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Singapore's Dilemma: Control versus Autonomy in IT-Led Development

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A frequently debated question is whether technology molds society or is molded by it. From the first perspective, known as a *determinist* view of technology (Ebersole, 1995), the Internet carries with it certain types of values, organization, and social structure that will inevitably impact society. From the second perspective, known as an *instrumental* view of technology (see discussion in Feenberg, 1991), technologies such as the Internet are "pure instrumentality" (Feenberg, 1991, p. 5), indifferent to the ends to which they are employed.

This is closely connected to the issue of potential political impact of the Internet. A determinist perspective might predict that introduction of the Internet (with its means of decentered communication) would inevitably democratize government. In contrast, an instrumental perspective suggests that state authorities can wield the Internet to their own purposes, even using it to increase centralized control. The most extensive empirical study of computerization and political control was carried out by Danziger, Dutton, Kling, and Kraemer (1982), whose analysis of data from some 500 U.S. cities and counties indicated that computerization tended to reinforce the power and influence of those already in authority. However, such research has not yet been replicated internationally, nor has similar research been conducted on the impact of introducing the Internet.

One important test case for understanding the relationship of information and communication technologies and democratization is Singapore. This city-state stands out internationally in two regards. First, the country's leaders exert a level of social and political control that is unique among wealthy nations. And second, those same leaders are engaged in one of the most far-reaching attempts to infuse information technology in society and make their nation an "intelligent island." This article examines the challenges Singapore faces in three areas related to the use and impact of new technologies: media censorship, educational reform, and language policy. Before doing so, I present a brief overview of Singapore's economic and political development to date.

SINGAPORE'S NOT-QUITE DEVELOPED STATUS

From Singapore's founding as a state in 1965 through the late 1990s, the country experienced economic development unprecedented in world history. With an average gross domestic product (GDP) per capita growth rate of 7.4%, compounded annually, over a period of 30 years (Lee, 1999b), Singapore multiplied its wealth by eightfold and went from being a relatively poor country to one of the world's wealthiest. By 1997, Singapore had passed even the United States in gross national product per capita (United Nations Development Programme, 1999). Many of Singapore's other socioeconomic indicators are equally impressive, including the highest level of home ownership in the world (with more than 85% of the people living in their own homes; see Asher, 1995), a low crime rate, a well-protected environment, an outstanding public education system, and relatively little social strife among its multinational population.

Yet in spite of these impressive indicators, analysts both inside and outside Singapore are reluctant to view the country as having achieved fully developed status (see, for example, several articles in Low, 1999b). First, from an economic standpoint, Singapore falls behind in several important measures that are believed necessary for sustainable development. Singapore's economic gains have been due in large measure to its success in becoming an international business hub, with the presence of some 5000 transnational corporations, 2500 of which are handling regional markets (Savage, 1999). Singapore's information technology industry, for example, consists mainly of subsidiaries of multinational corporations (Poole, 1997), with Singaporeans frequently working under the leadership of

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foreign managers (based in Singapore or directing from abroad).

While Singapore has excelled in attracting multinational corporations, the country lacks a strong indigenous business class. There are relatively few Singaporean computer and Internet startup firms, or, indeed, startup firms of any type that are achieving international success (Lee, 1999b). Where, for example, is Singapore's equivalent to Finland's mobile phone company, Nokia, Sweden's telecommunication company, Ericsson, or Israel's Mirabilis firm that gave the world ICQ? Singapore also produces relatively little online content for either domestic or international use (Zook, 2001). The country also lacks a real film industry, producing an average of less than 4 films per year from 1995 to 1999 (Ministry of Information and the Arts, 2000), compared, for example, to Hong Kong, which produced some 90 films in 1997 alone (Film Industry: Screen Blues, 1998).

The lack of indigenous business success in Singapore, as well as relatively low funding for research and development (Chieh, 1999), contributes to Singapore's low rate of "total factor productivity" (TFP; see Low, 1999a). TFP, defined as the productivity with which capital and labor are combined, measures both technical efficiency and technological progress (Pack & Page, 1992, cited in Low, 1999a). Singapore's unusually low TFP compared to its GNP gives some economists pause about the country's ability to sustain economic growth.

Beyond economic matters are the cultural and political dimensions that are seen to be part of development. The United Nations Development Programme (1999) ranks Singapore lower in its human development index than its economic indicators would merit. This is due in part to the lack of political freedoms in Singapore as compared to Western countries. Singaporeans lack the possibilities of forming political parties, holding rallies or demonstrations, criticizing public officials, or controlling their own media choices that people in North America or Western Europe take for granted.

Until now, many might contend that political control and economic development have gone hand-in-hand in Singapore. Few would doubt that the strong state policies promoted by Singapore's leaders and the discipline that they have succeed in imposing on society have contributed to that country's rapid economic growth. Yet due to changing economic circumstances in Singapore and in the world, this may no longer be the case. In the new knowledge economy, the most successful regions, exemplified by California's Silicon Valley, tend to be those that foster free-wheeling, risk-taking economic activity from below. This kind of economic activity is fostered in part by free market policies—an area in which Singapore is unmatched—but also by a culture that rewards risk-taking, creative thinking, and independent initiative from below. And in these last areas, Singapore, by the admission of its own leaders, has substantial room for improvement.

Singapore's dilemma is thus as follows: how to promote the kind of independent initiative from below that a modern 21st century requires while maintaining the level of communitarian order that has served the country's elite, and most of its citizens, well (Chua, 1995). This dilemma expresses itself in virtually every area of public policy in Singapore today, including the important areas of media, education, and language.

MEDIA CENSORSHIP

Singapore is almost alone among wealthy countries in its heavy-handed control of the media. This is achieved through a government-encouraged monopolization of the national print media, a national journalist body that is unapologetically progovernment, a Press Act that empowers the Minister of Communication to control ownership of the domestic press and imposes restricted circulation of foreign publications for alleged interference in domestic affairs, and a compliant judiciary that punishes government critics with huge libel damages (Chua, 1995).

However, Singapore's tight control of information is being increasingly undermined by the nation's fast-growing online infrastructure. Following a 1985–1986 recession, Singapore began preparing for transition to an information economy (Rodan, 1998). This led in 1992 to adoption of a new national strategy, "IT2000—A Vision of an Intelligent Island," which set the goal of wiring all households, businesses, schools, libraries, and government departments in a broadband network within a decade (Rodan, 1998). By 1999 this effort was well underway, and Internet penetration rates in Singapore have already surpassed those of Israel and Germany (United Nations Development Programme, 1999), creating channels of communication outside the government-controlled media.

The government has attempted to restrict access to information on the Internet as well. Regulations adopted in 1996 force all Internet service providers (ISPs) to set up proxy servers and to block access to web sites deemed objectionable by the Singapore Broadcasting Authority. However, this still leaves Singaporeans a wide range of options for accessing information through newsgroups and e-mail.

The potential impact of the Internet on media and political control in Singapore has been discussed at length in international magazines and journals (see, for example, Rodan, 1998; Sandfort, 1993). What is interesting now is the extent to which these issues are being aired within officially sanctioned channels in Singapore. A recent book (Lee & Mahizhnan, 1998), published by the government-endorsed Institute for Policy Studies (IPS) of Singapore,

contained an essay by two prominent figures questioning the government's Internet censorship policies. The essay was written by Arun Mahizhnan, codirector of IPS, and Stephen Yeo, former Chief Executive Officer of the National Computer Board. Yeo was one of the people most responsible for developing and implementing Singapore's national IT infrastructure plan. He was the winner of the Singapore Computer Society's "IT Person of the Year" award in 1998. Yeo and Mahizhnan's essay was published not only in the IPS book, but also in adapted form in the Sunday edition of Singapore's leading newspaper (Yeo & Mahizhnan, 1999).

In the essay, Yeo and Mahizhnan question whether any government, even one as efficient as that of Singapore, can effectively monitor and control all the information that citizens receive via the Internet. Beyond the possibility of such control, they question the desirability of "state-nannyhood" (p. 36), which they see as contradictory to the liberalization required by those seeking to be at the leading edge of the information age.

Yeo and Mahizhnan's is not a liberatory tract demanding freedom for freedom's sake. Their arguments are carefully calibrated to fall within the framework of Singapore's traditional communitarian goals. They argue, for example, that a step-by-step easing of government control of the Internet will allow the development of a "civic immune system," based on industry and self-regulation, which in the end may prove even "an even more effective shield than any government-imposed system" (p. 36). While hardly radical, their public call is bold for Singaporean society, and the fact that it has been published in prominent places indicates that their vision has at least some support within official circles.

EDUCATIONAL REFORM

Singapore's leaders recognize that infrastructure alone will not guarantee success in the age of information. They have placed an equally high emphasis on human resource development.

This emphasis gets implemented in part through international recruitment, with Singapore making a concerted effort to find the best and brightest scientific, technological, and management leaders and encourage them to work in the island. This has met with some success, with many experts from neighboring countries such as Malaysia emigrating to Singapore, and other leaders and executives from Western countries coming for short-term stints. But the effort to recruit international talent comes into conflict with the strong system of control and regulation in Singapore, and some well-paid faculty positions at the National University of Singapore go unfilled due to international scholars' reluctance to submit to the strict rules and regulations of the society and university.

The more significant channel for human resource development comes from Singapore's own educational system. Singapore already has one of the best public school systems in the world, with its students regularly ranking at the top of international test results in mathematics and science. But there is a concern that Singaporean students lack the thinking and leadership skills needed for scientific and entrepreneurial leadership. Education officials have thus engaged in an educational reform effort under the slogan "Thinking Schools, Learning Nation." The two main pillars of educational reform are thinking skills and information technology.

"Thinking skills" refers to an effort to move away from rote learning of facts to develop the kinds of analytic skills needed for an information economy. According to Ministry of Education literature (see its web site at http://www1.moe.edu.sg), these include skills in areas such as cross-cultural communication; finding, analyzing, and categorizing information; and learning how to learn. Unlike in many contexts emphasizing thinking skills, however, the preceding adjective "critical" is absent, and there is no mention in ministry literature of teaching students to be able to analyze hidden meanings, understand implicit power relations, or critique injustice. Other national ministries of education outside Singapore are not all promoting the notion of critical thinking, either, but in many countries, such as the United States, there is ample room for local educational authorities or nongovernmental organizations to promote their own educational approaches. The tight system of national control in Singapore means that whatever is not officially sanctioned by the government gets little hearing.

While Singapore's thinking skills campaign is thus constrained, it is nevertheless serious and ambitious. A national research project on thinking skills in education has been established, and Singapore hosted an international conference on the topic. And to put teeth into the thinking skills campaign, the admissions policy for national universities is being revamped. As of 2004, admissions will no longer depend solely on standard A-level examinations alone, but will be determined by a combination of A-level exams, a reasoning test, and a portfolio of project work and extracurricular activities.

Information technology is being promoted both as a means to assist thinking skills, and because technological skills are seen as valuable in their own right. The country is in the midst of a $750 million (U.S. dollar) effort to support information technology in the schools, starting with wiring all the nations schools in three phases. By 2002, every classroom will have 12 direct connections to the Internet; the phase one schools already have these connections in place. By the same year, all schools are projected to have a pupil:computer ratio of 2:1. If these goals are reached, Singapore's schools will be better equipped for

computer and Internet access than any other schools in the world.

The Ministry of Education is also carrying out an extensive inservice teacher training project, with the goal of retraining all of Singapore's teachers in effective use of information technology by 2002. A team of 60 full-time trainers from the Ministry of Education visits schools throughout the country over a period of a year, meeting with teachers by subject area every fortnight to conduct inservice training on effective uses of educational technology and also visiting teachers' classrooms to support their efforts. Teachers are encouraged to gradually increase the amount of hands-on student computer time until it reaches 30% of classroom instructional time by 2002.

The plans are ambitious and the progress to date is impressive, but again Singapore faces dilemmas in reaching its goals. The current school climate in Singapore, as in many Asian countries, places strong emphasis on order, discipline, and uniformity. Uniforms are required, and students are forbidden to wear brand-name shoes. Students with hair a few centimeters too long have it trimmed by "school disciplinarians" before they enter the classroom in the morning. Singaporean schoolchildren are well behaved and hard working, and the order in a Singaporean class would make many American educators envious. Yet, as seen in other countries such as Japan, this same order and discipline can sometimes discourage independent initiative and creativity. The traditional teacher-centered classroom in Singapore is not necessarily compatible with the kinds of project-oriented group work that exploit the value of information technology and that Singapore's leaders are now promoting. A recent visit to a Singaporean school revealed an outstanding technology infrastructure—with Internet connections and computer projection systems in every classroom, and with several full computer laboratories for instruction—but with students engaging in computer-based drills and exercises that were not much different than the kind of exercises they would have performed on paper.

Not only students but also teachers face more rules and regulations than in other countries. And now educators are faced with a strong top-down push to integrate information technology in the schools. Whether this will lead to effective use of technology is yet to be seen, but such top-down efforts at technology implementation have been ineffective in other contexts (Cuban, 1986). One tertiary educator explained to me some of the obstacles faced at his institution:

> There is far too much emphasis on the technology and not the pedagogy. Money is thrown at the hardware but people are inadequately trained for exploiting and integrating IT. Now we are inundated with the latest technology and teachers here are more and more reluctant to try out computer-aided learning. What's more, no time is provided for teachers to practice with one technical implementation before another directive comes along.

Many Singaporean teachers and students are doing exceptionally well with educational technology. For example, Singaporean teams won several of the top prizes in the 1998 international ThinkQuest competition (http://www.thinkquest.org), which involves student collaboration in producing educational web sites. And the Ministry of Education's plans seem well designed and put a lot of emphasis on teacher training. Singapore may well become a model for effective uses of educational technology, not only in Asia but in the world. However, it appears there are still many obstacles to promoting the kinds of independent initiative among students and teachers necessary for effective use of information technology.

LANGUAGE POLICY

A final dilemma relates to language policy. Singapore's leaders see English as being critical for participation in the international economy and have aggressively promoted the language for decades. As in other areas, their efforts have met with great success. All Singaporean children study English as a medium of instruction (also taking some classes in a second language, either Mandarin, Malay, or Tamil), and almost all people save immigrants and some elderly speak English fluently. Whether or not to use English is not a controversy in Singapore.

The question is, which English? The majority of Singaporeans speak a highly colloquial dialect of English called Singlish, which differs greatly from the varieties of English spoken in the United States, Britain, or Australia (Pakir, 1997). The emergence of Singlish marks a phenomenon that will likely become more common in the 21st century, as English strengthens its hold as a global language and simultaneously fragments into an increasing number of local dialects (Graddol, 1997). Just as MTV, CNN, and other international media, products, and discourses have first become globalized and then relocalized in different versions, so too is English becoming a network of local Englishes.

Singaporean government officials, including Singapore's powerful former prime minister Lee Kuan Yew, have attacked Singlish as a threat to the country's economic viability and competitiveness and vowed to wipe it out in a single generation (Lee, 1999a). As current prime minister Goh Chok Tong (1999) argued, pointing to Singapore's efforts to export its media and internationalize its economy:

> [Television] programme series are very expensive to make. If they are only shown in Singapore, they will surely lose money. If the characters spoke Singlish, viewers overseas would not understand it. . . . [This] applies to many other activities. Whether we are publishing a newspaper, writing a

company report, or composing a song, does it make more sense to do so for a 3 million audience, or for the hundreds of millions who speak English around the world? We cannot be a first-world economy or go global with Singlish.

Yet language serves not only economic purposes, but also social and cultural ones, especially in an era when many other traditional markers of identity are being eroded (Castells, 1996; Warschauer, 2000). So just as government leaders feel that globalization makes the use of Singlish a hindrance, many Singaporeans feel that globalization requires them to protect their own identity through whatever local means of expression they have, especially one as powerful as language. Singaporeans use Singlish almost exclusively in informal face-to-face interaction (Gupta, 1989); it is also prevalent in online chatting.

A poet has expressed nicely (in Singlish, of course) the Singaporean attachment to the dialect as a means of expressing and maintaining identity in the age of information. Here are excerpts of a poem that has circulated anonymously on the Internet:

Wah! I heard we all now got big big debate.
They said future of proper English is at stake.

All because stupid Singlish spoil the market,
want to change now donno whether too late. . . .

Other people hear you, say you sound silly.
So like that how to become world-class city?

Basically Singlish got good and got bad.
Aiyah! Everything in life is all like that.

Actually Singlish got one bright side.
I am talking about our national plight. . . .

Other people all say we all got no culture.
All we got is a lot of joint business ventures.

So we got no culture to glue us together.
End up we all like a big bunch of feathers.

Wind blow a bit too strong only we fly away.
Everybody all go their own separate ways.

Now we must play Internet otherwise cannot survive.
Next time the only way to make money, or sure to die.

When other countries' influences all enter,
we sure kena affected left, right and centre.

Sekali our Singporean identity all lost until donno go where.
Even Orang-Utan Ah Meng starts thinking like a Polar Bear.

But still must go I.T. otherwise become swa koo,
only smarter than Ah Meng of the Mandai Zoo.

Wait the whole world go I.T., we still blur as sontong,
next time we all only qualified to sell laksa in Katong.

But actually we all got one "culture" in Singlish.
It's like rice on the table; it is our common dish.

I know this funny "culture" is not the best around
so we must tahan a bit until a better one is found.

Not all the time can marry the best man,
so bo pian got no prawns, fish also can.

I donno whether you agree with me or not?
I just simply sharing with you my thoughts.

Singlish is just like the garden weeds.
You pull like mad still it would not quit.

Sure got some people like and some do not like.
Singlish and English, they'll still live side by side.

We see once again the contradiction between control from above and below. Singaporean government officials hope to impose a single standard of English that they think will make their economic competitive. Their goals appear well-meaning: to ease Singapore's entry into global media and communications markets. Yet by insisting on a single standard, they go up against popular sentiment to speak in a way that many Singaporeans feel reflects their own identity and culture. And a strong sense of identity and culture may in the end be vital to the type of grass-roots national creativity and initiative that Singapore needs for successfully participating in a knowledge economy, as well as for satisfying other human needs of its citizens.

Interestingly, Singaporean officials earlier had a similarly negative attitude toward Chinese dialects in their effort to promote Mandarin as the common ethnic language among the Singaporean Chinese community. They later eased their policies on Chinese dialects somewhat when they realized that these dialects had not only cultural value, but also economic value, as a means of communication with the economically dynamic regions of southern China. Since Singlish has principally a cultural value, and not an economic one, it is unclear whether governmental policy will be reversed, though Singaporean leaders have stressed ethnic and national identity as a way of maintaining Asian values for their country.

TOWARD A CRITICAL THEORY OF TECHNOLOGY

While policies regarding media censorship, educational reform, and language use each have their unique elements, in the end they revolve around a common question: How can Singapore best combine leadership and direction from above with initiative, creativity, and interaction from below to meet the challenges of the 21st century? In a sense, Singapore is a particularly interesting case of the more general contradiction of the information society noted by Castells (1996, 1997): that between *the net* and *the self*. Through strong government policies in the areas of media, education, and language, Singaporean officials hope to keep their country under firm control for smooth integration into the global networked economy. Yet Singaporeans desire to express their own identity through the language they use, the way they teach and learn, and the information sources they access.

Those looking for a simple answer to whether technology controls, or is controlled by, society, will not find it in Singapore. Singapore's impact on uses of technology and technology's impact on the development of Singapore are mutual, existing in ecological symbiosis. Yet just as technology is neither inherently good nor bad, neither is it neutral (Kranzberg, 1985). The Internet, based on the history of its interface, features, uses, and designers, tends to favor certain forms of interaction, communication, learning, and commerce, and thus it is no accident that certain regions and communities are able to exploit it better than others. Singapore's small size, excellent telecommunications infrastructure, well-educated populace, and societal proficiency in English all bode well for its effort to become an "intelligent island." At the same time, the high degree of top-down regulations and control found in Singapore make this effort challenging. Singaporean policies, and society, will likely continue to evolve gradually toward meeting the imperatives of a knowledge economy, managing in a Singaporean fashion the contradiction between net and self.

What is needed to understand Singapore today is not a deterministic or instrumental perspective but rather a critical theory of technology (Feenberg, 1991). From this view, technology is neither all-powerful nor neutral, but rather "ambivalent." The ambivalence of technology is distinguished from neutrality "by the role it attributes to social values in the design, and not merely the use of technical systems" (Feenberg, 1991, p. 14). From this perspective, the social role of the Internet is shaped by several aspects of its design, including the fact that it works best with ASCII code (favoring users of Roman alphabets), on personal computers (favoring those with the money and skill to own and operate computers), and via phone lines (favoring those with affordable access to telecommunications). These are some of the features that favor widespread adoption of the Internet in Singapore, a relatively wealthy society with an excellent telecommunications structure and an English-speaking populace.

However, the "ambivalence" of the Internet, as with other technologies, means that its use is shaped not only by design features, but also by the broader social context of its adaptation and use. Like any technology, the Internet is not a destiny but a social battlefield, in which different societal actors and groups fight to assert their own views and voices. This notion of technology as a site of struggle is somewhat in line with the concept of *organizational pluralism*, which suggests that there is pulling and hauling among numerous actors and groups to determine uses of technology, with benefits divided differently at different times (see discussion in Danziger et al., 1982). However, a critical theory of technology must also take into consideration broader social, political, and economic factors to analyze how underlying power differentials and struggles help shape contention between groups. In the case of Singapore, organizational struggle within the city-state must be considered in the context of broader socioeconomic issues, such as the rapidly changing global economy, the changing class structure in Singapore with the rise of the island's computer and telecommunications industry, and contention between Singapore and other Asia Pacific centers for economic supremacy. This broader social context suggests that those forces favoring continued educational and media reform will likely gain strength in coming years and will continue to press for, and achieve, some of their goals.

A broader critical analysis of the impact of information and communication technologies in Singapore remains to be conducted. In this short piece, I have only attempted to highlight the centrality of the issue of top-down versus bottom-up control, as illustrated by debates over media censorship, educational reform, and language policy. In the authoritarian/communitarian society that is Singapore, struggle over these issues is muted, but not absent. Whether the island succeeds in becoming not only more intelligent but also more free is yet to be seen. But with the nation facing political, educational, and language challenges that may soon be faced by other authoritarian states seeking to adopt the Internet, Singapore's dilemmas and struggles deserve our close attention.

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