-based technologies.

The CEO of Zephyr Communications, Terry McGarty, offered further insight into the nature of IP-based telecommunications networks and strategy. These emerging technologies promote convergence among formerly proprietary communications networks. Indeed, the use of IP and the ability to integrate with existing networks allows for the full global integration of multimedia, voice, data and other similar services-based telecommunications facilities. It pushes the intelligence to the edge of the network and establishes a minimalist approach to network design and execution. The IP-based system creates an essentially borderless open market, dramatically changing how transactions and even tariffs are viewed. Firms can choose the country in which a transaction will occur, under whose tax regimes and with what protections for consumers. Promoting IP-based networks for Next Generation telecommunications will also broaden and deepen increasingly global markets for related goods and services that can be sold over the Internet.⁶

The ability of IP technology to utilize both local and long-distance networks in the most efficient manner was also emphasized by Andrew Morley of Level 3 Communications, who spoke of a virtuous cycle based on the silicon economy. In this cycle, improved production techniques lead to lower unit costs, which in turn lead to higher demand and new applications. Greater utilization of cost- and innovative-capacity then leads to lower unit costs. And the cycle continues. Morley referred to Moore's Law, which predicts that the price-to-performance attributes of silicon chips will double every 18 to 24 months. Perhaps the same logic will describe the change in the price-to-performance attributes of many Internet-based telecommunications technologies. If so, then only a relentless commitment to innovation will keep telecommunications firms ahead of the fast-moving technology curve. Those who entrench their technology positions for the long term will soon be left behind.

Takashi Hatchoji of Hitachi Ltd. (Japan) elaborated on the changes noted by McGarty and Morley, drawing several general implications for international business. Hatchoji underscored the importance of the Internet for fostering the globalization of not only the telecommunications industry, but many other service-related fields such as retailing and professional services in law, accounting and consulting. If Internet-based telecommunications are able to pool once separate local or national markets into a globalizing whole, then they might also engender the re-segmentation of markets based on non-geographical dimensions. Hatchoji predicted the creation of super-niche markets, as Internet-based communications and commerce characteristics permit firms to identify and serve increasingly small, precisely defined consumer groups. This could mean, for example, the emergence of a best-in-class firm specializing in the sale of a specific

type of classical music or vintage film. Internet-based provision of such products would facilitate worldwide service to specific customer niches. Hatchoji noted, however, that such globalized niche service over the Internet still requires substantial development of supporting infrastructure. Standards governing the encryption of data required for the secure purchase of classical music or vintage films, for instance, are still in an emergent phase. Internet-based commerce, like Internet-based telecommunications, remains more of a future prospect than a present reality. The future is approaching quickly, however, and firms need to prepare now.

BANDWIDTH SURPLUS OR SHORTAGE? ALTERNATIVE FUTURE SCENARIOS FOR TELECOMMUNICATIONS NETWORKS

Both in the U.S. and abroad, alternative modes for transporting voice, data and video are displacing traditional modes, and are vying to become the dominant network standards in the near term. Bill Griffin of GTE Laboratories framed the majority of the debate on networks by focusing on the U.S. experience with networks, bandwidth and the development of Internet-based telecommunications services. He predicted the partitioning of the Internet into a number of dedicated, specialized IP networks—a view embraced by a number of other speakers. Griffin also foresaw the development of a significant over-capacity in bandwidth due to the extensive network build-out currently under way. The rush to build competing networks among Internet firms would be the consumer's boon, and perhaps, the builder's nightmare. Griffin posed an important question for the other panelists to consider: how will firms manage the coming era of bandwidth over-capacity?

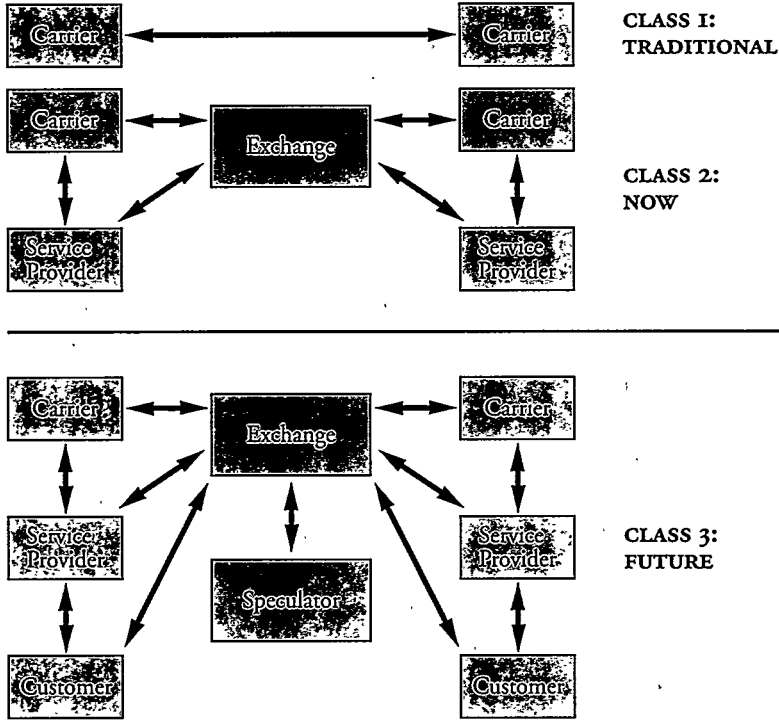
Several participants provided at least partial answers. Randall Battat from Motorola Corporation's Internet and Networking Group challenged Griffin's over-capacity premise, arguing that, due to technology, bandwidth over-capacity is an unlikely future scenario in the U.S. or anywhere else. The chief agents of bandwidth are computers rather than humans. With information-processing capabilities far outstripping human agents, networked computers will quickly fill whatever bandwidth capacity becomes available. The price of that increased bandwidth will almost surely continue to fall, but markets for bandwidth will continue to clear quickly and without prolonged surplus or shortage of capacity.

Steven Chrust of SGC Advisory Services sounded a note of caution regarding the networks debate. As one of the founders of the Internet telephony firm Winstar Communications, Chrust brought both consulting and entrepreneurial perspectives to the discussion. He argued that North American regulators do not favor many new technologies designed to increase bandwidth on networks serving the local loop, the final network segment connecting telecommunications

customers to the local central office. Local phone and cable companies were slower to adopt broad-band technologies than long-distance carriers, for example. The result could be local loop bandwidth shortages, slow connections, congested networks and frustrated Internet telecommunications due to network bottlenecks encountered just before information reaches the local customer. Chrust believes the success of networked telecommunications over the Internet may require regulatory intervention in the local loop similar to what occurred in the 1980s in long-distance. This would involve nurturing entry of technologically advanced network providers in the local loop in order to protect them from local loop incumbents. In the U.S., this could mean protecting small telecommunications start-ups from the former BOCs.

Bill Lehr of Columbia University and MIT addressed Bill Griffin's questions about bandwidth from economic and institutional perspectives. Drawing on his research with Fletcher School Professor and Symposium Co-Chair Lee McKnight, Lehr outlined current and prospective configurations of markets for bandwidth.⁷ As shown in Exhibit 1, he noted that markets are evolving from rather simple, direct transfers of network capacity between long-distance carriers, for example, to increasingly complex market transactions involving carriers, Internet service providers and bandwidth speculators buying and selling bandwidth through formal exchanges. Existing markets for leased-line bandwidth in the U.S., UK and elsewhere may provide a model for the orderly development of bandwidth markets on a broader basis.

EXHIBIT I
A BANDWIDTH MARKET TAXONOMY



Source: Lehr and McKnight, 1999

Perhaps the bandwidth market structures described by Lehr and McKnight provide a way to reconcile the differing positions of Griffin, Battat, Chrust and others. Given the increasing dependence of telecommunications networks on bandwidth to handle exploding traffic in voice, data and video, it is imperative that both regulators and competitors take an active role in the development of orderly markets for bandwidth and the technologies they enable. Otherwise, both bandwidth gluts and shortages can represent a significant near-term risk.

TWILIGHT OF THE TELECOMMUNICATIONS AGENCY, DAWN OF THE PRIVATIZED TELECOMMUNICATIONS FIRM AND HIGH-NOON FOR INTERNATIONAL ALLIANCES IN TELECOMMUNICATIONS

Schumpeter's concept of creative destruction may also apply to organizational innovations in telecommunications. In many countries around the world, the post and telecommunications ministries have given way to the more efficient state-owned telecommunications corporations, which, in turn, have given way to the public-private joint venture and the fully privatized telecommunications firm. The heavily regulated firm with protected market segments has yielded to a newer, more lightly regulated enterprise serving market open to a range of new entrants. The integrated end-to-end telecommunications conglomerate has evolved into a network of specialist firms allied by contracts, shared equity holdings and co-specialized technology investments.

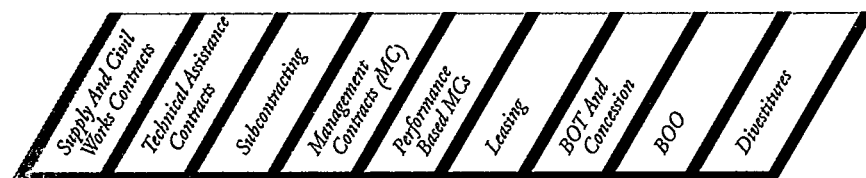
There was a consensus among symposium attendees that the days of the telecommunications enterprise as an explicit government agency are coming to an end, as prevailing political ideologies mandate less government control over telecommunications and fiscal realities compel governments to sell off state telecommunications assets. Research presented by Walter Molano, the Director of Economic and Financial Research for BCP Securities, confirmed this overall view. However, Molano also pointed out that in certain cases, well entrenched special interest groups, poorly developed technological infrastructure or national political traditions contrary to market-oriented values could undermine telecommunications privatization, at least in the short run.⁸

While symposium participants could agree on the denouement of explicit political control over telecommunications, they could not reach consensus on what was replacing it in new regimes around the world. Fletcher School Professor and Symposium Co-Chair Paul Vaaler framed the debate with a summary of current terms and trends in telecommunications privatization. Vaaler emphasized that the shift from a state-run telecommunications department to a firm under the effective control of private shareholders is rarely completed in a single transaction. As Exhibit 2 shows, privatization is better understood as a spectrum of policy choices. At one end, choices result in few property rights shifting from public to private hands—for instance, the use of private management contracts to administer publicly owned telecommunications services. At the other end of the spectrum, more ambitious policies of privatization are pursued—such as partial or complete enterprise divestiture to private owners. In practice, telecommunications firms frequently pass through several privatization stages on the way to complete divestiture.⁹

EXHIBIT 2

TELECOMMUNICATIONS PRIVATIZATION:
A SPECTRUM OF POLICY CHOICES

CHOICES



PUBLIC ◀ Responsibility for Investments and Risk Allocation ▶ PRIVATE
 O ◀ Duration (Years) of Private Involvement ▶ X

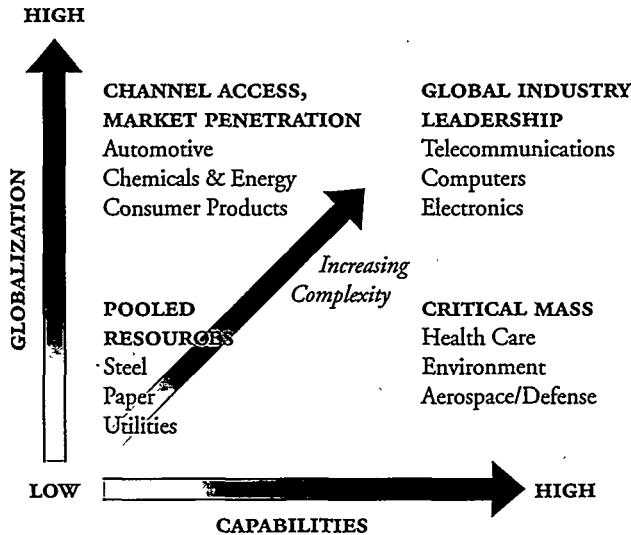
Australia's former telecommunications monopoly, Telstra, exemplifies this transformational process. Beginning in the 1990s as a state-run agency of the federal government, Telstra has since undergone substantial re-organization to create firm-like structures and incentives systems. An initial public offering in 1998 furthered its transformation into a market-oriented telecommunications firm. But Telstra's CEO, Frank Blount, felt that focus on the recent share offering missed other important factors transforming the firm. Telstra's shift from a bureaucratic, state-run monopoly to a market oriented firm was also prodded substantially by the introduction of new technologies. For example, new digital technologies enhanced connectivity among voice, data and video operations; new switching technologies raised productivity; and new cable and Internet-based technologies led to profitable new product and service niches. Wealth created by these new technologies not only improved the bottom line, but also helped pay for substantial training and restructuring costs necessary to transform Telstra's basic operations and culture.

Telecom Argentina CEO, Juan Carlos Masjoan, echoed Blount's points about the crucial link between technological and organizational change in privatizing telecommunications firms. Masjoan highlighted the important role that migration from primary reliance on fixed-line to wireless technologies for voice telephony played in Telecom Argentina's transformation over the 1990s. Both the Miniphone wireless venture in Buenos Aires and the Personal wireless venture in northern Argentina provided the firm with valuable experience in commercializing new technologies in fast-expanding markets. The company's revenues from wireless have jumped from \$271 million in 1997 to more than \$530 million in 1998, which provides another example of technological innovation aiding both the financial performance and strategic transformation of the privatizing telecommunications enterprise.

Discussion of privatization also led to interesting disagreements between Masjoan and Blount. Blount noted that a privatizing Telstra—as of spring of 1999, a majority of shares were still held by the state—remains obligated to act like the old regulated monopoly in certain instances, such as being the company of “last resort.” Unlike many of its rivals in the industry, Telstra is still required to provide basic telecommunications service to all Australian firms and households, regardless of their geographic locale or the cost involved. Blount asserted that such lingering obligations should be balanced with prudent re-regulation of price and service in geographically remote locales. In contrast, Masjoan expressed reluctance to support any re-regulation of markets currently served by Telecom Argentina, suggesting the best regulatory policy was one of non-interference in Telecom Argentina’s dealings, whether with domestic rival Telefonica or with foreign rivals seeking stakes in emerging wireless markets.

Many symposium participants felt that new telecommunications regimes necessitated the emergence of new organizational forms. Competitive threats and opportunities in the new regimes often arise too quickly for any individual political agency, state-owned enterprise or privatized firm to respond. Whereas no single telecommunications organization could handle the challenges of increasingly hypercompetitive markets, perhaps an international alliance of telecommunications firms might be able to do so. Professor Peter Pekar of the London Business School and Booz•Allen & Hamilton observed that the telecommunications industry worldwide is increasingly characterized by a web of strategic alliances. He cited Global One, Concert and Unisource as three European alliance structures designed to leverage collective economies of scale in research and development, distribution and marketing in order to complement the individual firms’ competencies. As Exhibit 3 illustrates, telecommunications appears well-suited to the alliance model of organization, given the industry’s rate of globalization and the relative ease with which capabilities can be shared among alliance members.¹⁰

EXHIBIT 3
PRIMARY ALLIANCE DRIVERS:
POSITIONING TELECOMMUNICATIONS



Chief Technology Officer of Hitachi America Kenji Takeda offered some real-life examples of the benefits and risks of such strategic alliances, based on his company's alliance with Microsoft in the area of television set-top box development. Microsoft's expertise is critical to the success of the research program with Hitachi. The antitrust challenges to Microsoft's hegemony in the U.S. Internet browser market, however, could presage challenges in other emerging technology markets like set-top boxes, with resulting implications for Hitachi's investment. Uncertainties related to inter-firm alliances in telecommunications will complicate long-term forecasts and planning for alliance members. As Symposium Co-Chair Raul Katz of Booz•Allen & Hamilton noted, what we call long term may be no more than two or three years away.

**NEW INDUSTRY STRUCTURES, REGULATORY
APPROACHES AND SOCIAL FALLOUT**

Understanding the interplay of public policy and business strategy in telecommunications seems more important now than at perhaps any other time in the industry's history. Privatization, deregulation and technological innovation across the globe are compelling substantial changes in the public rules governing the competitive search for private profit among telecommunications enterprises. Several symposium discussions centered on the nature of this change, with Raul Katz of

Booz•Allen & Hamilton and Robert Pepper, Chief of the U.S. Federal Communications Commission Office of Plans and Policy (FCC), helping to frame the debate.

Katz reminded the group that the old regulatory regimes assumed a clear separation between local and long-distance telephone, broadcasting, cable and equipment industries with one or a few favored firms dominating the provision of such products or services to a geographic locale. In contrast, the basic premise of regulatory initiatives such as the U.S. Telecommunications Act of 1996 is to break down barriers between these segments. As Exhibit 4 shows, the emerging “DigiSpace” super-industry pools firms to create more competition among the incumbents and new entrants serving firms and households.

EXHIBIT 4
TRADITIONAL TELECOMMUNICATIONS
INDUSTRY SEGMENTS

CABLE SYSTEM OPERATORS Time-Warner MediaOne Williams	LONG-DISTANCE CARRIERS AT&T MCI/WorldCom Sprint
BROADCASTERS CBS, Fox ABC/Disney NBC	LOCAL CARRIERS Bell Atlantic RCN
	TELCO EQUIPMENT SUPPLIERS Lucent, Cisco Motorola

Telecommunications Industry Segments formerly separated by Regulation, Technology and History...

...are pooled into a single Super-Industry – call it ‘DigiSpace’ – with few Intra-Industry Barriers, with new entrants, and with more consumer choice in products and services.

DIGISPACE

Cisco	MCI/WorldCom	NBC	Bell Atlantic
Motorola	RCN	Sprint	MediaOne
Time-Warner	AT&T	Williams	Fox
			Lucent

Pepper spoke about this new regulatory regime and industry structure, counseling patience to those who criticize the U.S. FCC and others for the seemingly slow pace at which the new telecommunications legislation is being implemented. He argued that the Telecommunications Act may represent the greatest civil engineering project in history, since it seeks nothing less than the restructuring of a

previously segmented, comprehensively regulated industry. Within this context, the deliberate pace of implementation is cause for commendation, not for criticism. Indeed, some of the Act's aims may have already been achieved. For example, competition in the U.S. local service markets is increasing, though as Pepper noted, the fact that local business markets have benefited from increased local competition, while local residential markets have not, is a legitimate concern. It took more than a decade to bring AT&T's long-distance market share down from nearly 100 percent in the early 1980s to below 50 percent today. Perhaps incumbents in local residential markets will assume a similar pace of gradual withdrawal.

Pepper also discussed some of the underlying problems of regulation in the current telecommunications industry environment, admitting that regulators in the U.S. and abroad are often reluctant to relinquish power that dates back to an age of natural monopolies, segmented industries and regulatory protection. The current social goal is to reduce regulatory constraints on industry incumbents, encourage entry by non-traditional firms, foster the development of emerging technologies and increase competition and consumer choice. This objective cannot be achieved within a regulatory framework and mindset tailored to old regimes.

The situation is further complicated by the lack of regulation of the Internet-related technologies that are driving many of today's exciting telecommunications developments. One such innovation is the Transmission Control Protocol/Internet Protocol. Another innovation is packet switching, which allows telecommunications over the Internet to be broken down into packets of information, routed separately to the end destination and then reassembled at the terminus. The Telecommunications Act of 1996 says nothing about such technologies. In fact, it only mentions the Internet once. Perhaps this oversight will necessitate another telecommunications act sooner than was anticipated three years ago.

Several panelists debated Pepper's points about regulatory impact on telecommunications competition, including Jill Hills of the University of Westminster in London, who underscored the social dimension of regulatory policy from a European perspective. In 1998, the European Commission opened local telecommunications service markets throughout the European Union to full competition. Market forces are expected to spur innovation and productivity, both in the telecommunications industry and across related industries. They are also expected to foster capital creation, new business start-ups and employment across European labor markets, some of which have stubbornly high unemployment rates. However, as Hills noted, the European regulatory initiative also implies the rollback of many industry incumbents from dominant market positions. Their rollback, sometimes prodded by regulation, has curtailed many incumbent capital expenditure projects, led to the shutdown of less profitable divisions and resulted in job losses.¹¹

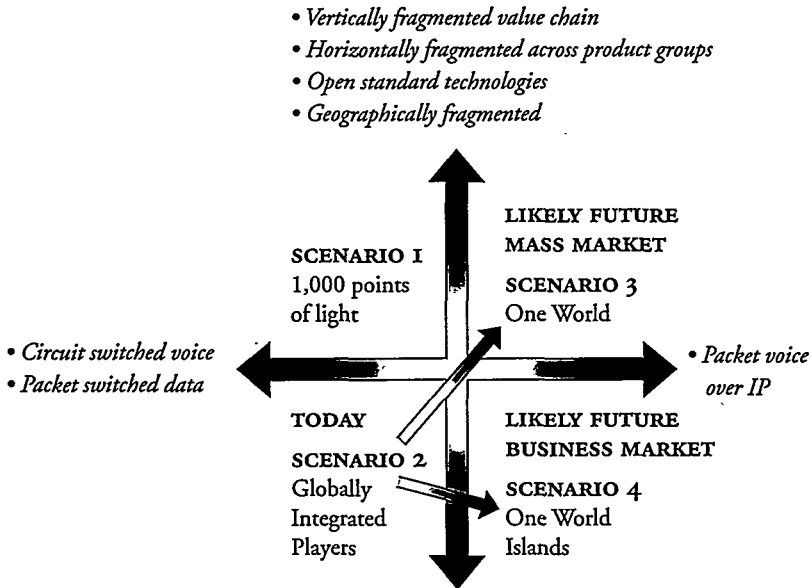
A process of creative destruction in European telecommunications might work more smoothly if capital, technology and, most importantly, people could move quickly from shrinking incumbents to growing entrants. But this transition has been slower than it has been in the U.S., and the creation of new regional institutions like an Euro-FCC to assess and manage the transition is unlikely to help much in the near term. Hills cautioned that regulatory reform in telecommunications would more likely destroy old jobs before creating new ones, or create new ones only in distant geographic locales. If labor mobility is low, as is the case throughout much of Europe and in many emerging market countries, then regulatory reform is indeed a venture meriting careful, deliberate formulation and implementation.

What do these regulatory, technological and social dynamics mean for the future structure of the telecommunications industry? Offering a business strategy perspective on this question, Booz•Allen & Hamilton's Martin Hyman described alternative future scenarios. He identified two factors likely to reshape the future industry structure. The first being the proliferation of increasingly open, interoperable standards in voice, data and video telecommunications technologies. Open standards are expected to promote greater innovation in various sub-fields of telecommunications and to foster more frequent entry and exit of firms competing to provide these technologies. A second factor driving change is lower costs which follow from keener competition and more frequent technology upgrades by both industry incumbents and new entrants.

Based on these drivers, Hyman outlined in Exhibit 5 four alternative future scenarios for industry executives to consider, two of which warrant active preparation. The first two scenarios assume a somewhat slower pace of change in the upgrade and convergence of telecommunications technologies. Scenario 2, for example, assumes that current voice and data switching technologies will continue to develop along distinct trajectories into the near future, in which case the dominant telecommunications firms in the industry would likely remain both vertically and horizontally integrated. The second scenario assumes that globally integrated players will continue to emphasize proprietary telecommunications technologies and further the process of consolidating markets in compact geographic areas. Within this scenario, the industry structure in the U.S. and abroad would remain fairly stable in the near term.

EXHIBIT 5

ALTERNATIVE INDUSTRY FUTURES: THE MOVE “TO THE RIGHT”



INDUSTRY DRIVERS

1. Open standards promoting
 - rapid innovation
 - frequent competitive entry

2. Lower costs promoting
 - keener rivalry on pricing
 - faster upgrade of capital base and technology

EXAMPLE

- Sprint and SBC announcement of convergent networks

However, Internet-based switches and convergence in standards for voice, data and video seem to be shifting the technological paradigm of telecommunications toward Scenarios 3 and 4. Scenario 4’s “I-world islands” describes the business that market firms in this industry will seek to serve. New Internet-based technologies will enable modernized, integrated telecommunications giants to provide seamless service to firms with business communications needs across cities, countries and continents. Scenario 3’s “I-world” suggests a similar technology drift toward convergence for the mass consumer market. Organizationally, however, their future needs could be met by a network of smaller independent telecommunications firms linked by openly available, interoperable, Internet-based technologies and service plans.

Hyman’s predictions about future industry structures and scenarios provoked many questions. For instance, can differences in the future organization of

mass consumer and business markets persist for long? Wouldn't the integrated giants serving business customers eventually clash with the networks of smaller, more flexible telecommunications firms serving the mass market? Perhaps the structures of the worldwide telecommunications industry will remain as fluid and mutable in the future as they appear to be today. If so, business executives will need to continually question, and probably revise, their own expectations about future industry structures.¹²

CREATIVE DESTRUCTION OR JUST DESTRUCTION?

Profound technological and organizational changes in telecommunications have contributed to substantial productivity improvements not only within the industry, but throughout the larger global economy, as the benefits of improved telecommunications spill over into other industries. Of course, this widespread impact is not wholly positive—the increased speed, flexibility and efficiency of telecommunications has proven traumatic to some individuals and firms and the social structure in which they operate. Faster, more flexible and more efficient technologies and organization generate demand for faster, more flexible and more efficient responses to customers, suppliers and other firm stakeholders. Only a few years ago, telecommunications workers enjoyed the benefits of job security and advancement in an industry essentially insulated from the competitive forces of the private sector. Today, they enjoy few—if any—such benefits and the road ahead contains lifelong learning and retraining. Incumbents and new entrants alike are unlikely to curtail the reorganizations, downsizings, mergers and acquisitions, strategic alliances and other transactions calculated to improve shareholder value, even at the expense of firm employment levels. The destruction of the old regimes in telecommunications implies the revision or even destruction of longstanding social contracts between telecommunications firms and many of their stakeholders.¹³

The progression of new organizational forms might be justified by the process of creative destruction and the search for greater efficiency. But efficiency for whom? Do the benefits of the destruction of old organizational forms extend to the greater public, or are they largely confined to specific interest groups such as shareholders in former state-owned enterprises, new entrants in the specific market segments and business consumers of new telecommunications services? Schumpeter said much about the impetus for innovation, but less about how its benefits can be distributed or how society should deal with the social consequences. Regardless of the nature of the destruction, industry players must position and reposition themselves and their organizations for survival in a rapidly changing environment. The symposium speakers and participants placed the transition in a human context, with constant reminders that the careers of real

people with real jobs are at stake. Yet given the unprecedented pace and magnitude of change in the telecommunications industry, it is essentially impossible for any executive, policymaker or academic to clearly distinguish creative destruction from just destruction. At the end of the symposium its participants had a deeper understanding of the competitive changes and dynamics in the industry yet there remained perhaps as many questions as answers about how to fulfill societal obligations in the brave new world of global telecommunications. ■

NOTES

¹ See, for instance, A. M. Knoll "Introduction to Telephones and Telephone Systems," Chapter 12, Artech House, 1999.

² J. Shaw, "Telecommunications Deregulation," Chapters 1 and 2, Artech House, 1998.

³ "Straight Talk" AT&T 1998 Annual Report, March 25, 1999.

⁴ "A Connected World," *The Economist*, Sept 13, 1997.

⁵ J.A. Schumpeter, "Capitalism, Socialism and Democracy," Harper and Row, 1942.

⁶ T. McGarty "The Internet Protocol and Global Telecommunications Transformation," paper presentation at March 11-12, 1999 Symposium: "Creative Destruction or Just Destruction," The Fletcher School of Law and Diplomacy, Tufts University, Medford, MA.

⁷ W. Lehr and L. McKnight "Internet Bandwidth Markets," paper presentation at March 11-12, 1999 Symposium: "Creative Destruction or Just Destruction," The Fletcher School of Law and Diplomacy, Tufts University, Medford, MA.

⁸ Molano "The Logic of Privatization," Greenwood Press, 1997.

⁹ P. Vaaler "Enterprise Privatization and Foreign Direct Investment in Telecommunications," paper presentation at March 11-12, 1999 Symposium: "Creative Destruction or Just Destruction," The Fletcher School of Law and Diplomacy, Tufts University, Medford, MA.

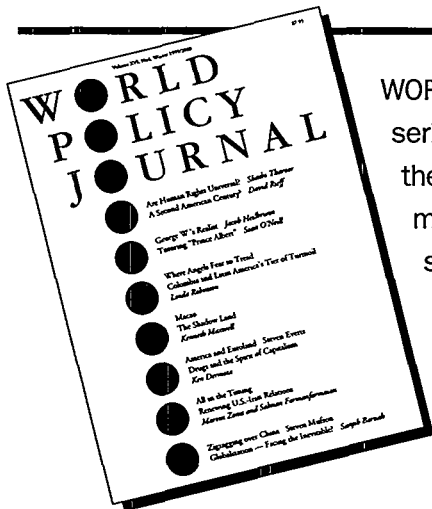
¹⁰ P. Pekar "Smart Alliances: A Practical Guide to Repeatable Success," Jossey-Bass, 1998.

¹¹ M. Hyman "Telecoms in Transition," paper presentation at March 11-12, 1999 Symposium: "Creative Destruction or Just Destruction," The Fletcher School of Law and Diplomacy, Tufts University, Medford, MA.

¹² M. Hyman "Telecoms in Transition," paper presentation at March 11-12, 1999 Symposium: "Creative Destruction or Just Destruction," The Fletcher School of Law and Diplomacy, Tufts University, Medford, MA.

¹³ W. R. Neuman, L. McKnight, R. Solomon, "The Gordian Knot," Chapter 4. The MIT Press, 1997 (8), Molano "The Logic of Privatization," Greenwood Press, 1997.

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