



Internet-Mediated Experiences of Underdevelopment: A Four-Country Survey of Academia*

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Abstract

Professional academics in Indonesia, Malaysia, Singapore and the United States have significantly different subjective experiences of Internet use. This difference appears not only in substantial inequalities of access, but also in a higher level of expectation and value placed on the Internet among Indonesians and secondarily Malaysians. These results, from a survey and interviews of teachers and researchers in the social sciences and humanities, are analyzed in the context of dependency theory within knowledge economies. While inadequate and unequal access to information and communication technology is a substantial problem, the article argues that emphasizing access, resource and skills development alone will not solve academic and other more general dependencies within knowledge economies. Rather, a simultaneous — if sometimes conflicting — emphasis on both infrastructural development and de-centered production of knowledge is called for.

Keywords

[please supply between five and eight keywords]

Introduction

Budiawan arrives at his office between five and six in the morning, as the early dawn is still clearing away the dusty Jakarta night. He fires up the desktop computer and logs on to the Internet server, listening to the familiar squeal and whirr of the modem. With a few clicks of the mouse, he opens Internet

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Explorer and locates the object of this morning's search — a World Bank report on developing countries. Click, click, the download begins. Estimated time left 47 min 56 sec. Budiawan retires to the office kitchen, makes a cup of tea, and flips through the morning newspaper. Ten minutes later he returns to his desktop and curses when he sees that the connection to the server has dropped.

In 1999, scenarios similar to this were recounted frequently to me in the course of interviewing Indonesian academics and researchers about their use of the Internet (Thompson 2004). In subsequent years, further interviews and conversations suggest that not much has changed. While some facilities have improved in some places, stories of limited and frustrated access to online information remain commonplace. This paper examines cross-national inequalities in the area of access to Internet resources among academics in Indonesia, Malaysia, Singapore, and the United States. The primary findings presented are from a survey of academic Internet users conducted in 2002–2003 that lend support to the impressions gathered previously and subsequently from open-ended qualitative interviews. I argue that the digital divide is not only constructed in terms of limits to access and resources, but also entails an experiential, subjective sense of underdevelopment within knowledge economies.

The choice of Indonesia, Malaysia, Singapore and the United States was driven by two main concerns. The survey aimed to contribute to a specific discussion of the state of Southeast Asian studies while also more broadly addressing the “academic dependency theory” and ideas about the world system of academia. Within Southeast Asian studies, the expansion of Internet access and email use is frequently cited as a boon to scholarship (e.g. Dutton 2007:149; Social Science Research Council 1999). Yet, the specific effects of Internet or other ICT on the distribution of knowledge and its production within Southeast Asian studies; is relatively under-examined (Thompson 2006; cf. Dutton 2007:158, 160–163). One set of findings from the survey examined the shape of email-mediated networks of communication among scholars of and in Southeast Asia (Thompson 2006). The present paper focuses on additional findings regarding the subjective experience of Internet use by those same scholars. The four countries captured in this survey represent different locations in terms of the academic world system. The United States is widely seen as a nodal core (if not *the* nodal core) in that system. Singapore (along with Japan and several other sites) can be seen as part of the “semi-periphery”, while Malaysia and Indonesia would generally be viewed as operating on the periphery of the academic world system (see: Alatas 2003, 2006a; Kuwayama 2004; Ribeiro and Escobar 2006). The survey findings of the networked typology of email communication, largely confirm this view of the academic world

system, at least among Southeast Asian scholars (Thompson 2006). At the same time, general Internet connectivity is somewhat more readily available in Malaysia as compared to Indonesia.

The survey confirmed that a disparity existed in the experience of Internet use by academics in Indonesia and Malaysia as compared to their American and Singaporean counterparts. In the former nations, and particularly Indonesia, academics not surprisingly expressed frustration at the limits to their Internet access, whereas there was general satisfaction among Singaporean and American academics with regard to the Internet resources at their disposal. However, the different subjective experiences of Internet use were not merely about access. In Indonesia and Malaysia, academic users of the Internet were found to have heightened expectations of its potential over Singaporeans and Americans.¹ Academics in countries such as Indonesia and Malaysia not only experienced a sense of inadequate facilities, but this was compounded by a stronger feeling — relative to their Singaporean and American counterparts — of the importance of the information “out there in cyberspace” that they were missing out on.

Borderless worlds and the free flow of information, imagination and creativity continue to be fodder for corporate advertising campaigns. In the past decade or more, nonetheless, of expanding “knowledge economies”, academic assessments as well as popular accounts of the development of information technology and the Internet in particular, have been far more measured (e.g. Castells 1996, 1998; Frost 2006; Slevin 2000; Stoll 1995).² We have become aware of various and complex “digital divides” (e.g. Barzilai-Nahon 2006; Norris 2001; Samarajiva and Gamage 2007; Strover 2003; Van Dijk and Hacker 2003; Vehovar et al. 2006). Moreover, suggestions of purely technological solutions (i.e. more investment in training, hardware and infrastructure) have been at least tempered by attention to social, cultural, political and other factors that shape the networked world (e.g. Bunnell 2002; Castells 1996, 1998; Hakken 1999; Koku, Nazer and Wellman 2000; Parayil 2005; Riles 2000; Thompson 2004; Warschauer 2003; Wilson 1998).

While unequal access to resources (e.g. computers, online connections, servers and other equipment and infrastructure, not to mention knowledge

¹ Throughout the article, I am referring to academics based on their institutional affiliation, not their national citizenship. Large numbers of “Singaporean academics” in this case are not Singaporean citizens. The same is true in smaller numbers for respondents discussed from America, Malaysia and Indonesia.

² Nevertheless, writings emphasizing the transformative effects of ICT are not difficult to come by, e.g. Foloridi, 2007.

and training) is one important aspect of the “digital divide,” a similarly important and related issue is the subjective experience of the digital divide, especially among those who are on the “wrong” side of that divide.³ The conditions of evolving Internet connectivity and use in places like Indonesia, Malaysia and Singapore have been different in important respects from the well-known history of the Internet in the United States, and also different from place to place within regions like Asia and within nations themselves (Ho et al. 2003). One of the important differences has been the “compressed” time-frame in which the Internet has been adopted, combined with excessive commercial Internet hype, and a large gap between the promise of Internet connectivity and the reality of poor infrastructure and uneven access, often due to basic economic constraints or the elaboration of off-line social inequalities in the online world (cf. Beal 2003; D’Costa 2003; Thompson 2004).

The issue here is about the *cultural* construction of the digital divide between academic Internet users in different nations. By pointing to the cultural construction of a digital divide, I am *not* referring to a concept of static, bounded, indigenous, national, ethnic or linguistic cultures (which, while still widely used, is of questionable analytical value or empirical validity; cf. Handwerker 2002). Rather, I mean the processes that engender senses of selves, identities, positionality and hierarchies within a wider field referred to here as a “knowledge economy.”

The term “knowledge economy” has become a broad and often glorified catch phrase to describe a wide variety of activities in which the production and products of knowledge (embodied ideas, patents, technological processes and the like) are central to relative success within a system of value and growth of the system itself (e.g. Powell and Snellman 2004:201). Many national development agencies (in this case particularly those of Malaysia and Singapore) have deployed a rhetoric of establishing a national “knowledge economy.” I am using the term in a more limited and precise sense, referring specifically to the economy (i.e. relationships of exchange) of academia. Professional academics whose primary activities are teaching and research engage in a knowledge economy arguably of a purer type than that which is now considered to be of such importance for global businesses. Ideas and information are the primary goods in which professional academics trade. Access to ideas and information, as well as one’s location in their production chain, are a crucial factor in determining an individual’s fate in the academic knowledge

³ For the sake of brevity, I am glossing over the complexity of that divide and the important problem of its representation as a binary divide rather than a much more complex, layered, mosaic of access, abilities, content, etc. (cf. Beal 2003:26; Barzilai-Nahon 2006; Norris 2001; Strover 2003; Van Dijk and Hacker 2003; Vehovar et al. 2006; Warschauer 2003).

economy (cf. Burris 2004; Purcell 2007). It is this particular economy of the world system of academia with which I am concerned; not the broader national economies of Indonesia, Malaysia, Singapore or the United States.

In the following sections of this article, I first discuss the conditions of access in the four countries, including investment in information technology as well as the historical development of the Internet and associated cultural context surrounding this development in each country. Second, I report the results of a survey of scholars in the social sciences and humanities at universities and research institutes in the four countries regarding their personal experiences and opinions about the Internet. Based on the results of the survey, as well as more qualitative and anecdotal evidence, I argue that the experience of these inequalities in the knowledge economies of academia produces a particular subjective sense of “underdevelopment” among Indonesian and to a lesser extent Malaysian academics. The conclusion returns to a broader consideration of the challenge of academic — and more broadly, intellectual — dependency in a networked world.

Conditions of Access

Three interrelated conditions accompanying expanding access to Internet connectivity are important in the context of the disparate subjective experiences of Indonesian, Malaysian, Singaporean and American academics: the particular histories of Internet expansion in each country, the hype and discourse accompanying that expansion, and the infrastructural investments made in support of Internet expansion.

The American experience has been retold in various forms, and is generally said to originate in the U.S. Department of Defense’s ARPANET project of the late 1960s and early 1970s development of protocols for email communication (e.g. Cummings and Kraut 2002:221; Dodge and Kitchen 2001:155). From this beginning, the Internet expanded slowly and mainly among small groups of academics at American universities (cf. Beal 2003:36–37). When Internet use and access began to expand more rapidly from the late 1980s and particularly in the 1990s accompanying the popularity of the “World Wide Web” and graphics-oriented browsers, email use and file-transfer-protocols (FTPs) were already widely used and solidly entrenched in at least some academic circles. To the extent, that a “digital divide” was (or still is) felt among American academics, it was usually discursively structured as a divide between the older and younger generation of scholars. Although, even the significance of this generational divide was muted by the fact that given a relatively evenly distributed infrastructure, access to the Internet was more a matter of inclination

than age (many “older” scholars were or are extremely tech-savvy, while many “younger” scholars are equally not). In addition, the complaints of having to learn “new technologies” were often almost as acute among “younger” scholars as “older” ones, given the very rapid changes in email, FTP and WWW-browser technologies and interfaces during the 1990s.

For Singapore, Malaysia and Indonesia, evolution and expansion of Internet connectivity not only came somewhat later than in the United States, but also emerged in the context of powerful developmentalist discourses guiding national agendas as well as widely capturing the national imaginations within those countries. In the 1980s and 1990s, all three countries were among the nations that embodied the so-called “Asian economic miracle,” judged primarily by high Gross Domestic Product (GDP) growth rates and other economic indicators (Mallet 1999; Rigg 1997).

In the 1990s, Internet connectivity became the *sine qua non* of development and modernity particularly in Singapore and Malaysia, but also Indonesia. Singapore’s powerful government development agencies have conceptualized Singapore as a “wired city.” It is a leading center for e-commerce within Asia with an economy increasingly dominated by “knowledge” as opposed to manufacturing industries (Kuo and Low 2001; Thompson 2001:125–126). In 1996, Malaysia launched an ambitious “Multimedia Super-Corridor” (MSC) through which it sought to attract high-tech (and high-value added) foreign direct investment (Bunnell 2004; Folk 1998). The MSC project became an important part of a broader Malaysian discourse of modernity and nationalism (Bunnell 2002, 2004). Although Indonesia was in fact one of the first countries in Asia to be connected to the Internet in 1984 (Lim 2003:117), the “wiring” of Indonesia has proceeded at a slower and more uneven pace than either Malaysia or Singapore. Nevertheless, connecting to the Internet has been a subject of desire in the discourses of development and modernity among Indonesians, as in Malaysia and Singapore (Hill and Sen 1997:68). In Indonesian academic institutions in particular, computers and Internet access were limited, valued goods associated with status in academic hierarchies, in many cases being distributed, seemingly inefficiently — such as to deans, department heads and other senior staff, who underutilized them relative to more junior staff (Thompson 2004).

In all of these cases, the development of Internet connectivity has been closely connected to a broader developmentalist discourse. Singapore, Malaysia and Indonesia all see themselves as “developing” economies at a comparative disadvantage to other nations and regions — particularly the United States, Europe and Japan. In Malaysia, the dominant political-economic rhetoric since 1991 has been former Prime Minister Mahathir Mohamad’s “Vision

2020,” which calls for Malaysia to “become a fully developed” country by that year. Economic discourse and analysis in Singapore likewise is commonly framed in reference to becoming a “fully developed” country and a “full-fledged information society” (Kuo and Low 2001:291). Economic and political discourse in Indonesia is generally less optimistically progressive than in Malaysia or Singapore, with more analysis of problems of corruption, poverty and underdevelopment than projections of a “fully developed” future status. Nevertheless, Indonesia shares with Malaysia and Singapore an overarching “developmental” ideology. In all three countries, the idea of “catching up” or being “left behind” relative to America, Europe, Japan and others has a powerful hold on the national imagination. Expanding Internet use and infrastructure within this developmentalist context differs from its expansion in places like the United States, where developmental comparison to other nations is not nearly as pronounced.

A final and closely related aspect of the different paths toward Internet connectivity in America, Indonesia, Malaysia and Singapore are the wide disparities in investment in information and communication technology (ICT) in the four countries. From 1995 to 2001, in the six years prior to the period captured by the survey, the United States, Singapore and Malaysia all showed increases in overall expenditures on ICT infrastructure, in total real dollars, as a percentage of the GDP and in *per capita* outlays (see Table 1). Indonesia, by contrast, was one of the few countries (and the only in Southeast Asia for which data is available) in which the total and *per capita* expenditures on ICT actually fell between 1995 and 2001 and expenditure as a percentage of GDP remained essentially flat.

Table 1: ICT Expenditures for USA and Select Southeast Asian Countries, 1995/2001

Country	Total ICT \$,millions 1995	Total ICT \$,millions 2001	ICT as % of GDP 1995	ICT as % of GDP 2001	ICT per capita (\$) 1995	ICT per capita (\$) 2001
USA	557,252	812,635	7.5	7.9	2,118	2,924
Singapore	5,735	9,592	6.9	9.9	1,920	2,110
Malaysia	4,438	6,325	5.0	6.6	221	262
Thailand	4,464	4,751	2.7	3.7	75	76
Indonesia	4,337	3,540	2.1	2.2	22	17
Philippines	1,933	3,131	2.6	4.2	28	41
Vietnam	740	2,124	3.6	6.7	10	26

Source: World Bank <http://www.worldbank.org/data/countrydata/ictglance.htm>

The real-dollar fall in ICT expenditure in Indonesia was due in large part to the aftermath of the 1997–1998 Asian financial crisis and devaluing of the Indonesian Rupiah. Indonesia was disproportionately effected by the crisis and particularly slow to recover. World Bank data up to 2001 shows that among Southeast Asian countries, Indonesia was near the bottom in terms of ICT investments (particularly in percent of GDP and *per capita* terms). Singapore by contrast showed rates of investment in ICT nearly comparable to that of the United States, while Malaysia's investments in ICT fell in between that of Singapore and its other Southeast Asian neighbours — significantly lower than the former but significantly higher than the latter. While precisely similar data are not available post-2001, the World Bank 2006 report on ICT and development indicates that comparable disparities continued during the subsequent five years (World Bank 2006). In this context, the current study examines the comparative experience of academic Internet users in these four countries.

Preliminary Fieldwork and Survey

This study stemmed initially from involvement on a project developing a database of experts on Asia in the social sciences and other fields.⁴ In the course of that project, I sought to understand the barriers to greater involvement and networking between individuals and institutions in the United States with those based in Southeast Asia. Interviews and discussions with Indonesian and Malaysian professionals (mostly academics in the social sciences — but also technology experts and others) raised a range of issues related to their personal feelings and experiences regarding the Internet. Not only did they commonly express frustrations such as slow and dropped connections, they also related a strong sense of relative lack — that they did not have access to information in a way they imagined or had experienced it to be in other places such as North America or Europe.

The results of the survey discussed in this article focus on a series of questions about respondents' subjective experiences with the use of the Internet

⁴ During 1999–2000, I was an intern and then Southeast Asia research coordinator at the National Bureau of Asian Research in Seattle, Washington and involved with developing the AccessAsia database (<http://www.accessasia.org/>); in particular I was tasked with increasing the number of experts from Southeast Asia in the database and coordinating with institutional partners in Southeast Asia.

and their opinions on the role of the Internet in their professional work. The questions were developed based on prior interviews and numerous informal discussions with academics — most in Indonesia, but also in Malaysia, Singapore and the United States (cf. Thompson 2004). The questions (listed in Table 5) were aimed at exploring the respondents' attitudes and experiences in four broad dimensions which had appeared as relevant in the previous fieldwork: their frustration related to both facilities and online experience; their sense of "information overload"; their feeling about the impact of the Internet on the way they work; and their opinions on the value of the internet, both to themselves and their profession.

Table 2: Use Statistics

	Internet Use	Work Access+	Home Access+	Web User+	Email/ Day+*
Indonesia	71.6%	82.5%	53.5%	66.7%	3
Malaysia	98.2%	98.2%	71.0%	89.6%	6
Singapore	100%	100%	81.5%	96.9%	25
USA	98.5%	100%	88.5%	95.5%	30

+Among Users; *Median Reported Received

The survey was conducted between October 2002 and July 2003 among academics in the social sciences and humanities. In the case of Indonesia, Malaysia and Singapore, responses were collected from simple random samples using faculty and research staff lists of universities and research institutes: two universities and one research institute in the case of Indonesia ($n = 190$, of which 136 were Internet users), two universities in the case of Malaysia ($n = 165$; 162 users) and one university in the case of Singapore ($n = 65$; all users). In all cases, these were leading universities and research institutes in each country. For the United States, the sample attempted to capture specialists in Southeast Asian studies. For practical purposes, responses were drawn from six universities with centers for Southeast Asian studies using available lists of the centers' affiliate members ($n = 131$; 129 users). Student research assistants in each country administered the survey questionnaires in short interviews with respondents. The questionnaire and interviews were conducted in the primary language of instruction in each institution. The overall response rate for the survey was 82.73% (83.70% in Indonesia, 82.09% in Malaysia, 74.71% in Singapore and 86.75% in the United States).

Uneven Access and Use

Results of the survey show uneven use and access to the Internet across the four countries. Singaporean and American academics had the highest rates of use and access. Indonesians had the lowest. Malaysian academics had virtually the same access to the Internet that Singaporeans and Americans had, but somewhat lower use.⁵ Use of the Internet was practically universal in Malaysia, Singapore and the United States (see Table 2).

A significant majority (71.5%), though not all academics in Indonesia used the Internet. Access to the Internet at work among users in Indonesia was high (82.5%), but still relatively low compared to the almost universal access at work in Malaysia, Singapore and the United States. Access to the Internet from home was similarly lowest in Indonesia. Use of the Internet to search for information on the World Wide Web was also close to universal in Singapore and the United States, almost 90% in Malaysia, but only done by two-thirds of Indonesian respondents.

Email use, measured here by number of email messages received per day, was much higher among Singaporeans and Americans than among Malaysians and Indonesians. In all cases, a few individuals reported receiving one hundred or more messages a day (one Indonesian respondent reported 200 per day!). These outliers skewed the average number of emails upward (especially in the case of Indonesia). In this case the median number is a clearer reflection of the “average” user across nations. Median self-reported email messages received per day shows a wide incremental gap between Indonesians (3 per day) and Malaysians (6) compared to Singaporeans (25) and Americans (30).

The frequency with which respondents checked email and used web browsers also show heavier use by Singaporean and American academics. The National University of Singapore and most if not all of the American universities where the survey was conducted had “always on” connections for faculty members. Most Indonesian and Malaysian academics had dial-up connections or other connections that were not “always on” or in some cases had connections that slowed down their computers and so were less inclined to keep an always-on connection, “always-on.” These differences in ease of connectivity almost certainly account for the differences in frequency of use, with Singaporeans being the most frequent users (of checking email and web browsing) followed by Americans, with significantly lower rates for Malaysians and again lower for Indonesians as compared to Malaysians (see Tables 3 and 4).

⁵ Access in this case is being measured in purely categorical, yes/no terms, and so does not take into account different *degrees* of access, such as the ease of access, connection speeds, and so on.

Table 3: Checking Email Frequency (Users)

	Several x Daily	Daily	Several x Weekly	Weekly
Indonesia	23.1%	28.5%	25.4%	23.1%
Malaysia	56.0%	27.0%	13.2%	3.8%
Singapore	92.3%	7.7%	0%	0%
USA	88.2%	9.4%	2.4%	0%

Table 4: Web Surfing Frequency (Users)

	Several x Daily	Daily	Several x Weekly	Weekly
Indonesia	20.3%	9.8%	31.7%	38.2%
Malaysia	39.0%	11.0%	30.8%	19.2%
Singapore	72.6%	12.9%	11.3%	3.2%
USA	53.6%	15.2%	22.4%	8.8%

Table 5: Survey Questions

Participants were asked to respond to the following statements on a 7-point Linkert scale.

One = “Strongly Disagree”; Seven = “Strongly Agree”

Number	Question
2.1	The Internet services at my institution are generally satisfactory.
2.4	The way I do my work would be very different without Internet access.
2.5	I use email more often than any other means to communicate with colleagues.
2.6	I often get frustrated because my Internet connection is too slow.
2.7	I often feel overwhelmed by the number of email messages I receive.
2.8	In general, the Internet is beneficial for academic research.
2.9	I often get valuable information related to my work through the Internet.
2.10	The Internet changes the way that work in my field is done.
2.11	I often delete email messages after reading only the subject line.
2.12	In general, the Internet makes my work easier.
2.13	I get information from the internet that I could not get elsewhere.
2.14	The Internet is usually the first place I go to search for information related to my research.
2.15	My institution needs to do a lot to improve Internet access.
2.16	I often find there are times I want to use the Internet but do not have access to it.
2.17	I often receive more email than I have time to read.
2.18	I often find searching for information on the Internet frustrating.

Frustration and Overload

Internet users face very different frustrations and different online experiences across the four countries. Indonesians, with the lowest use and access, not surprisingly reported the greatest frustration with their access to the Internet and the facilities available to them (see Table 6). Indonesians were least satisfied with the facilities available to them and felt that their institutions needed to do more to improve Internet access. They were most likely to experience frustration because their connection was too slow and have times when they could not access the Internet. Singaporean and American academics, conversely, were generally very satisfied with the facilities available to them and their access to the Internet. Malaysians fell in between, being significantly less satisfied with the facilities at their institutions and their access to the Internet than either Singaporeans or Americans and significantly more satisfied in all cases than Indonesians.

Table 6: Measures of Frustration

	Indo Mean	Msia Mean	Sing Mean	USA Mean	Indo- Msia t-test Sig.	Indo- Sing t-test Sig.	Indo- USA t-test Sig.	Msia- Sing t-test Sig.	Msia- USA t-test Sig.	Sing- USA t-test Sig.
2.1 Facilities Satisfactory	3.60	5.42	6.03	6.12	.000	.000	.000	.002	.000	.625
2.6 Slow Connection	5.32	4.68	3.45	3.53	.002	.000	.000	.000	.000	.769
2.15 Need Improvements	6.57	5.09	3.00	3.12	.000	.000	.000	.000	.000	.642
2.16 Often Can't Access	5.05	3.66	2.68	2.24	.000	.000	.000	.000	.000	.055
2.18 Search Frustration	3.17	4.11	3.73	4.03	.000	.024	.000	.115	.297	.021

Table 7: Measures of Overload

	Indo Mean	Msia Mean	Sing Mean	USA Mean	Indo- Msia t-test Sig.	Indo- Sing t-test Sig.	Indo- USA t-test Sig.	Msia- Sing t-test Sig.	Msia- USA t-test Sig.	Sing- USA t-test Sig.
2.7 Too Much Email	3.52	4.12	4.69	4.68	.003	.000	.000	.010	.006	.974
2.11 Delete w/o Reading	4.21	4.12	4.66	5.01	.677	.130	.001	.053	.000	.239
2.17 Cannot Read All	4.48	4.08	4.57	5.05	.076	.733	.014	.053	.000	.065

Singaporean and American academics, however, experienced significantly more information (or specifically email) overload than Malaysians, who in turn reported somewhat more information overload than Indonesians (see Table 7).⁶ In all the statements related to email overload, American academics agreed the most strongly. Also, notably, while Indonesians were the most frustrated with regard to Internet access, they reported significantly less frustration than all other respondents with regard to searching for information when online. While Americans, Singaporeans and Malaysians all had more and better access to the Internet, Indonesians were apparently more satisfied (or at least less frustrated) with what they found online and when it came to looking for information. This is also reflected in how respondents from different countries assessed the impact and value of the Internet in relationship to their own experience and academia generally.

Table 8: Impact of Internet

	Indo Mean	Msia Mean	Sing Mean	USA Mean	Indo- Msia t-test Sig.	Indo- Sing t-test Sig.	Indo- USA t-test Sig.	Msia- Sing t-test Sig.	Msia- USA t-test Sig.	Sing- USA t-test Sig.
2.4 Work Different	5.43	5.35	5.53	5.65	.681	.676	.246	.460	.185	.623
2.5 First Means	3.94	4.68	5.08	5.80	.000	.000	.000	.113	.000	.004
2.10 Changes Field	5.42	5.41	5.05	5.66	.967	.142	.185	.129	.129	.011
2.14 First Place to Look	5.08	5.20	4.72	4.25	.536	.205	.000	.057	.000	.096

Value and Impact of the Internet

Respondents from all four countries generally agreed that “the Internet changes the way that work in my field is done” and that “the way I do my work would be very different without Internet access.” Moreover, there was little or no significant difference in the degree to which Indonesians, Malaysians, Singaporeans and Americans agreed with these statements (see Table 8). The relative levels of information or email overload between the countries were mirrored in the inclination toward the use of email over other forms of communication. Americans showed the greatest inclination to use email more often than other means, significantly higher than either Singaporeans or Malaysians, whose

⁶ For an overview of the concept of “information overload” see Eppler and Mengis 2004.

inclination was again significantly higher than Indonesians. Indonesians and Malaysians, however, indicated the greatest likelihood that the Internet would be the first place they would look for information related to their research. The mean answer to this question was ambivalent for American academics (4.25 on a 1 to 7 scale) and significantly lower than that of Indonesians or Malaysians (mean scores both over 5). Singaporean academics fell in between the two groups, with a mean that was not statistically different from either.

Of all the respondents, Indonesians judged the Internet to have the greatest value (see Table 9). In particular, Indonesian academics agreed most strongly that they “get information from the Internet that I could not get elsewhere.” Indonesians’ response to this question was very significantly higher (mean over 6) than that from all other countries, whose agreement with this statement was largely the same (mean of 5.22 to 5.34). Indonesians also gave the strongest agreement with regard to the benefits of the Internet for academic research, the Internet having valuable information for their own work, and the Internet making their work easier. In all cases, their responses were significantly higher than those of American academics and in some cases significantly higher than those for Malaysians.

In interviews, Indonesian academics often talked about the Internet as a means to compensate for a lack of resources and access to information by other means — particularly with regard to inadequate library facilities (cf. Reid 1995; Rosenberg 1998). Some of the information that they sought online focused on local (national) content such as online newspapers and information from government ministry websites. But much of their online time was dedicated to finding (and downloading) information from outside Indonesia, particularly from sources in the United States, Europe, Australia and elsewhere, such as the World Bank or various online journals in their area of expertise. In the latter respect particularly, the Internet played a conflicting role in their professional identities. On the one hand, it promised — and in some cases did in fact provide — access to information and ideas to a degree unimaginable only a decade or less earlier. Yet at the same time, it heightened their sense of comparative disadvantage vis-à-vis scholars in “developed” countries and strengthened the bonds of dependency on networks of academic researchers and the production of ideas centered on sites far removed from their own (cf. Harvey 1989). The conflicting role of Internet communication as bane and boon for Indonesian academics can be situated in the context of their position in a wider academic knowledge economy.

Table 9: Value of the Internet

	Indo Mean	Msia Mean	Sing Mean	USA Mean	Indo- Msia t-test Sig.	Indo- Sing t-test Sig.	Indo- USA t-test Sig.	Msia- Sing t-test Sig.	Msia- USA t-test Sig.	Sing- USA t-test Sig.
2.8 Benefits Research	6.41	6.01	6.06	6.08	.003	.067	.012	.809	.662	.939
2.9 Useful Information	6.04	5.55	5.75	5.59	.004	.183	.010	.354	.831	.465
2.12 Makes Work Easier	5.84	5.63	5.58	5.25	.187	.227	.001	.827	.025	.123
2.13 Get Unique Info	6.09	5.25	5.22	5.34	.000	.000	.000	.875	.628	.598

Experiencing Underdevelopment in a Knowledge Economy

One possible explanation for the different attitudes and experiences of Indonesian, Malaysian, Singaporean and American academics found in the survey and interviews would focus solely on infrastructure and access. Indonesians, and secondarily Malaysians, according to this explanation, experience a sense of lack only because of the poor facilities available. While this is indeed a primary issue, it does not fully address a more systemic issue that Syed Farid Alatas identifies as “academic dependency” (following Altbach 1977 and Gerreau 1988; both cited in Alatas 2003; see also Alatas 2006a).

André Gunder Frank’s classic formulation of dependency theory, or the “development of underdevelopment” thesis, argued that economies in Latin America (and by extension Africa, Asia and elsewhere) were not “underdeveloped” due to traditional or feudalistic, pre-capitalist conditions, but by the very nature of their incorporation into the (capitalist) world economic system (Frank 1994[1966]). Frank laid out a specific argument of the relationship between metropole and satellite economies within the system. Prior to incorporation into the system (or in Frank’s view, the development of the capitalist system in general), economies may have been “undeveloped” but they were not “underdeveloped.” Through the expansion of capitalism, particularly under European colonialism, metropole-satellite relationships were established, such as between the European powers and their colonies, and urban centers and rural peripheries (especially in the Third World). Under these conditions, the satellite economies became *underdeveloped* in specific relationship to the metropole, due to their subordination to and dependency on the metropole-centered economy.

Drawing on Frank's dependency theory analysis of industrial and commodity production to analyze intellectual production and the "global division of labour in the social sciences," Alatas suggests that the development of social sciences outside of Europe and North America, particularly the production of theory as opposed to practical and applied research, is engendered by the ties to and dependence on what he calls the "social science powers," particularly the United States, Great Britain and France (Alatas 2003:602; see also Alatas 2006a; Kuwayama 2004; Ribeiro and Escobar 2006). As I have reported elsewhere (Thompson 2006), the results of the survey related to email communication show a pattern that closely resembles Alatas' framework of academic cores (e.g. the United States), semi-peripheries (e.g. Singapore) and peripheries (e.g. Malaysia and Indonesia).

There are at least two analytically distinct (though in practice, interrelated) aspects of the development of underdevelopment (either in its classical form or in knowledge economies). The first, emphasized by Frank, is material underdevelopment, in which infrastructure, production, consumption and other elements of the system are organized in such a way as to engender inequalities. A second aspect of underdevelopment is the cultural, discursive, or psychological dimensions of the metropole-satellite relationship, in other words, the ways in which that relationship engenders particular ways of talking, thinking, and feeling about relationships and states of "development" and "underdevelopment" (cf. Escobar 1995). In simple terms, "*underdevelopment*" is at one level a discourse of comparison. It involves the experience of a sense of lack or disadvantage at the periphery vis-à-vis the metropolitan center.

This sense of disadvantage came out clearly in many of the interviews in Indonesia and Malaysia and is born out more generally in the results of the survey reported above. Several respondents (or non-respondents) also provided a critique of information technology generally — and the Internet specifically — as a mode of Information age imperialism (cf. Loo and Yeap 1998). An Indonesian academic, who was also serving in a government appointment, for example, took this critique seriously enough to refuse to use the Internet, mobile phones or any other of the newer information and communication technologies. He argued passionately that this was just one more means by which Indonesians were being "mentally colonized." In a similar vein, one of the Malaysian academics who refused to respond to the survey questionnaire did so on his belief that this was an attempt by Singapore to subversively "benchmark" itself in a comparatively favourable light to Malaysian academic institutions (as the survey was conducted under the auspices of a National University of Singapore research grant). While these opinions and

reactions were atypical, they do reflect a more general unease and sense of disadvantaged self-consciousness among Indonesian and Malaysian participants in the survey and fieldwork.

Understanding the problem faced by Indonesians, Malaysians and others as one of systemic dependency within a knowledge economy does not provide any easy or clear solutions for the development of progressive Internet-related policies. In fact, it highlights the very horns of the dilemma between fostering further *development*, in terms of infrastructure, resources, skills, etc. and encouraging greater *autonomy*, to break the ties of academic dependency (and other knowledge-based dependencies). These two paths seem to work in opposite directions. On the one hand, ongoing upgrading of information and communication technologies, training and so on, operates to further entrench individuals and institutions into a global knowledge economy, without any clear indication that they will either be able to move up in the status and resource hierarchies inherent in that system or that the hierarchies themselves can ever be leveled or eliminated. Gaps between the assumptions and capacities in the core sites of the system and those in the periphery further contribute to higher rates of “failure” in the dependent periphery (cf. Heeks 2002; Rolland and Monteiro 2002). In the specific case of academic dependency, this means that those on the periphery are systemically less likely to receive the rewards of that system (e.g. recognition, acceptance of innovative ideas, opportunities in funding and research, and so on). More generally, knowledge-economy dependencies would have similar implications in business innovation, capital accumulation and other activities (cf. Harvey 1989 on regimes of flexible accumulation).

The alternative often advocated (at least since Frank’s original work if not before) is to foster “autonomous” regimes — of production, political economies, or in this case knowledge economies — that would operate independently of current centers within the system (e.g. Alatas 2003:602–603, citing Garreau 1985; cf. Alatas 2006b). However, such a proposal, at least if carried to an extreme, would seem untenable in practical terms and likely to generate its own set of undesirable outcomes. Communication, interaction, and exchange are at the heart of the production, dissemination and consumption of knowledge. A narrow rejectionist agenda would ultimately be self-defeating in an attempt to improve the knowledge economy within which an individual, institution or even a nation is operating. To the extent that autonomous knowledge economies do exist — e.g. Islamic jurisprudence, *feng sui*, and even to a lesser degree, different fields of academic knowledge such as the division of science from humanities — they can be culturally irreconcilable in that the assumptions, institutions and practices through which they operate do not

recognize nor validate the other's modes of thought or ways of operating. Successful training in a seminary, for example, will do little to get one's ideas recognized and considered in most academic fields nor will a Ph.D. in social science qualify one to lead and preach to a church congregation. Promoting "academic autonomy" in this sense would merely be a sophisticated form of opting out of the academic knowledge economy altogether.

Neither mere infrastructural development alone nor simple claims to autonomy in calls for "breaking ties" with central nodes in contemporary knowledge economies provides a singular solution to the problem of academic and similar dependencies in information societies. But understanding the experience of those in "peripheral" positions within such systems — as in the example of Indonesian and Malaysian academics provided here — indicates that *both* infrastructural issues (e.g. access, resources, skills) and issues of dependency (e.g. the sense of peripheralization and desires it engenders) need to be addressed simultaneously. Although they can work at cross-purposes — for example, increased access to the Internet can tie individuals more closely into the system that fosters "academic dependency" — these two issues do not merely act as a zero-sum game (in which increasing one variable automatically decreases the other and vice-versa).

The past several decades have been a period of rapid change at a world-wide scale with regard to information and communications technology. To some extent, this complicates any attempt to monitor the state of communications technologies, such as the Internet and its use among academics, in any particular sites at any particular time. The situation is given to change rapidly from year-to-year. The survey results here, for example, are specifically valid for 2002–2003 and could usefully be updated. My own ongoing interactions with academic colleagues, particularly in Indonesia, suggest that some improvements have taken place in terms of the breadth and quality of Internet access over the past several years. However, the findings of the survey and the arguments made here point to a more substantial systemic issue based in disparities of infrastructure, connectivity and communications technologies more generally. While in absolute terms, access to the Internet may be better now than several years ago in Indonesia (and elsewhere), during the same period, Internet communications has being revolutionized (yet again) by "Web 2.0" applications, such as online video. Given the heavy bandwidth requirements of such applications, the same relative disparities captured in the 2002–2003 survey, very likely continue into the present.

More and better access to Internet resources is clearly valuable to and valued by Indonesian, Malaysian and other academics. At the same time, a significant and purposeful investment needs to be made in fostering intellectual and

other knowledge-based development, which is not primarily dependent on the central nodes of knowledge-economies; and therefore, dependent on the information and communications technologies produced for and by those centers. In academic fields, such initiatives include hosting conferences in the “academic periphery,” exchanges of scholars among various “peripheral” academic institutions (for example, as graduate students, visiting scholars, and full time research and teaching staff), and development of collaborative and comparative research between “peripheral” institutions that is not mediated by a relationship to the “center.” In all of these respects, the Internet and other communication technologies can play a useful role. But only if a purposeful “de-centering” is undertaken and with attention to modes and technologies of communications that enhance the participation of all participants, rather than putting them at a disadvantage.⁷ Moreover, such initiatives must be structured and imagined in such a way that the objective is not (or not only) to provide those on the “academic periphery” with more access to the center, but rather to de-center and diversify the production of knowledge itself.

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⁷ In addition, there are a broader and extremely complex set of issues regarding the different structures of professional academic identities in different institutions, nations and societies that require further consideration than can be addressed in the present paper; see Evans and Brooks 2005 for one framework for approaching these questions; to which we need to add cross-national considerations of the different situations and meanings of being an academic in such diverse settings as Indonesia, Malaysia, Singapore and the United States.

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