

Information Technology & The Transnational Ruling Class

By Jerry Harris
Chicago Third Wave Study Group

Information technology (IT) has laid the foundation for global capitalism. This revolution in the means of production has created a new technological economic sector, evolved industrial manufacturing, and transformed financial markets. It is the electronic skeleton through which globalization works, connecting every performing part of the world economy. The power and reach of every transnational depends on products from IT companies, and IT corporate leaders have become a key sector within the global capitalist class. (1)



Diego Rivera Mural in Detroit

Information capitalism has built the structure of the new economy through two revolutionary methods in the production of information and knowledge. The convergence of telecommunications and computers has made possible a global command and control structure for transnationals, building a global assembly line for manufacturing. Secondly, the same information systems have established 24-hour global financial markets that function in real-time, leading to world capital integration. In addition, information technologies are thoroughly imbedded in the tools and productive processes of the traditional industrial sector, as well as consumer products, services, media and entertainment.

The most important part of the IT sector are those corporations which manufacture the products that are building the global structure of information processing and enable organizational changes in finance and industry. Those corporations that either produce these goods, or have most thoroughly integrated them into their productive processes tend to be the core of the new transnational power base. Therefore IT has built new structures and tools (such as the Internet, computer hardware and software); these tools in turn have caused old structures to adopt and change (such as services and industrial production); have made possible the creation of new products and economic activity (such as wireless phones and e-commerce); and have evolved the structure of non-physical commodities with high information content (such as finance and entertainment). (2)

Globalization has become the defining economic and political process of our present era. A new analysis of the capitalist class is necessary to better understand this developing world system and its contradictions. The attempt here is to trace the emergence of a new dominant capitalist sector, define its characteristics and analyze its economic impact.

Four Categories Of IT

IT breaks down into four basic categories. The first to develop were hardware corporations, many starting in the 1960s and 1970s. These companies produce things like chips, boards, boxes, servers, switches, and routers that build the basic architecture and infrastructure of the new systems. Some of the most important corporations are Intel, Cisco, Hewlett Packard, Sun Microsystems, Compaq and Dell.

The next wave of corporations began by writing software applications for everything from games to business systems; they also developed networks and operating systems. Corporate giants such as Intuit, Microsoft, Oracle and Novell dominate this category. Although their stock prices may go up and down, these corporations are firmly rooted in producing value and profits. For example, a copy of Microsoft Office 2000 retails for \$349, but only cost about \$20 to manufacture. With an overall profit rate of 39% on \$20 billion in sales Microsoft is the envy of the corporate world. Those profits are the reality behind its stock price. (3)

Most recently Internet and dot-com companies have appeared. These companies have attracted a lot of attention and capital, helping to fuel speculation on technology stocks. Certainly this category will undergo consolidation, but such innovators as AOL, Amazon, E-Bay and Yahoo have developed widely used and expanding services. An important group of actors are also venture capitalists who have specialized in IT start-ups.

Fourth are the corporations offering Internet services, cable and broadband connections, satellite hook-ups, wireless communication and phone lines. Although emerging out of the industrial age the telecommunications industry is now technologically and financially linked to IT. Perhaps the best indication of this convergence was the 1997 Telecommunications Act that created a new regulatory structure that sanctioned and recognized the rapidly merging telecommunications, computer and cable industries. Among these corporations are both old and new names such as A.T.T., Global Crossings, National Fiber Network, Teledesic, Cable and Wireless, Alcatel, Deutsche Telekom and Nippon T&T.

Lastly, electronic corporations have a substantial investment in IT manufacturing. While these companies usually have their origins in the industrial era and a wide array of commodities, a significant number now produce a majority of their products in the above four IT categories. These include semi-conductors, fiber optics, software, wireless phones and numerous other products that serve the computer and telecommunications industry. Some of these transnationals are Motorola, Qualcomm, Nokia, Lucent, Samsung, Royal Philips, and Toshiba.

IT And Global Corporations

In 1999 among the largest Fortune 500 transnationals, 37% were based in the U.S., 34% were from Europe, and 20% from Japan. Among third world countries South Korea lists 9 corporations, China 6, Brazil 3, Taiwan 2, and one each for India, Malaysia, Mexico, and India. Among these transnationals, the IT sector is the most profitable. The following chart groups together the largest global economic sectors judged by revenues and profits to show the relative weight of information technology. The chart shows sector, (under which are the industrial groups listed by Fortune), the number of transnationals in each sector, followed by revenues and profits. (4) Neither the Labor Department, Fortune nor other economic observers have established an overarching category to analyze IT's expansive influence. The following two charts attempt to establish such a criteria.

Major Transnationals	Size	Revenues (in Millions)	Profits (in Millions)
---------------------------------	-------------	-----------------------------------	----------------------------------

IT Sector: Services and Software Office Equipment Electronics Telecommunications	47 Corporations US – 23 Euro –12 Japan – 9 Other – 3	\$1,339,671	\$89,885
Finance Sector: Banks Diversified Financials	70 Corporations: US - 16 Euro - 34 Japan – 9 Other – 11	\$1,436,230	\$64,215
Transportation Sector: Aerospace Airlines Motor Vehicles & Part Railroad Rubber	53 Corporations: US – 21 Euro- 18 Japan-14	\$1,560,252	\$60,985
Insurance Sector: Life and Health (Mutuals) Life and Health (Stocks) Property and Casualty (Mutuals) Property and Casualty (Stocks)	54 Corporations: US – 17 Euro –19 Japan-12 Other- 6	\$1,292,977	\$43,774
Energy Sector: Energy Mining, Crude-Oil Production Petroleum Refining Utilities	54 Corporations: US- 23 Euro-12 Japan-8 Other-11	\$1,249,113	\$42,752

Fortune's 500 listing of the largest U.S. corporations gives a more finely tuned arrangement of industrial groups than its list of the Global 500. In the U.S. finance ranked number one in profits,

while the IT sector was second in profits but number one in revenues. By examining IT's strength globally and in the U.S., its' clear this sector has emerged as a key power in world capitalism. (7)

Major US Firms	Size	Revenue (in Millions)	Profits (in Millions)
Finance Sector: Banks Diversified Financials Securities Saving Institutions	78 Corporations	\$838,637	\$111,892
IT Sector: Office Equipment Data Services Software Computer Peripherals Electronics (8) Networks Telecommunications Semiconductors	94 Corporations	\$891,884	\$86,105
Energy Sector: Energy Mining Crude-Oil Production Petroleum Refining Pipelines Gas and Electric	104 Corporations	\$829,025	\$38,638
Transportation Sector: Aerospace Airlines Auto Retailing and Services Motor Vehicles Railroads Transportation Equipment Trucking	74 Corporations	\$881,837	\$36,681

Capital Investments In IT Stocks

There tends to be two economic sectors in the globalized economy best represented by the “new economy:” corporations listed on the Nasdaq and the “old economy” industries of the DOW. In Europe IT stocks are mainly listed on the Euro.NM, (New Markets), an alliance that brings together France’s Nouveau Marche, Germany’s Neuer Markt, Italy’s Nuovo Mercato, Euro.NM Belgium, and Euro.NM Amsterdam. This is not a perfect division between old and new industries and overlaps exist, but it does help to analyze sectors of growing distinction within capitalism. This is a different viewpoint than the division usually drawn between finance and manufacturing, and is not meant to displace or challenge the validity of that analysis. Rather the attempt here is to draw attention to the growing influence of digital/electronic technology as the key economic sector in the new era of information capitalism, and its distinct role in the development of a transnational capitalist class.

The IT revolution has had a huge impact on capital investments and stock markets fueling the great global speculative boom. The world’s three leading industrial groups in stock performance are semiconductors, wireless communications, and communication technologies. (9) In the U.S. venture capital investments for start-ups (most of which are in IT) was at \$19.3 billion in 1998, grew to \$50.72 billion in 1999, and hit \$21 billion in the first quarter of 2000. (10) The market value of Nasdaq grew 1,900% in the decade of the 1990s. Its value of \$5.85 trillion is a third of total U.S. stock market value, up from only 10% in 1990. (11) Overall, nine of the best ten performing stocks in the U.S. (3-99 to 3-00) were from the IT industry. (12) Canada has experienced a similar boom. Technology and communications stocks account for 51% of the total value of the Toronto Stock Exchange, compared to just 15% for all of Canada’s energy, mining and forest product companies. (13)

A similar investment boom hit Germany’s New Market, whose top ten listings had an average return of 592% (2-99 to 2-00). The top ten old economy corporations listed on the DAX recorded a return of 95% over the same period. Of these DAX performers if we eliminated the IT overlaps of Deutsche Telekom and SAP (which produces software), the remaining top eight companies averaged only 66%. Like the DOW, DAX still has a larger total capitalization than the New Market, \$1.01 trillion euros compared to \$224 billion for the New Market. But since 1997 DAX has grown by 84%, while the New Market has grown a remarkable 6,818%. (14)

Throughout Europe the impact of the new technology stocks are a spectacular success. Money is leaving the old industrial sector in a rush to high technology. On average Euro.NM stocks have gone up 516% over the past three years. The New Markets now list close to 500 companies, with the 180 new listings of 1999 attracting \$8.5 billion in investment capital. (15) From March 1999 to March 2000 technology hardware stocks grew by 153.4%, telecom services by 47.1% and software/computer services by 54.2%. In comparison old line industrial stocks were down: transportation by -27.3%, auto -26.3%, construction -8.6% and oil and gas by -7.5%. (16) Of the seven best stock performers in Europe six were IT stocks. (17)

Nasdaq has now formed a joint venture with the London Stock Exchange and Deutsche Boerse to build an exchange for growth stocks that will eventually include the Italian, German and Spanish New Markets. This transnational merger will link the most important IT industries into one global market. Japan has also entered the field with the creation of Nasdaq Japan, under the leadership of former I.B.M. Japan executive Tatsuyuki Saeki. Overall, telecommunications, media and computer technology is one-third of Europe and Asia’s capitalization of equities. (18) Of the ten best performing stocks in Asia (not including Japan) seven were from the IT sector. (19) By 1999 foreign direct investments in Asia had past its pre-crisis mark, much of the new growth driven by technology and telecommunications.

Information technology is also expanding as a key to foreign direct investments, as well as foreign fund stock holdings around the world. In Japan technology stocks held by foreign funds rose from 4% in 1997 to 22.4% at the beginning of 2000. Figures for the Pacific and Asians markets show foreign held technology stocks up from 2.5% in 1995 to 16.5% in 2000. Growth in Europe was slower, but foreign held IT stocks rose from 2.8% to 10.4% in the same period. (20)

This tremendous growth in wealth throughout the world has added new clout to info-tech corporations as it puts them in a position to acquire other corporations. The best example was AOL's buyout of Time Warner despite the fact that it's revenue was only 20% of Time Warner's and it's workforce 85% smaller. After the merger Gerhard Cromme, chief executive of Germany's biggest steel company Thyssen Krupp, sounded an alarm for the old industrial giants. As he warned: "This can happen to everybody – even those of us with big market capitalizations. Internet companies can buy up whatever they want in the world, and it's something we have to think about." (21)

The volatility of Nasdaq in the Spring of 2000 represented a shake-out of unsound and unprofitable companies typical in capitalist economic cycles of developing technologies. Early electrical technology went through similar shake-outs from 1880 to 1890, resulting in the consolidation of industrial monopolies General Electric and Westinghouse from a field of 21 mergers. (22) The new technology economy is now entering a period of greater centralization and consolidation reflecting competition in its monopoly stage. For example, between August 1999 and May 2000 Cisco acquired six companies spending a total of \$17,399 billion. (23) This process will increase the relative influence and power of info-tech capitalists within the transnational class as major corporations consolidate and emerge as clear winners and leaders of the new economy.

IT Mergers

According to Fortune, "The boom in mergers and acquisitions (is) one of the defining trends of the past decade." (24) In 1998 all-time records were set in the US with 12,500 deals totaling over \$1.6 trillion. (25) Of these, \$201 billion were for cross-border mergers, up from \$23 billion in 1991. In turn, foreign investments in the US in 1999 totaled \$240 billion in corporations and corporate bonds. (26) Globally two sectors were particularly effected, telecommunications and finance, both effected by deregulation under the World Trade Organization. Other important mergers occurred in high technology, media, and basic manufacturing. Globally the pace of mergers roared ahead in 1999 with 23,576 deals worth \$2.3 trillion. (27)

One of the most significant changes in the pattern of mergers was their transnational character. As noted by Jeffery Applegate, chief investment strategist at Lehman Brothers; "M&A, which used to take place only within a nation-state, is increasingly intraregional and increasingly global." (28) This differs from the merger wave in the early twentieth century that resulted in the control of domestic markets by a handful of corporations. The transnational merger trend today is directed at establishing production facilities in other industrialized nations and cross-border buyouts in what John Bellamy Foster calls the "greatest merger wave in capitalist history." (29) This massive move to consolidation is driven by global competition as transnationals move to protect themselves and control production.

The struggle to dominate the IT field has set the stage for some of the biggest transnational mergers, particularly the battle for Internet and telecommunications corporations. In the U.S. AT&T acquired cable giant Telecommunications Inc. followed by MediaOne group. This gives AT&T control of more than a third of the nation's cable network for television, high-speed Internet access and online telephone services. (30) Other recent deals include Ameritech's acquisition by SBC, Qwest's move to buy US West, and MCI WorldCOM's planned takeover of Sprint.

This same trend has hit Latin America and Asia. In Hong Kong the Internet access company Pacific Century Cyber Works was recently acquired for \$38 billion by Cable and Wireless HKT, Hong Kong's dominant phone company. Meanwhile Spain's recently privatized Telefonica SA has bought telecommunication and Internet companies throughout South America, including the biggest markets in Brazil, Argentina, and Chile. The top ten telecommunications firms now control 86% of the world market. (31)

Japanese corporations have also entered into alliances and made important acquisitions. Matsushita Electric entered Europe with three major Internet deals, while Nippon Telegraph and Telephone made a \$5 billion deal for Colorado based Verio, the largest U.S. operator of business web sites. (32) In a huge move Japan's largest Internet group, Softbank, plans to become Europe's biggest Internet investor by establishing two funds with a combined worth of \$1 billion. One fund devoted to the UK is worth \$450 million and is in alliance with News Corporation, which invested \$150 million. The other fund worth \$550 million is partnered with Vivendinet in France. (33)

Softbank has already invested in 300 Internet companies around the globe but the fit in Europe is particularly good. Both Europe and Japan are exploding in Internet wireless connections. In Japan DoCoMo, a subsidiary of Nippon T&T, has bypassed computers to spawn an e-mail craze with wireless phones. With six million subscribers and about 25,000 people signing up daily DoCoMo's market value tripled in 15 months to \$370 billion. (34) In Europe free Internet connections via wireless phones is also widespread and is soon expected to overtake PC users. Says Eric Hippeau, president of Softbank International Ventures, "We're particularly interested in wireless technology because Europe seems to be ahead of the US in this field. We can introduce technologies from Europe to the rest of the world." (35) DoCoMo has now allied with Hong Kong conglomerate Hutchinson Whampoa and the Dutch mobile phone operator Royal KPN to buy-up the license rights for the next generation of mobile communication services in Britain, Germany, France and Belgium.

Not to be left behind Microsoft has jumped into the Asian market hoping to become the dominant power in broadband. Microsoft wants to put Windows into TV set-top boxes and mobile phones in a region where broadband is more widespread than the US. Gates has allied with Legend and Haier in China to develop television set-top boxes, and with DoCoMo in Japan. In Taiwan, Microsoft is working with Gigamedia of the Koos Group to bring Internet services to TV, mobile phones, and PCs. In Europe they have joined with Palm's biggest competitor, UK's Psion, and Sweden's Ericsson, major players in the mobile phone market. (36)

A good illustration of the fierce competition among transnationals was the most expensive buy-out in history (\$185 billion) that took place in Europe when Britain's Vodafone/Airtouch took over Germany's Mannesmann. The acquisition created the largest wireless telephone corporation in the world. Not only will the new company control the biggest Euro markets in Britain, Germany and Italy, it will have holdings in more than 30 countries including the U.S. and Japan. Europe shares a common wireless transmission standard, so mobile phone use is much more widespread than in the U.S. The Vodafone/Mannesmann merger also has huge implications for Internet users, because throughout Europe personal computer access to the net is limited and expensive. In achieving a monopoly over wireless communication Vodafone is now in the position to be the largest Internet portal in Europe.

The takeover of Mannesmann was a protracted battle in which both corporations tried to gain advantage by moving directly into the other's market. In January '99 Vodaphone acquired Airtouch in the U.S., an important minority partner of Mannesmann. Mannesmann fought back by entering the

British market when it bought out the large mobil phone network Orange for \$33 billion in October '99. When Vodafone stole away another Mannesmann partner, this time in an Internet deal with Vivendi in France, they had finally maneuvered into a dominant competitive position.

Although both corporations had strong domestic identities their respective governments steered clear of being drawn into a nationalist brawl. Even as Mannesmann was threatened by a hostile foreign takeover, Chancellor Gerhard Schröder judged government interference could jeopardize future mergers in which German corporations would continue their global integration. The acquisition of Chrysler by Daimler Benz has marked the true road forward for German transnationals.

To think of the English, Germans, or any national group as winners in these mergers is to miss their essential character as transnational deals engineered by de-nationalized elites. Global markets are transforming national capitalists into a transnational class with common goals and interests. Mannesmann's CEO, Klaus Esser, a member of the new global class declined to use nationalist political rhetoric as a strategy to defend his corporation. Tens of thousands union workers protested the proposed merger, as did most German investors. Yet Esser ignored his domestic audience and appealed to his global shareholders to hold out for a higher share price. When Vodafone upped their offer the majority of shareholders bought the deal. Esser understood that the question over which partner would dominate the deal was a secondary consideration to building a new transnational giant and allowed the process to unfold.

Mannesmann may have had a German face, but in reality it was already a thoroughly transnationalized corporation with many institutional investors in the U.S. and Britain. Mannesmann also had important global holdings such as Italy's second-largest phone company Infostrade, and major U.S. interests in phone, publishing, and music. If you swoon to Whitney Houston or groove to Santana you've been listening to a Mannesmann CD.

After Vodafone's acquisition of Mannesmann, Orange was unloaded to France's Telecom for \$37 billion. This adds six million customers to Telecom, which also has operations in Austria, Belgium, Denmark, Italy, the Netherlands, and Switzerland. (37)

The Vodafone/Mannesmann merger illustrates the elevation of international stock prices over domestic concerns and underscores how national markets and politics are becoming secondary factors in a globalized economy. In fact, about 40% of all stocks traded in Frankfurt on the DAX are held by foreigners. The newly merged Vodafone now joins a rapidly growing group that includes BP and Amoco; Credit Suisse and First Boston; Bertelsmann and Random House and many others. These are corporations whose national identities fade away as they shape the world economy and compete under the new rules of globalization.

IT And New Private Wealth

As IT production expanded it developed into powerful new corporations, creating a new stock market, new wealth, and new capitalists. This new bourgeoisie is a key group within the rising transnational capitalist class and is developing its own characteristics and at times its own politics. Recently *Money* and *Business* conducted an analysis of chief executive's pay comparing 100 of America's largest non-technology companies to 60 of the leading new economy Nasdaq corporations. The average pay of old economy chief executives was \$7.1 million, compared to \$27.5 million for the new economy leaders. The info-tech executives on average have also accumulated \$720 million more in equity, almost ten times the holdings of old economy bosses. (38) This wealth is based in the market valuation of stocks that are used much more widely by the new economy corporations as part

of executive compensation. This is also true in Europe, where info-tech corporations on the hunt for top talent have begun the same practices as U.S. corporations. While this wealth will fluctuate with the market, it's an innovative use of tying the best talent into ownership.

This has not only made Bill Gates the richest man in the world with \$71 billion in wealth, but created 10 other chief executives with ownership stakes over a billion dollars among the top 60 info-tech firms. Even after the post Spring 2000 Nasdaq crash these executives were worth a billion or more: Jeffrey Bezos of Amazon, \$8.9 billion; Lawrence Ellison of Oracle, \$8.4 billion; Henry Nicholas III of Broadcom, a producer of communication chips, \$4.8 billion; Timothy Koogle of Yahoo, \$2.4 billion; Jo Mei Chang of Vitria Technology, a maker of e-commerce software, \$2.3 billion; David Wetherall of CMGI, \$1.8 billion; Stephen Case of AOL, \$1.7 billion; Irwin Jacobs at Qualcomm, \$1.2 billion; and Scott Kriens of Juniper Networks, a maker of Internet routers, \$1.1 billion. (39)

Among the 100 top DOW chief executives only two had ownership stakes over a billion: Patrick Ryan of Aon with \$1.2 billion and Frederick Smith at Fed Ex with \$1.1 billion. (40)

These figures report on chief executives, but the Forbes 400 lists the greatest personal fortunes in the United States. As Forbes points out: "Heavy industrial fortunes would have dominated our list decades ago." (41) But no longer, information technology capitalists are this era's stars. To appear on the list you need a minimum of \$625 million. Overall about two-thirds are billionaires. Of the five richest men three come from Microsoft and one from Dell. Of the total 400, 89 have wealth tied to the IT sector. IT capitalists also tend to be younger, 48 being under 50 years old. Of the Forbes 400 only a total of 77 fit that age category. (42)

Of the 350,000 wealthiest households in America (worth \$10 million or more), 5% are headed by someone 35 years old or younger. That's 17,500 households, most of who represent new economy wealth. In 1983 only 0.79% of the richest households were headed by someone 35 or younger. (43)

Over the past decade there has been an outburst of magazines dedicated to watching and promoting the IT sector. *Wired* is perhaps the most widely read dedicating 400 pages every month to trumpet the successes of the new economy. In June they print their own annual index of 40 IT companies that are "driving the future" complete with CEO profiles and investment advice. *Computer Resellers News* is even more self-conscious focusing on individual leaders of the IT super-rich. Every November they choose 25 top IT corporate leaders complete with personal profiles and a parallel reader's poll. They also have established an "Industry Hall of Fame" with annual inductees. There are currently 37 members and you can go online to read articles, see photographs and video clips and hear recorded interviews on each member of this IT Valhalla. The magazine also sponsors an inductee gala event, which in 1999 took place in the Hard Rock Hotel in Las Vegas with 1,000 in attendance. These magazines and events illustrate that IT capitalists are fully self-aware and see themselves as a separate sector within their class.

The development of the IT grouping has interesting historic parallels to the rise of the industrial bourgeoisie in Great Britain. The industrial technology revolution that began in England around 1760 produced a whole host of new industries, new means of production and new wealth that brought about capitalism's modern era. The industrial revolution created value much more rapidly than the old agricultural economy, and the wealth and political influence of the new rich soon outstripped that of the old money. But the industrial bourgeoisie also merged with the landed gentry through common investments, financial mergers, and marriage. Also land management modernized to produce the first factory farms, transforming feudal estates with new farming equipment and methods

of production. In this manner important sectors of the old agricultural economy became part of industrial capitalism.

The same process can be seen today as old industrial families invest in new technology, and industrial corporations adopt information technologies to transform themselves and step into the new economy. As the New York Times notes, "From Taiwan to Thailand, the region's most powerful families have started a blizzard of online ventures. Whether their core businesses are in property, telecommunications or banking, Asia's tycoons are seizing on the Internet in hopes of expanding their reach." (44) This strategy is not isolated to Asian capitalism, but is a global trend.

Even in China the IT sector is at the core of a newly developing non-statist capitalist class. The amount of foreign money flowing to private entrepreneurs is without precedent since the 1949 revolution. Already three of China's dot coms are listed on the Nasdaq. As the New York Times observes, "as China's old Marxists know, capital is power and if the country's young Internet entrepreneurs can hang onto their assets and make them grow, they could emerge as a potent force shaping the country's economic – and political – future." (45)

The IT Political Agenda

Competition can be fierce within the IT stratum as the government's anti-monopoly suit against Microsoft revealed. But there are also commonly shared political, social and economic goals. Some of these are a no tax policy for e-commerce; support for government social spending to expand the use of computers and internet access; an open immigration policy for IT professionals; support for regulatory legislation that has allowed the merger of telephony, television and computer technology; limiting lawsuits from Year 2000 computer failures; ending overtime pay after an eight-hour workday; enforcing US copyright laws to protect intellectual capital; and support for China's entry into the WTO.

The political involvement of info-tech capitalists is growing rapidly in the nation's capital. Microsoft has spent about \$16 million in donations to candidates and lobbying efforts since the government's antitrust suit in 1997. Other Internet companies have more than doubled their political contributions in 1999 to \$4.5 million, while telecommunications and phone companies added another \$7.61 million. As with many industries this money is more or less evenly split between both parties. Info-tech corporations have dramatically increased their lobbying efforts in Washington, and politicians are falling over each other to help pro-industry legislation through Congress. Often bills favored by high-tech corporations get support from a mix of New Democrats and Republicans. " 'You have to work hard to make technology issues Democrat or Republican, liberal or conservative,' said Representative Edward J. Markey, Democrat of Massachusetts. ' It's not the contras versus the Sandinistas'." (46)

New Democrats meet with Silicon Valley executives regularly. Says Wade Randlett co-founder of TechNet and executive at Red Gorilla "I think they are trying to create a mini high-tech party in a way. It's a smart political approach." (47) Republican Representative of Louisiana, W.J. Tauzin calls the info-tech executives "stars," while Virginia Democratic Representative James Moran notes "People want to know them, touch them." (48) As the info-tech industry grows its political wish list becomes larger and hundreds of bills that effect the industry are now in Congress. Says Democratic leader Senator Tom Daschle, "The level of interest is as high or higher than any other set of issues I'm aware of. It's a new paradigm." (49)

The IT industry has also sought to tailor social policies by establishing large grant foundations. The Bill and Melinda Gates Foundation is now the largest private foundation with an endowment of \$17 billion, followed by the Lilly Endowment at \$15 billion. Hewlett-Packard recently nudged aside the Ford Foundation for the third spot with an endowment of \$10 billion. (50)

IT And Industrial Capital

The drive towards a world capitalist system is rooted in its competitive struggle for accumulation. But the mode by which the nationally based industrial sector is transformed into transnational corporations is defined by IT. Its' not just a change in the way competition unfolds or where capital is invested, but the way in which information technology has changed industrial technology. This has a direct impact on how globalization is structured, its capabilities and mode of operation. Abby Joseph Cohen, chief strategist at Goldman Sachs notes; "In many ways it's artificial to draw a distinction between the so-called old economy and new economy, because the real magic of the U.S. economy has been the enormous application of technology." (51) Adds Fortune, "the companies of the 500 that get the NET – even if they're smokestack industries – are way ahead of their less Netsavvy rivals." (52)

One effect of IT is shifts in the make-up of the labor force, with layoffs and hiring at the same time in the same company. The Tribune reports "In a recent survey, the American management Association found that 36% of approximately 2,000 companies contacted created new jobs at the same time that they cut existing jobs." (53) For example, AT&T is eliminating accountants, marketing managers, telephone operators and repair people, but adding jobs in software developers, Internet specialists, and sales agents. Although many of the newer jobs have higher salaries, AT&T plans to layoff 40,000 workers while only adding 10,000. These shifts in the labor force help explain the current nature of class divisions and the growing divide in incomes.

Auto is perhaps the best example of the marriage of the old and new economies. It is the auto that best represents the industrial economy in the twentieth century. Its development pushed the expansion of the rubber, steel, glass and oil industries, it caused the development of our highway system, changed the urban landscape into limitless suburbs, helped build a national economy, and impacted our culture in many faceted ways. Yet today this old industry is thoroughly linked to the tools and organization of the new economy much in the manner that feudal farming was transformed by the industrial revolution.

This transformation has taken place in every phase of auto manufacturing and can be divided into five categories: organization; research and design; means of production; product; and marketing and supplies.

Organization: The global assembly line constructed by the auto industry was made possible by the new command and control system built by information technology. The coordination of production, the transnational flow of parts, the sharing and speed of data, accounting and finances are all done through the instant connectivity of computer networks and software that organizes and channels the necessary information. This level of coordination and the speed needed to operate the system would be physically impossible with the simple phone lines of the 1950s and 60s. GM, Ford and Daimler-Chrysler now plan to create a business to business web site that would coordinate transactions for everything automakers and their suppliers buy. This global parts exchange would handle about \$750 billion in e-commerce transactions. This would also speed engineering changes because innovations would be sent instantaneously up and down the line resulting in a smoother coordination of supplies and products.

Research and Design: All modeling is done with computers and software created for this specific work. The research for developing new parts, the use of new materials, as well as the design of each model is accomplished with information technologies. Beyond the manner in which vehicles are designed have been the engineering efforts to integrate microprocessors into the operation of cars and trucks. Also the coordination of these projects and their global work teams operate through real time connections carried out via the integration of computer and telecommunications.

Means of Production: Robot painters, welders and assemblers are the most obvious changes in the means of production, but the changes are deeper and more imbedded. Many tools like lathes, drill presses and milling machines are run by numerical control technology. Also the coordination of work and its pace inside the factory is carried out through the use of IT. These changes have led to huge productivity gains in the auto industry and a drop in employment. At the Ford factory in Chihuahua, Mexico, 16 workers produce 1,200 cylinder blocks per shift. (54) Recently Chrysler built a plant with an operating plan of only five-years, based on the expected life span of the software that manages production. Since IT is now seen as the source of added value the factory is organized on its lifecycle, not industrial assets such as heavy machinery. (55)

Product: Cars are imbedded with microprocessors at virtual every level of function. The engine, the flow of gas, traction control, diagnostics and entertainment systems all run on software and microprocessors. The Economist reports that, "The typical car today has more computer-processing power than the first lunar landing-craft had in 1969." (56)

Marketing: Every medium that advertises and markets cars has been changed by the technological revolution. The message of ads may not have changed, but the technology that delivers it has. E-commerce and web site marketing are changing the way vehicles are sold. The ultimate hope of the auto industry is to link customers to the car before it leaves the assembly line via Internet ordering. Although the build-to-order system is not in the near future it remains a major goal and one that would eliminate car dealerships.

These multiple changes have created the global assembly line that in turn has produced growing centralization in the auto industry. As competition became more global and less national it spawned a spectacular rise in world mergers. In auto there are now five transnational players who own or control 20 formerly independent manufactures.

The General Motors' empire includes: Fiat, Subaru, Isuzu, Saab, and Suzuki. Ford controls Jaguar, Aston Martin, Land Rover, Mazda, and Volvo. Volkswagen has acquired Audi, Bentley, Birgatti, Lamborghini, Seat and Skoda. The three other major world corporations are Daimler Benz which own Chrysler and have major stock in Mitsubishi. Renault, which controls Nissan and acquired Samsung, and Toyota, which recently took over Daihatsu. Furthermore Daewoo is expected to be bought in the near future by either G.M or Ford. This leaves only Honda, BMW, and Hyundai as important independents. (57)

What is true for the auto industry also applies to other major industrial groups. Not only does ownership cross borders, but production, design, supplies and marketing are also global. This whole system is run and made possible by IT. The old industrial economy is thoroughly saturated at every level with the new means of production. Says Thomas Kwok of the Hong Kong business empire Sun Hung Kai, "One good thing about old-economy companies is that they have profits and cash flow, but old-economy companies need new-economy ideas to survive." (58) That's what makes info-tech capitalism so key to the creation of a global economy and the transnational capitalist class. The

fabulous wealth of the new economy goes far deeper than dot com stock speculation. In actuality the dot com craze is only an outward manifestation of a much more firmly rooted creation of new value.

IT And Finance

Finance has been revolutionized by the new means of information production. In fact, globalization is largely defined by the huge and rapid transfer of money. This ability has spawned a new era of speculation and investments that have transformed national economies the world over. Although many analysts worry about the instability of global capital markets that's exactly where profits are to be made. Says Jack Bouroudjian, senior vice president of Commerz Futures, "Traders love market volatility – they live by it." (59) Adds the Tribune "dramatic swings in stock prices ...have largely been welcome – more volatility means more volume." (60)

In order to navigate and profit from this volatile environment traders rely on accurate data. Information is key to the operation of financial markets, and it's speed, coordination and accuracy are core elements. All of these have been immensely enhanced by a wired world, which in-turn creates a rapidly changing environment that pushes demands for faster and better information. The ability to move huge amounts of money electronically, the knowledge of where to move it, and how long to leave it has lead to trillions of dollars bouncing around world markets operating on daily or even hourly margins. The money market alone trades \$1.7 trillion a day, equaling the GNP of the US in one week. This incredible flood of financial transactions are accomplished by a computer known as CHIPS, or the Clearing House Interbank Payment System. CHIPS handles about \$2 billion in transfers every minute. Housed in New Jersey, it has a sister in Belgium called SWIFT, or the Society of Worldwide Financial Telecommunications. The New York Times dubbed CHIPS "the computer system that is the heart of global capitalism." In fact, more than 90% of all money circulating between countries is in speculative activities. (61)

For the first time in history the world's stock market capitalization has passed the world's economic output in goods and services. From \$16 trillion a decade ago stock market capitalization has hit \$35 trillion. This compares to \$30.1 trillion in global goods and services. (62) Hundreds of new financial instruments have been created to increase this flow in what the New York Times refers to as a "torrid growth in the world's Capital markets." (63) This growth would have been impossible without the information systems that operate it. These markets now dominate world financial movements, a lesson brought home by the 1997 lighting quick crash in Asia. IT has built an integrated global financial system that ties together all national currencies in a web of dependency. This network is managed by the IMF which demands full financial access for transnational banks and speculators into every national market.

Just as mergers in industry are driven by global competition and the organizational abilities of IT, so too are mergers sweeping the banking and finance industry. Major transnational mergers saw Suisse Credit's buying the Bank of Boston, Deutsche Bank's acquisition of Bankers Trust, and Societe Generale acquisition of Yamaichi International Capital Management. The biggest move inside the US was Travelers' acquisition of Salomon Smith Barney, followed by their buy-out of Citibank for \$73 billion. This created Citigroup with total assets of \$720 billion and operations in over 90 countries. Citigroup recently moved into the Japanese market by becoming the biggest shareholder of Nikko, Tokyo's third largest brokerage firm. In Japan pending mergers will create two banks with assets of more than \$1 trillion apiece. Another trillion dollar bank, UBS of Switzerland, recently acquired Paine Webber which holds \$423 billion in assets. The same trends are present in Germany, where there has been a scrambling of Deutsche Bank (Germany's largest with \$800 billion)

Commerzbank, Hypovereinsbank and Dresdner Bank to merge or recreate themselves for global competition.

While New York has the DOW and Nasdaq, Saskia Sassen points out that “London is the preeminent city for global finance...It leads the world in institutional equity management, holding over \$1.8 trillion in assets...it is arguably the world’s biggest net exporter of financial services, with a surplus of \$8.1 billion...leads in international bank lending, consulting on cross-border mergers and acquisitions, and trading and issuing international bonds. Finally, London is the leading global foreign exchange center, with a 40% market share, far ahead of New York.” (64) In fact, U.S. banks account for only 15% all of cross-border lending. (65)

Information technology is also the main target of new venture capital. In the first six months of 2000 a total of \$49.3 billion was invested in 3,322 new companies. Northern California was the center for venture capital receiving 36% of the total, while 20% went to east cost start-ups. Nationally almost 86% of these investment funds went to Internet related companies. Of those companies attracting large investments of \$50 million or more, 36 of 39 were tied to the Internet. (66)

Most investments come from wealthy families, many of whom became rich in the IT industry like Paul Allen of Microsoft. IT corporations like Intel and Cisco are also putting billions into new companies. Just a few years ago venture capital was mainly a local affair with angel investors mentoring start-ups and sitting on boards. But as pointed out by Jean Yaremchuk; “The spirit of global cooperation has rubbed off on venture capital investors, with European powerhouses investing in Silicon Valley and a slew of U.S. based venture capitalists moving into Europe.” (67) Just in the second quarter of 2000 U.S. venture capital firms had 183 investments in Europe, Asia, and Latin America.

Conclusion

The tendency of capitalism to expand and become a world system has been present from its start. But the ability to integrate beyond its national borders and emerge as a transnational system is closely linked to the new abilities of information technology. The interconnectivity and speed necessary to link world finance and build a transnational economy only became possible with a networked world. Earlier international trade based in national industrial capitalist formations was built by slower flows of information, coordination, exchange, transaction, and travel. The technological revolution of the industrial era built new markets and manufacturing methods bound by its own capabilities, just as today’s technology allows capitalism to reconfigure itself along new lines of global organization.

In the industrial revolution speed and connectivity was represented by the expansion of the rail system that tied together markets and commodities. Railroad construction exploded to meet the demands of a youthful capitalist market. For example, in 1850 in Europe there existed only 19.5 thousand kilometers of rail, but by 1870 this had grown to 61.5 thousand kilometers. (68) These rail systems primarily helped to consolidate national markets and capital. In the 20th century the communications revolution increased trade and tied world markets closer together.

Today the Internet is what carries products to markets and it is experiencing phenomenal growth to meet the demands of information capitalism. In 1990 U.S. fiber networks totaled 2.8 million miles. A decade later 17.4 million miles of fiber existed with a total of 26.7 million miles planned by 2002. In Europe since 1995 long-haul fiber networks have grown by 700 percent. (69) These systems have the ability for almost unlimited connectivity all taking place in real-time. Compare this to the 1950s

when long distance phone lines could only handle a few hundred calls between Europe and the U.S. at any given time.

Today's means of communication, marketing and production are in sharp contradiction with the old industrial nationally based system. The struggle between the two is played out in the transformation of government and supranational bodies. The growth of the WTO, IMF, and World Bank reflect a fundamental process to create a new legal and economic superstructure to accommodate, expand and protect the new social relations of globalized capitalism.

When we examine political expressions from this emerging system they clearly reflect changes that spring forth from the organization and abilities of the new means of production. The rise of neo-liberalism with its demands for open markets and financial structures worldwide came about when capital became capable of exploiting such a global system. These structural policies never developed in the era of international industrial capital. That world system did not have the physical ability, the speed, nor connectivity to build or conceive of such an integrated economic system. In fact, the world industrial trading system was based on national production and exchange, and the monopolization of international markets by individual nation states. The nation state with nationally based corporations were defining characteristics of imperialism. Today's transnationalization of production and finance is a different type of global exploitation and a new type of imperialism.

Even after the Asian crash and the subsequent failures in Russia and Brazil, transnational capitalists did not retreat into nationalistic or protectionist remedies. Rather they pushed the process of globalization even further, demanding full financial transparency and common financial standards for all countries. These demands reflect the organizational and structural abilities of the new means of production. The political and superstructural changes sought by the WTO and IMF are aligning modern transnational markets with changes at the economic base. These in turn create new political terrain. Whether it's globalization at the top, or the grassroots movement from below, both are born out of the changed conditions brought about by the era of information capitalism.

NOTES

For an analysis of the formation of the transnational capitalist class see Bill Robinson and Jerry Harris, 'Towards a Global Ruling Class: Globalization and the Transnational Capitalist Class', *Science and Society*, (Spring 2000)

Manuel Castells has written extensively on the "network society" and impact of the information age, while Paul Romer had developed the "New Growth Theory" that explores the importance of ideas to the development of an economy.

James Fallows, 'Billion Dollar Babies', *The New York Review*, (16-December 1999), p. 9.
'The Fortune Global Five Hundred, the World's Largest Corporations', *Fortune*, (2 August 1999).
In analyzing the electronics industry I included in the chart only those corporations with substantial investments in IT products. For example, *Fortune* lists both Whirlpool and Intel in the same category. Out of 25 on *Fortune's* list I choose the following 16: Siemens; Hitachi; Matsushita; Toshiba; Royal Philips; NEC; Lucent Technologies; Motorola; Intel; L.M. Ericsson; Samsung; Northern Telecom; Sanyo; Nokia; Sharp; and Tyco International;

I included Rubber because it listed only three corporations, Bridgestone, Michelin, and Goodyear, all tightly linked to the transportation industry through tire production.
'The Fortune 500', *Fortune*, (17 April 2000).

In listing the US electronics industry I used the same method as above. Out of 31 corporations I choose the following 10: Motorola; Solectron; Rockwell Intl.; Qualcomm; Harris; Micron Technology; Molex; Conexant Systems; DII Group; and Sanmina.

Lipper, Wall Street Journal Market Data Group. 'Best and Worst', The Wall Street Journal, (8 May 2000)

Suzanne McGee, 'Venture Capitalists Still Love Start-Ups', The Wall Street Journal, (4 May 2000), p. C1.

Greg Ip and E.S. Browning, 'NASDAQ Swings are Unprecedented But Consumers are Not Spooked', Wall Street Journal, p. 3. (<http://www.global.noc.org>), (17 April 2000).

Lipper, Wall Street Journal Market Data Group. 'Best and Worst', Wall Street Journal, p. R17. (8 May 2000).

Mark Heinzl, 'Above the U.S.', Wall Street Journal, p. R 13. (8 May 2000).

Edmund L. Andrews, 'The Metamorphosis of Germany Inc.', New York Times, Section 3, p. 1. (12 March 2000).

Beborah Ball and Vanessa Fuhrman, 'Net Gain', Wall Street Journal, p. R9. (8 May 2000)

Warburg Dillon Read, Datastream. 'What Is Value', Wall Street Journal, p. R9. (8 May 2000).

Lipper, Wall Street Journal Market Data Group. 'The Best and Worst', Wall Street Journal', p. R17. (8 May 2000).

Bill Barnhart 'Cross Border Marriages Will Ease Investing', Chicago Tribune, Section 5, p. 3. (7 May 2000).

Morningstar Inc. 'The Tentacles of Technology', New York Times, p. BU 8. (2 April 2000).

Ibid 21. Edmund L. Andrews, 'The Metamorphosis of Germany Inc.', New York Times, Section 3 p. 1. (12 march 2000)

Gerhard Cromme, chief executive of Germany's biggest steel company Thyssen Krupp.

Anthony Bright, The Electric Lamp Industry, New York, (MacMillian, 1949). P. 85.

Scott Thurman, 'Cisco Agrees to Buy Arrow Point for About \$6.1 Billion in Stock', Wall Street Journal, p. A4. (8 May 2000).

Noshua Watson, 'The Lists', Fortune, p. 295. (17 April 2000).

Jeremy Kahn, 'The Fortune Global Five Hundred', Fortune, p. 144. (2 August 1999).

R.C. Longworth, 'Suddenly Our Manuels are Out of Date', Chicago Tribune, Section 2, p. 1. (9 April 2000).

Suzanne Koudsi, 'Ten Deals We'd Like to See', *Fortune*, p. 58. (17 April 2000).

Jeremy Kahn, 'The Fortune Global Five Hundred', *Fortune*, p. 144. (2 August 1999).

John Bellamy Foster, 'Monopoly Capital At the Turn of the Millennium', *Monthly Review*, p. 12. (April 2000)

Stephan Labaton, 'ATT Clears Step in Bid to Purchase a Cable TV Giant', *New York Times*, p. 1. (26 May 2000)

John Bellamy Foster, 'Monopoly Capital At the Turn of the Millennium', *Monthly Review*, p. 12. (April 2000).

Nikhil Deogin and Steve Lipin, 'NTT Agrees to Buy 90% of Verio', *Wall Street Journal*, p. A21. (8 February 2000)

Paul Abrahams, 'Softbank in \$1bn European Internet Investment Move', *Financial Times*, p. 15. (3 March 2000).

Uli Schmetzer, 'Wireless 'I-Mail' Connects Japan', *Chicago Tribune*, Section 3, p. 1. (24 May 2000).

Paul Abrahams, 'Softbank in \$1bn European Internet Investment Move', *Financial Times*, p. 15. (3 March 2000).

Neel Chowdhury, 'Gates and Co. Attack Asia', *Fortune*, p. 197. (17 April 2000).

Andrew R. Sorkin, 'For Vodafone, Saving Grace from French', *New York Times*, p. C1. (29 May 2000).

David Leonhardt, 'Order of Compensation Universe Reflects Pull of New Economy', *New York Times*, Section 3 p. 1. (2 April 2000).

Ibid.

Ibid.

'America's 400 Richest People', *Forbes*, p. 338. (Special Issue 1999).

'America's 400 Richest People', *Forbes*, (Special Issue 1999).

Laura Holson, 'Nothing Left to Buy?', *New York Times*, p. C1. (3 March 2000).

Mark Landler, 'Asia's Tycoons Prepare to Join Rush to Internet', *New York Times*, p. 1. (29 May 2000).

Craig Smith, 'A Dot-Com Revolution in China', *New York Times*, p. B1 (15 July 2000).

Lizette Alvarez, 'High-Tech Industry Long Shy of Politics, Is Now Belle of Ball', *New York Times*, p. 1. (26 December 1999).

Ibid.

Ibid.

Ibid.

James Fallows, 'Billion-Dollar Babies', New York Review, p. 9. (16 December 1999).

Feliciano Garcia, 'The Lists', Fortune, p. 294. (17 April 2000).

Ibid.

Patrick Barta, 'The Churning of the Workforce', Chicago Tribune, Section 6, p. 1. (26 March 2000).

Jerry Harris, 'Globalization and the Technological Revolution of Capitalism', Cy.Rev #5, p. 19. (Fall-Winter 1997).

Chris Meyer, 'The 10 Driving Principles of the New Economy, Rule #1, What's the Matter', Business 2.0, p. 193. (March 2000).

Parn Woodall, 'The World Economy', Economist. (28 September 1996).

Keith Bradsher, 'Gentlemen Merge Your Manufacturers', New York Times, p. C1. (23 March 2000).

Michael Schuman, 'Asian Factories Fire Up Foreign Investors', Wall Street Journal. (8 March 2000).

Mark Landler, 'Asia's Tycoons Prepare to Join Rush to Internet', New York Times, p. 1. (29 May 2000).

Bill Barnhart, 'Traders Thrive on Volatility, but Some Say Enough', Chicago Tribune, Section 3, p. 1. (14 April 2000).

Ibid.

Jerry Harris, 'Globalization and the Technological Transformation of Capitalism', Cy.Rev #5, p. 17. (Fall-Winter 1997).

Craig Karnin, 'The Global Shareholder', Wall Street Journal, p. R4. (9 May 2000).

Edmund Andrews, 'Streamlining a German Blimp', New York Times, p. C1. (29 February 2000).

Saskia Sassen, 'Global Financial Centers', Foreign Affairs, p. 83. (January/February 1999).

Christan Weller, 'Global Banking', Foreign Policy in Focus, Vol. 3, #9, p. 1. (May 1998).

Peter Sinton, 'Still Banking on the Net', San Francisco Chronicle, page C1, (August 10, 2000)

Jean Yaremchuk, 'All the World's A Venture Capital', www.news.com, 8-17-00

Michel Beaud, A History of Capitalism 1500-1980. New York, (Monthly Review Press, 1983). P. 86

Wired, 'High-Fiber Diet', p. 142. (June 2000)