



Dreamscapes of Modernity: Sociotechnical Imaginaries and the Fabrication of Power

Sheila Jasanoff (ed.), Sang-Hyun Kim (ed.)

<https://doi.org/10.7208/chicago/9780226276663.001.0001>

Published: 31 August 2015

Online ISBN: 9780226276663

Print ISBN: 9780226276496

Search in this book

CHAPTER

Nine Guerilla Engineers: The Internet and the Politics of Freedom in Indonesia

Joshua Barker

<https://doi.org/10.7208/chicago/9780226276663.003.0009> Pages 199–218

Published: August 2015

Abstract

This chapter charts the role of Onno Purbo (Hasan Poerbo's son) and his colleagues in building the Indonesian Internet in the 1990s and early 2000s, and shows how their work involved an attempt to construct an oppositional sociotechnical imaginary. Against state imaginaries that envisioned state-controlled, centralized, capital intensive networks of communications, these engineers imagined a new Indonesian Internet public creating a low-cost, large-scale, do-it-yourself network free of state control.

Keywords: [sociotechnical imaginary](#), [information technology](#), [politics of freedom](#), [history of the Internet](#), [Onno Purbo](#), [Indonesia](#)

Subject: [Cultural Studies](#)

Self-supported and self-funded, shoulder-to-shoulder, developing the nation and taking over other countries: that is what is happening in Indonesian information technology today. Don't expect World Bank or IMF loans. It is almost all resting on the strength of young people and ordinary Indonesian people, with hardly any help from the government much less from [political] parties; in fact, if anything the bureaucrats and police sweepings have made things more difficult. *Alhamdulillah*, the current from below has been able to build a nation between the cracks of the state's confiscations and anger, despite interrogations and imprisonments. The efforts at struggle are based on the simple ambition to see the Indonesian nation rely upon the strength of its minds, rather than its muscles. A nation able to triumph from its ability to think rather than to sweat and to shoot.

(Purbo 2003b)¹

In their recent book on the politics of Asian cyberspace, Deibert et al. (2012) argue that the idea that the Internet is destined to be a space of political freedom has now largely faded. Instead, they suggest, this idea is now best understood as a normative or rhetorical claim about what the Internet *should* be rather than what it is or what it will be. Underscoring this point, powerful actors like the former US Secretary of State, Hillary Clinton, and Google's leaders now find it necessary to regularly state their commitment to this normative ideal.

The embrace of this rhetoric by powerful US actors should not blind us to the fact that it is an ideal that has global reach and is embraced by a rather odd assortment of groups and individuals, often with very different backgrounds and agendas. If we are to understand the roots of this ideal—and its continuing power—we must examine the processes that constituted the association between the Internet and a politics of freedom in particular settings around the world. In this chapter, I examine the roots and character of this association as they developed in Indonesia in the 1990s and early 2000s. Specifically, I trace the activities and ideas of Onno Purbo, a man often called “the father of the Indonesian Internet.”

Starting in the 1990s, Purbo and a small group of colleagues and students at the Institute of Technology in Bandung (ITB) were instrumental in establishing the first campus LAN and the first intercampus computer network linking together campuses and research centers in the cities of Jakarta and Bandung. They then went on to establish a dedicated satellite gateway for this network to the global Internet and to grow their intercampus network to include universities across the archipelago. While commercial Internet service providers (ISPs) have since become widespread and tens of millions of Indonesians now access the Internet via cell phones and wireless and fixed-line connections, for several crucial years this nationwide campus network was the main backbone for Internet communication in Indonesia. I will show that in the process of building this network, Purbo and his friends were also self-consciously building a sociotechnical imaginary that linked the technology to a politics of freedom. To some degree this was reflected in their jargon, as when they referred to themselves as “activists” (*aktivis*) using “guerilla” (*gerilya*) tactics in their “struggle” (*perjuangan*) to bring a “free net” to Indonesia. Such references were somewhat tongue in cheek, but they are suggestive of some of the roots of their sociotechnical imaginary. In part, their imaginary was an extension of a globalizing rhetoric about the Internet commons, but it was also inflected by the specific history of technology and nationalism in Indonesia and by ideas about bottom-up community development advocated by critics of the Indonesian government's development policies. Purbo himself was the son of development activist Hasan Poerbo, and he had been raised in an environment saturated with ideas about modernization from below.² Moreover, this imaginary was shaped by changes in Indonesia's political landscape during this period, as the country's longtime dictator, President Suharto, was eventually ousted under pressure from a student-led reform movement.

Besides its local inflections, what is also notable about the emergence of Indonesia's early Internet imaginary is that it developed largely independently of the institutions of state power. As Jasanoff and Kim (2009) have shown, when championed by governments, and supported by state institutions, sociotechnical imaginaries can acquire remarkable force. But what if they do not have these supports? The case of the Indonesian Internet is interesting because it shows how a sociotechnical imaginary can take shape—and acquire force—through the efforts of a bottom-up actor network that gradually gives shape to a broader media “counterpublic” (Warner 2002).

Beginnings of the Indonesian Internet

There is no other country in the world that has a 10+ years history of struggle building its information society, and has been able to build this information society into millions of people by 2003 from nil back in 1993. No other country in the world has built a large-scale system all on the basis of mutual self-support. [...] It's not surprising that many of those present at the World Summit on the Information Society exclaimed, 'Indonesia is inspirational.'

(Purbo 2003a)

I first met Onno Purbo in 1995 at ITB. ITB is the oldest technical school in the country and its high temple of technology. Every incoming class of students is reminded that they represent the best that Indonesia has to offer. Faculty and graduates often seem to position themselves as high priests capable of mediating between the powerful and arcane world of new technologies and the mundane and familiar world of Indonesian underdevelopment. In the mid-1990s, ITB was the only place in Bandung where one could cheaply send and receive email. To get into the building where Purbo's research group was located I had to sign in with a security guard and state the purpose of my visit. Basoeki Suhardiman, a student who worked with Purbo, explained to me that they had learned long ago that it made sense to cultivate good relations with the security guard. They invited him up to learn how to use computers and always chatted with him when they passed his security post. Such security guards were sometimes plugged into the intelligence-gathering apparatus of Suharto's New Order regime, and it was best to keep them on your side. When Basoeki told me things like this he would speak in a hushed tone, and I often had trouble understanding him, not only because I had trouble hearing, but also because it all seemed overly melodramatic given that their activities in the lab were focused on technology not politics. I always felt that I was missing something. I had the same feeling some years later, after Suharto had been ousted and the military repression had been lifted, when I was discussing Purbo with a close friend of mine who works in a large telecommunications firm. He said, quite seriously, "be careful with Onno, he's dangerous." The tone and terms he used were somewhat anachronistic by this time, because they were drawn from the Suharto regime's discourse for branding opponents of the regime as dangerous communists, a label that could mean that those consorting with them might end up in prison or worse. Yet they still carried force. It was clear that Purbo somehow had come to represent a kind of politics that at least some people found threatening.

p. 202 To understand what this politics is it is helpful to contrast the beginnings ↴ of the Internet with the beginnings of Indonesia's domestic satellite system, which was the last great communications innovation for the country prior to the advent of the Internet. As I have described elsewhere (Barker 2005), Indonesia was the first developing country to have its own domestic satellite system. The imaginary surrounding the satellite was from its inception all about national unity and, to a lesser degree, national development (a fact it shared with the Canadian satellite system it was modeled upon). While first put forward by academics at ITB, the idea of the satellite as a national unifier was quickly picked up by the authoritarian Suharto government, which turned it into a kind of state dogma for telecommunications. Under the authority of the state's monopoly telecommunications provider, the satellite would serve the explicit purpose of instilling official nationalist ideology across the archipelago. Suharto named the satellite Palapa, which referred to an oath taken by a precolonial Javanese king to unite the archipelago under his rule. At the inauguration of the satellite, Suharto dressed up in traditional garb, recited the Palapa oath, and turned the satellite on using a button in a replica of a Javanese ceremonial dagger. In the decades since, Indonesian children have been obliged to learn about the Palapa oath and its link to the satellite and national unity through school textbooks.

While the Palapa dogma exemplifies a sociotechnical imaginary imposed from the top down with the full force of state power, it was also an imaginary sustained by domestic capitalists vying for contracts to build out the ground segment of the system. These entrepreneurs used the Palapa ideology and arguments about national

security to pressure bureaucrats and officials to buy more ground stations, particularly in border regions, where threats to national unity were feared to be greatest. The network they ended up building was thus one that reflected the deeply centralized imaginary promoted by the government and effectively hard wired its authoritarian politics into the terrestrial part of the system. There was nothing about freedom in the media ideology of the satellite, but it was a system that was from the outset all about politics.

The beginnings of the Internet, some two decades later, followed a very different trajectory of development. Rather than being coopted by the state for the purposes of social control, it emerged as a network of the people. Early Internet and proto-Internet development in Indonesia took place within loosely structured and sometimes overlapping communities of hobbyists—especially radio and computer hobbyists—and researchers working at the University of Indonesia (UI), ITB, and various government institutes like the National Agency for Assessment and Application of Technology (BPPT) and the National Institute of Aeronautics and Space.³ In general terms, one can distinguish between two kinds of network development during the period up until 1993. On one hand, there were hobbyists who sought to link together computers into networks that could exchange data, messages, and small pieces of software. These efforts originated among computer hobbyists in the early 1980s, with technologies like bulletin board systems, which depended on linking computers together via the telephone network. Starting in the late 1980s, radio amateurs started connecting their radios to computers in order to establish wireless networks capable of transmitting data instead of just voice. On the other hand, there were a couple of much more ambitious and costly projects that aimed to connect Indonesian universities and research institutes to growing interuniversity networks in the United States and Germany. The first of these latter initiatives emerged at UI, and the second originated at BPPT, which was headed by B. J. Habibie.⁴ Both were funded through moderately sized loans from the World Bank, and both envisioned a domestic network between universities and research institutes whose access to the globalizing Internet would be available through links at UI or BPPT, respectively. Habibie's ambition in particular was to replicate within Indonesia the kind of network that had emerged in the United States once the Internet had moved from the military into academia with support from the National Science Foundation.

Among researchers there was a great deal of enthusiasm for such international connections in part because many Indonesians studying in the United States, Canada, Europe, and Japan were involved in network development abroad. These expatriate students used the Internet to keep in touch with one another and to exchange technical know-how, software, and news. Graduates returning from abroad wanted to remain connected into these networks and to bring their colleagues and students in Indonesia into the growing conversation. The problems these people faced were the difficulty and high costs involved in connecting to UI or BPPT and, once the loans ran out, the high cost of connecting to the gateways abroad. Domestically, the phone system was under the monopoly of Telkom, a public corporation, which charged not by the call but by time used; and its rates were extremely expensive. Internationally, there was a duopoly, but the problem was the same. Just as importantly, telephone density was very low, and it could take years to get a line, and one often needed personal connections in Telkom to get one at all. (In the 1990s, the late Onghokham, an historian, was so thrilled about getting a phone line after years of waiting that he held a *slametan*, the kind of ritual Clifford Geertz [1960] wrote about that marks major life cycle events such as births, deaths, circumcisions, and marriages.)

Purbo first introduced the idea of the Internet to a broader public in 1990 when he published an article in the major daily newspaper *Kompas* (see Purbo 1990). At the time Purbo was pursuing his PhD in electrical engineering at the University of Waterloo in Canada. It was the first of many articles he would publish about the Internet over the next two decades in Indonesian newspapers. The article laid out in simple terms a concept for a low-cost network that would circumvent the problems of relying on the telephone network. He described a large-scale network of computers or "intelligent machines" that linked together the various LANs that already existed in research institutions, government, and industry. Such a network would have many benefits, most notably, email. Email had the advantage of speed, and it allowed people to send messages to multiple

addressees, where one member's response would also be read by all members, thereby providing a group of people living far apart with a way to have an electronic discussion spanning months or even years "about anything from soccer to how to construct a computer" (Purbo 1990). He explained that many Indonesian students living abroad were already doing this, as were radio amateurs in Indonesia who were connecting to the global amateur packet radio network via satellite.⁵

In Purbo's view, the best way to expand the emergent Internet in Indonesia was to circumvent the monopoly-controlled wire infrastructure by using the kind of network that radio amateurs had been pioneering. And over the next few years a network of this sort did in fact come into being, connecting an expanding network of universities, government research institutions, and high-tech industry. Paguyuban Net ('Network Association'), as it came to be known, was most heavily concentrated in Bandung and Jakarta. Purbo's group at ITB was very active in developing this early wireless Internet, as well as a cable-based local area network (LAN) within the ITB campus.

The ITB group—known eventually as the Computer Network Research Group (CNRG)—had emerged out of ITB's Amateur Radio Club, where Purbo had long been active. CNRG was a bit of an unusual group for ITB, since it had no official status and no real hierarchy. It differed from other campus groups in that it had no hazing, no formal initiation, and the only real requirements for membership were that you had to be willing to spend long hours in the lab, often overnight, and you had to like *ngoprek*. *Ngoprek* consists of opening up the black box of technology, taking things apart, trying new components and new configurations, making things work in new ways, and then explaining, writing about, diagramming and taking pictures of what you have done so that others can replicate it. Or as one Indonesian website summarizes it, it means to take, dismantle, assemble, run, write, ↵ and share.⁶ It is more or less what English-speaking radio amateurs refer to as "home brewing."

Ngoprek does not just mean a willingness to delve into the innards of software and circuitry, it also implies that one will participate in a broader public of fellow bricoleurs. In the case of amateur radio, this broader public builds upon the how-to books and magazines of print culture but extends beyond the limits of particular print languages through a shared culture of diagrams, hardware nomenclature, technical jargon, machine languages, and call signs; a shared market of electronic goods; and a shared practice of over-the-air interaction. Purbo consciously sought to cultivate such a culture, both for himself and for his students in CNRG. It was not enough to do so in the online listservs—which mainly focused on technology—that were the core content of the network. From early on Purbo concluded that in order to expand the circle of people involved in the network it was far more effective to go outside it. Both he and his students thus spent a lot of time giving talks, contributing articles to newspapers and magazines, and writing books.

Network expansion proved to be a complex political process, and nowhere was this truer than at ITB itself, where the LAN involved laying an Ethernet cable around campus. The college administration was not initially supportive of the project, and getting funds and permission from the bureaucrats in charge was simply too involved and time-consuming a process. Instead, the group used what one member told me in 1996 were stealthy "guerilla" tactics. It happened that the Electrical Engineering Department had labs in three corners of the campus, so initially the group laid wires that were ostensibly to connect their own labs. To do so, however, meant running their distinctive yellow cable through hallways and labs associated with other units, which sometimes gave rise to some territorial disputes, making negotiations necessary. As on any campus, there were complex politics around space, and in some cases CNRG was seen as an upstart since it was a nonstructural group and it was running its cable through other groups' space. At the same time, there was also the sensitive issue that CNRG was essentially a group of hobbyists, and although most of its members (though not all) were electrical engineers, most had no formal training in network technology or informatics. There was always a risk that they could be seen as mere novices who were meddling in a domain that could be seen, in ITB's rather conservative and hierarchical academic culture, as not rightfully theirs. CNRG dealt with these problems as best it could by always politely and respectfully "asking permission first" (*minta permissi dulu*) to the units ↵ they might encroach upon and by offering to provide offended parties with their own access to the network in

return for their willingness to let the cable work go ahead. When units joined, they would have to provide their own cable and other infrastructure. In this way, as the physical network grew, so too did the actor network of those who were interested, knowledgeable, and committed to its development. For members of CNRG, the distinctive yellow cable of the ever-expanding network became a source of pride at having managed to wire the campus without any financial support from university authorities.

Throughout the process of building this network, Purbo was writing and publishing. The bulk of his writing focused not on his core research (integrated circuits) but on the nuts and bolts of what the Internet is, what the options are for network development, how one can use the Transfer Control Protocol and Internet Protocol suite protocol over packet radio, which institutions and individuals were contributing to network innovation, and how far network development had come. He encouraged his students to write books and contribute articles to magazines and taught them the most effective techniques to get technical concepts across to people who had little technical training: use analogies (e.g., email is like the postman), and don't use too much jargon. Purbo would then edit his underlings' books and help to ensure they got published.

In addition to their writings, members of CNRG were also obliged to give training, talks, and demonstrations to anyone who expressed an interest in joining the network. Within ITB, as other units heard about the network and saw the yellow cable, they would ask if they could gain access. Instead of doing the work themselves, CNRG members would provide training and assistance to representatives of the unit, who would then become the system administrators for that unit. When CNRG members traveled farther afield, to other universities in Bandung or in other cities, they would also give presentations. Often this meant giving a formal speech to the rector of the university, which would be followed by a couple of days of more informal technical demonstrations to students and faculty setting up the network. In this way, CNRG took the model they had developed at ITB and replicated it at other campuses, using wireless technologies first to connect campuses within the city of Bandung and then across the archipelago nation. This is how Indonesia's first nationwide campus network came into being.

p. 207

Resources for the expansion of the network came from a variety of sources. At the beginning, older amateurs donated computers and radios. As the group started to develop a reputation, some funds flowed in from small commercial consultancies, which would be used to pay for equipment or divided up among the group. Units within ITB wanting to connect to the servers at CNRG had to pay the costs of the Ethernet cable needed to reach from their unit to CNRG, and they had to provide their own computers. Outside of the campus the same basic principles applied. CNRG would provide technical support and training but any necessary hardware had to be provided by the people who were going to use it. For a time CNRG worked with other groups within ITB (including the original instigator for the satellite system, Iskandar Alisyahbana) interested in building low-cost radio modems to supply the expanding network, but the price on commercially available modems dropped to a point that it made the local industry difficult to sustain.

The main challenge to network growth was overcoming the problem of access to the international Internet. As the Bandung network expanded, this problem became more acute because traffic on the system grew and the radio connections to BPPT and UI in Jakarta were very slow. On this front, CNRG depended on the largesse of senior faculty at ITB and on powerful alumni of the Electrical Engineering Department, to whom it had to go hat in hand. Iskandar Alisyahbana donated use of a ground station so that the group could try to establish access via an amateur satellite. Another senior faculty member, Samaun Samadikun, convinced a former student and higher-up in Telkom to donate use of a leased line (ISDN) between ITB and BPPT. And another faculty member allowed the group to piggyback on bandwidth to a Japanese satellite he had obtained for a research project he was working on. Throughout this process Purbo wrote articles for both the ITB press and the national press thanking the donors publicly and highlighting the benefits of the network for education and national development.

Up until 1996, the Bandung network grew but the bottleneck in connecting to the international gateway in Jakarta remained. In that year CNRG competed with a number of other Indonesian institutions, including BPPT and some others, to become the Indonesian partner in a pan-Asian network, AI3, being developed by Japan. The premise of AI3 was that partner institutions throughout Asia would participate in an exchange of research results in return for access to a high-speed connection to the Internet via a Japanese satellite. CNRG, which had put forward a proposal that recapitulated their work building Paguyuban Net and saying they would continue to expand the network to include universities across the archipelago, was a surprise winner of the competition. After some lobbying, ITB's administration agreed to provide funds for equipment needed on campus, and an alumnus arranged for his company, a ground station supplier owned by one of President Suharto's sons, to donate a ground station. Given that the link ↵ would conflict with government regulations on international transmissions, further lobbying, also involving alumni, was required to obtain a government license. After a great deal of wrangling and red tape, the connection was finally established and CNRG became the main Indonesian conduit for university access to the global Internet.

p. 208

CNRG's success in this early stage of Internet development was disruptive and surprising in part because it represented an upstart strategy for technological innovation. The New Order regime embraced capital-intensive, foreign debt-intensive, top-down strategies of innovation in an effort to "leapfrog" toward national development. Habibie was the main proponent of such a vision, and many of his projects became infamous for their high costs, their heavy reliance on foreign experts, and their failures to achieve their lofty ambitions (Amir 2004). Purbo shared the stated objective of national development, but his approach to innovation was one that was low cost and debt free and relied on domestic know-how and mutual self-help. Such an approach was well-known in participatory development circles, in which Onno's father, Hasan Poerbo, was active, but it was only now being applied in a high-tech field. The approach allowed CNRG to establish a track record of successful innovation and network development, which gave its proposal to AI3 credibility that competing proposals may not have had.

In the years following CNRG's successful bid to AI3, the landscape of Internet development would change rapidly as commercial and state-owned service providers became more active. The first of these was started in 1995, and by 1996 fourteen others were operational. Hill and Sen (1997, 73) note that there appeared to be a policy of offering licenses to only a limited number of companies and that these were outside the "well-connected companies" that dominated the domestic economy, including private telecommunications. These ISPs initially focused on corporate clients and starting in 1996 helped to provide the backbone for Internet cafe" (*warnet*) that were sprouting up in major cities, including Bandung (members of CNRG were the first to set up a *warnet* in Bandung). From 1999 the number of *warnets* increased dramatically, and the Internet truly became a mass medium. Throughout these changes CNRG remained active and continued to expand its campus network to universities and other educational institutions all over the country.⁷ Eventually Purbo left ITB so he could dedicate himself full time to giving talks, giving advice, and writing, both in Indonesia and around the world. As a fellow at Canada's International Development Research Centre, he gained international recognition for his work on ICTs and development. Within Indonesia, he became active in several high-level associations, governmental and nongovernmental, which sought to shape government ↵ policy toward telecommunications and the Internet. Through frequent appearances in the press, at conferences, on television, and on social media, he became a minor celebrity, and as a broader domestic market for computer products began to take hold, a greater proportion of his "road shows"—as his talking tours came to be known—were underwritten by the publishers of his books, by Hewlett Packard, and by others with an interest in the growing Indonesian market for hardware, software, and related books. He became, in essence, a freelance version of what some corporations might call a "technology evangelist."

p. 209

Purbo's "Naïve Philosophy" and the Making of a Public

What did Purbo preach? An examination of his writings over the past two decades reveals that he has written a lot more than just technical manuals. He has spent a great deal of time reflecting upon and describing his and his cohort's experiences building the intercampus network discussed above, as well as his subsequent activities shaping developments at the national level. He has also written dozens of articles that discuss what the Internet is, how it can be used, what it will mean for society, and what the Indonesian government ought to do, and what individuals ought to do, to create an "information society."

The language he has used to discuss these things has changed over time. Writing in 1990, he explained the need for the Internet in terms of national development; in the early to mid-1990s, he talked about building the Internet as a process of "bottom-up" activism and community development; in the mid- to late 1990s he talked about building a national infrastructure that would underpin a second national awakening and would lead to the dawn of an information society; and then starting in the late 1990s he began to describe the Internet in terms of democratization, rebellion, struggle, jihad, and the quest for freedom.

These shifts were partly a reflection of broader discursive shifts that were going on in Indonesia at the time: from a discourse of development to one focusing on political reform. But they also drew on a range of oppositional sociotechnical imaginaries. As noted above, his belief in the power of "ordinary people" or common folk (*rakyat biasa*) to help themselves through "bottom-up" strategies can be traced back most immediately to his father, a professor at ITB who was quite well-known in NGO circles for his work helping to organize impoverished scavengers in Bandung and provide them with technology to give them sustainable livelihoods (see Moon's chapter in this volume). Onno shared his father's "community development" ideology and saw his efforts to expand the Indonesian Internet as part of a broader ambition to empower ordinary Indonesians in a sustainable fashion. Within ITB, his loosely structured group functioned—as one ITB professor described it—in a manner analogous to an NGO: it sought donations, provided training sessions, made use of community labor, and tried to become self-sustainable and self-replicating. In the context of the New Order, such an approach was generally seen as oppositional to the government's top-down, state-led approach to development.⁸ However, in international development settings such approaches were highly valued, and Purbo soon found that his activities spoke to the burgeoning interest in the "digital divide" and using ICTs for community development. But within these settings he was also somewhat anomalous, since his approach was not to provide access to new technologies but to teach people how to build networks for themselves from the ground up (using cheap cable, retooled woks, self-help, etc.).

Purbo's politics of freedom also echoed a much older nationalist discourse that linked radio amateurism to revolutionary politics. An early example of this discourse is discussed by Mrázek (2002), who describes a prominent nationalist journal in the 1930s that promoted the idea of providing courses on radio technology for children of all ages as a means to help Indonesians unite, improve their fate, and come out into the world. "[L]et us become radio mechanics," the article exhorts its readers (quoted in 2002, 190). Revolutionaries took up this notion during the struggle for independence, when guerilla fighters—cum—radio mechanics built radio transmitters and carried them from village to village, broadcasting messages about the progress of the struggle. For these revolutionaries, and for subsequent generations of radio amateurs like Purbo, building radios and transmitting and receiving messages were strongly associated with being in the vanguard of political change and the struggle for freedom. In the context of the reform movement that enveloped Indonesia in 1997 and eventually led to the ouster of President Suharto, applying this revolutionary discourse to the Internet—the preferred medium of communication for anti-Suharto activists—gave it renewed significance as a tool of resistance.

Purbo's discourse about Internet freedom also grew out of global discourses associated with hackers, the free and open source movement, and the copyleft movement. He was exposed to these ideas while a graduate

student in Canada in the late 1980s and early 1990s, and he has remained consistent in his view that information is meant to be free.⁹

p. 211 Purbo's approach to all these discourses was very much within the spirit of *ngoprek*: take them apart, put them back together, make them work, and ↵ share them. At the same time, all his writings reinforce his basic outlook, which combines a faith in the power of ordinary people to deliver a better technology with a faith in the power of technology to deliver a better society. This is particularly evident in his "naive philosophy"—as he has called it—about how the Internet will transform society. According to Purbo, the difference between the present society and the future Internet society can be understood through the analogy of "platforms," which he (2001c) defines as "the place that we stand, labour, and interact":

The platform that we stand on in Indonesia is constrained by fences, walls, stones, concrete, and asphalt highways. Things, people, paper, newspapers, magazines, information, and knowledge are usually sent from place to place on vehicles like cars, motorcycles, and bikes with speeds of 50–100 km per hour. The dimension of time limits the capacity to reach across districts and space. The slow process through bureaucracy recognizes stamps and physical signatures on papers that pass from one desk to another, which can be sped up slightly with some cash lubricant [bribes].

(Purbo 2000b)

The current platform is one that consists of transport and communication systems, and bureaucracies.¹⁰ The new platform, in contrast, is speedy and allows for the transcendence of these material constraints:

Developments in information technology, internet, and electronics are in fact able to transport writing, information, and knowledge in speeds of milliseconds from one place to another on the face of this earth. The platform where we stand has changed its shape significantly, as walls, tables, chairs, bureaucracy, authority, and power have become irrelevant in the new, non-physical platform. This platform is built using [...] (code), servers, ports, and resource locators: things difficult to imagine in the physical world as we have known it for thousands of years now.

(Purbo 2001c).

p. 122 The platform here means something that is sociotechnical: it involves what some (e.g., Rip and Kemp 1998; van de Poel 1998) might refer to as a sociotechnical "regime," a certain configuration of sociotechnical relations, including power relations, that achieves stability; a kind of sociotechnical analog of a scientific paradigm. For Purbo, the promise of the Internet is that it will establish a new platform that involves very different kinds of sociotechnical relations, and a different basis for social differentiation. As he puts it, "the need for physical appearances, suit jackets, ties, expensive cars, ↵ expensive homes, and prestigious offices will be thrown into question. The value accorded to someone will depend [instead] on the knowledge that they possess, along with their capacity to communicate information and knowledge to their community (*ummat*)" (Purbo 2001c).

Through such open communication, Purbo (2000b) envisions a flat society with an affective intimacy where the "feeling of being part of a close family is very strong, much like it was among breakers [radio amateurs] in the 1970s and 1980s."¹¹ In this society, he explains, everyone starts off equally and status is achieved on the basis of one's contributions to the group. Such contributions may take the form of writings, email conversations, or the creation and circulation of free software. The community will evaluate whose contributions are best and decide who is worthy of higher status.

This society, according to Purbo, will function based mainly on consensus and custom rather than on written law. Bureaucratic position will not matter; what will matter is your "capacity to engage in discussion, to make good arguments, [and] to represent concepts and perspectives to the public in writing" (Purbo 2001d).

Bureaucrats, he explains (2001a), ought to be afraid of this future: "If a high official/institution makes even the

smallest mistake, criticism is going to come immediately, one after another, via the open medium of the Internet. [...] If a high official is not very capable and is inattentive, it will be very easy for him or her to be audited by the people by way of bringing the problem to the public's attention" (Purbo 2000a). Purbo already saw evidence of such changes underway in electronic mailing lists, where at least one government minister who could not face all the criticism he received about his policies eventually "resigned" (*mengundurkan diri*) from the list.

While diminishing the power of bureaucrats, the new platform will also involve a kind of direct democracy. People will represent themselves rather than be represented. Whereas the current physical platform, with its spatial limitations, is unable to bring all Indonesians into a common discussion space, and so relies on "middlemen" for political representation, the same will not be true on the new platform, where the only "vertical" power will be the *ummat*'s relationship to God (Purbo 2000b).

Based on his experiences building the intercampus network, Purbo (2004) argued that the way Indonesians will arrive at this brave new world is through "bottom-up" strategies that encourage people to become self-taught in the new technologies and to build their own networks and make their own software. Computers will have to be put in schools, and people will need to write Indonesian-language technical manuals and share their knowledge so others can learn. Activists will have to fight to overcome the current regulatory regime for telecommunications, which obstructs bottom-up developments by allocating so much power to the monopoly providers. Bandwidth in the radio spectrum will have to be "liberated" for use by bottom-up initiatives like Internet cafés, self-organized and operated neighborhood networks, and community radio. Activists will also have to fight efforts by the police to shut down and extort money from these initiatives.

Purbo has spent much of the last decade spreading his "naive philosophy" through his road shows; through his appearances on TV, radio, social media; and in the press. As he criss-crosses the country, his presentations always draw a crowd, and they usually leave people dazzled by his enthusiasm, his virtuoso computer skills, and his strong antiauthoritarian streak. I have attended a number of these performances, and in Indonesia, the vast majority of those who attend are young men. During the more technical how-to talks, there appeared to be a minority of people who were highly competent and who followed each step of the way. A larger number of people seemed to be left behind but learned a little something and clearly liked the idea of being present among this insider group of technological savants-cum-activists.

According to Purbo, his presentations on hackers drew the largest crowds. I attended a talk on this topic at Indonesia's biggest mosque, the Istiqlal Mosque on Jakarta's main square, that was attended by a few hundred young people. Everyone sat on the floor in the basement underneath the mosque, and Purbo, along with other presenters, sat cross-legged on a slightly elevated stage, with computers on the table in front of him and a large screen behind him. Purbo's talk included step-by-step training in a couple of straightforward techniques for using one computer to break into another and a discussion of the hacker ethos. His understanding of the values underlying the hacker community is drawn from books (e.g., Steven Levy's *Heroes of the Computer Revolution* [1984]), but in these ideals Purbo clearly discovered something he could identify with.

They are very crazy about computers, their capacity to access computers, and any kind of knowledge about how computers work; they do all of this without limits and with totality. They do not like to hide information away, as all information has to be free, open and transparent—they are followers of the stream of copyleft rather than copyright. They do not believe in authority, bureaucracy, and those in power—power has to be decentralized. A person is evaluated based on his or her capabilities, not some made-up criteria like degree attained, bureaucratic role, public position, or ethnic group. They make art and beauty on the computer and they believe that computers will bring us all to a better condition.

(Purbo 2001b)

While many people imagine the so-called information society as one in which new media will form the platform of our social and working lives, Purbo has always imagined it as a society in which everyone is a radio amateur or a hacker. This social imaginary entails a heightened reflexivity about both the political economy and the materialities of communication that form the basis for public life. It is what Chris Kelty (2008) refers to as a “geek” or “recursive” public, namely, a public organized around the deliberate construction, manipulation, and maintenance of the very platform that makes the public possible in the first place. For Onno, this self-organized public should ideally be one whose platform is accessible to all, either because it is low cost or because it is a public resource. It should provide participants with a form of sociality that is characterized by a set of shared technical practices, heightened reciprocity, less hierarchy, more speed, greater immediacy, and greater intimacy. Onno’s road shows, seminars, books, and articles have all been part of his effort to mobilize people to feel a sense of belonging to, and desire for, this geek public.

Conclusion

Purbo’s road shows, his talks, and his writings, along with those of his collaborators, were instrumental in establishing a sociotechnical imaginary for the Indonesian Internet that linked the budding network to a politics of antiauthoritarianism and freedom and a view of the network as a commons. This imaginary grew out of the encounter between older sociotechnical imaginaries in Indonesia and those of the emerging global Internet. It took shape and acquired its importance in relation to the broader landscape in which the network was rolled out. This landscape was one in which the major telecommunications infrastructure was controlled by monopolies and subordinated to the interests of the New Order’s political and economic elite. As hobbyists and researchers built their networks, they were thus constantly coming up against economic, political, and regulatory obstructions to their work. Purbo and his group overcame and bypassed these obstructions by cobbling together an actor network that spanned many universities and institutes within Indonesia and abroad. In essence, the group sought to recreate for the Internet the kind of free space that had long existed in most countries for amateur radio: a domain of network provision that is designated as free and public and stands outside the infrastructure owned and controlled by the large providers. Purbo’s political strategy for achieving this objective was to continually expand the Internet actor network while using electronic mailing lists, books, and talks to create a “counterpublic” (Warner 2002) that shared his sociotechnical imaginary. It was a strategy that Latour (2005, 5) might describe as a kind of “thing-politics” gathering an assembly of relevant parties around an object in order to provide an occasion for a public to discuss and debate issues in common.

The early imaginary for the Internet was also shaped by broader political changes underway at the time. The late 1990s, when Purbo was building out the nationwide campus network, saw the rise of the reform movement that eventually ousted the dictator Suharto. The intercampus network was one of the main means through which activists bypassed government censors to communicate about demonstrations and marches taking place in various parts of the country. That Purbo and his group had sought to build a network free of government regulation may well have facilitated its use by activists. At the same time, the association of the early Internet with the successful political campaign to end the New Order regime had the reciprocal effect of helping to reinforce the Internet imaginary that Purbo and his group were promoting.

The growing counterpublic included Indonesian proponents of copy-left, free and open source software, and (want-to-be) hackers. In time, and against a backdrop of liberalization in the telecommunications sector and democratization of the political system, this counterpublic would grow to the point at which it had enough clout to affect regulatory policy. This was particularly evident in the success of Purbo’s struggle to “liberate” the 2.4-Mhz portion of the radio spectrum for free public use, which relied on the mobilization of the counterpublic he had helped to create. More generally, the counterpublic has helped to retain an association

between the Internet and a politics of freedom. This association has underpinned numerous social media campaigns to expose government graft and dishonesty and to fight nascent forms of online censorship.

There is nothing natural about the association between the Internet and a politics of freedom. But it is an imaginary that still has a remarkable force.¹² An examination of this imaginary in the Indonesian context reveals a complex interweaving of local and global genealogies. It also shows how the spread of this imaginary, and its substance, was shaped by the struggle of building out a network of this scale within a media ecology that was so dominated by an authoritarian state. In Indonesia, the association between the Internet and a politics of freedom is a product of these genealogies and this struggle.

Notes

Research for this paper was conducted with support from the Social Sciences and Humanities Research Council of Canada. I would also like to acknowledge and thank a number of people who commented on earlier drafts of this chapter: Sang Hyun Kim, Sheila Jasanoff, William Mazzarella and Grant Otsuki.

1. All translations from Indonesian sources are my own.
2. On Hasan Poerbo, see Suzanne Moon's chapter in this volume. The different spelling of their surnames is due to a shift in official Indonesian spelling that took place in the early 1970s.
3. This history is described in more technical detail in Barker et al. (2001), Lim (2005), and on a wiki created by Purbo, Lim, and myself, available at <http://wikihost.org/wikis/indonesiainternet/wiki/start>.
4. Habibie was Indonesia's Minister of Research and Technology (1978–98), who would go on to become vice president (1998) and president (1998–99).
5. On the history of the use of packet radio in early Internet development in the United States, see Abbate (1999).
6. See <http://ngoprek.org/>. Accessed September 30, 2008.
7. Purbo even experimented with creating a network for *pesantren* (Islamic boarding schools) in rural areas around Bandung, so that students in these Islamic schools could join in the fun.
8. The contrast between this approach and Habibie's top-down approach to development was to some degree a reformulation of a much earlier debate about technology and development that took place in the late-colonial Dutch East Indies (see Moon 2007).
9. He practices what he preaches: in my first "Interview" with him he said an interview really was not necessary; I should just bring a jump drive and he would copy his entire hard disk for me to use in my research.
10. A century earlier, the elements of this platform were considered to represent a new age of speed and friction-free movement (Mrázek 2002), but from Purbo's twenty-first-century perspective, they just seem to slow everything down.
11. For other examples of new communications technologies being associated with the erasure of traditional hierarchies in Indonesia, see Barker (2002, 2008) and Siegel (1997).
12. As a counterpoint, see Fred Turner's (2006) critical account of how the imaginative investment in the utopian and libertarian potential of cyberspace and information technology by countercultural icons like Stewart Brand "legitimized a metamorphosis within—and a widespread diffusion of—the core cultural styles of the military-industrial-academic technocracy that their generation had sought to undermine" (p. 238).

References

Abbate, Janet. 1999. *Inventing the Internet*. Cambridge, MA: MIT Press.

[Google Scholar](#) [Google Preview](#) [WorldCat](#) [COPAC](#)

Amir, Sulfikar. 2004. "The Regime and the Airplane." *Bulletin of Science, Technology and Society* 24(2): 107–14.

[Google Scholar](#) [WorldCat](#)

Barker, Joshua. 2002. "Telephony at the Limits of State Control: 'Discourse Networks' in Indonesia." Pp. 158–83 in *Local Cultures and the 'New Asia.' The State, Culture and Capitalism in Southeast Asia*, edited by Wan-ling C. J. Wee. Singapore: Institute of Southeast Asian Studies.

[Google Scholar](#) [Google Preview](#) [WorldCat](#) [COPAC](#)

p. 217 ———. 2005. "Engineers and Political Dreams: Indonesia in the Satellite Age." *Current Anthropology* 46(5): 703–27.

[WorldCat](#)

———. 2008. "Playing with Publics: Technology, Talk and Sociability in Indonesia." *Language and Communication* 28: 127–42.

[WorldCat](#)

Barker, Joshua, Merlyna Lim, Arie Rip, Teti Argo, and Sonny Yuliar. 2001. "Social Construction of Technology in the Indonesian Context nr.95-CS-03." Final Research Report submitted to KNAW. Ms. Universiteit Twente, Enschede.

Deibert, Ronald, John Palfrey, Rafal Rohozinski, and Jonathan Zittrain. 2012. "Access Contested: Toward the Fourth Phase of Cyberspace Controls." Pp. 327–99 in *Access Contested: Security, Identity, and Resistance in Asian Cyberspace*, edited by Ronald Deibert, John Palfrey, Rafal Rohozinski, and Jonathan Zittrain. Cambridge, MA: MIT Press.

[Google Scholar](#) [Google Preview](#) [WorldCat](#) [COPAC](#)

Geertz, Clifford. 1960. *The Religion of Java*. Chicago: University of Chicago Press.

[Google Scholar](#) [Google Preview](#) [WorldCat](#) [COPAC](#)

Hill, David T., and Krishna Sen. 1997. "Wiring the Warung to Global Gateways: the Internet in *Indonesia*." *Indonesia* 63 (April): 67–89.

Jasanoff, Sheila, and Sang-Hyun Kim. 2009. "Containing the Atom: Sociotechnical Imaginaries and Nuclear Power in the United States and South Korea." *Minerva* 47: 119–46.

[Google Scholar](#) [WorldCat](#)

Kelty, Christopher M. 2008. *Two Bits: The Cultural Significance of Free Software*. Durham, NC: Duke University Press.

[Google Scholar](#) [Google Preview](#) [WorldCat](#) [COPAC](#)

Latour, Bruno. 2005. "From Realpolitik to Dingpolitik or How to Make Things Public." Pp. 4–31 in *Making Things Public: Atmospheres of Democracy*, edited by Bruno Latour and Peter Weibel. Cambridge, MA: MIT Press.

[Google Scholar](#) [Google Preview](#) [WorldCat](#) [COPAC](#)

Lim, Merlyna. 2005. "Archipelago Online. The Internet and Political Activism in Indonesia." PhD diss., Universiteit Twente, Enschede.

Moon, Suzanne. 2007. *Technology and Ethical Idealism. A History of Development in the Netherlands East Indies*. Leiden: CNWS Publications.

[Google Scholar](#) [Google Preview](#) [WorldCat](#) [COPAC](#)

Mrázek, Rudolf. 2002. *Engineers of Happy Land. Technology and Nationalism in a Colony*. Princeton, NJ: Princeton University Press.

Purbo, Onno. 1990. Jaringan komputer biayamurah menggunakan radio. <http://www.bogor.net/idkf/idkf/network/jaringan-komputer-biaya-murah-menggunakan-radio-11-1990.rtf>. Accessed October 6, 2008.

———. 2000a. Demokrasi&Kembali ke Fitrah Manusia: Paska Era Informasi. <http://www.bogor.net/idkf/idkfwireless/aplikasi/hukum/demokrasi-kembali-ke-fitrah-manusia-paska-erainformasi-07-20.rtf>. Accessed October 6, 2008.

[WorldCat](#)

———. 2000b. Mengapa DPR kalau bisa jadi Dewan Rakyat. <http://www.bogor.net/idkf/idkf/aplikasi/mengapa-dpr-kalau-bisa-jadi-dewan-rakyat-mar-2000.rtf>. Accessed October 6, 2008.

[WorldCat](#)

———. 2001a. Badai AFTA, Free Trade, Globalisasi—Siapa Takut. <http://www.bogor.net/idkf/idkf-wireless/aplikasi/badai-afta-freetrade-globalisasi-siapa-takut-09-2001.rtf>. Accessed October 6, 2008.

[WorldCat](#)

———. 2001b. Dunia Bawah Tanah di Internet. <http://bebas.vlsm.org/v09/onno-ind-1/network/network-security/dunia-bawah-tanah-di-internet-08-2001.rtf>. Accessed October 6, 2008.

[WorldCat](#)

———. 2001c. Filosofi Naif Aspek Sosial, Budaya & Hukum Dunia Maya. <http://bebas.vlsm.org/v09/onno-ind-1/application/konsekuensi-aspek-sosial-budaya-di-dunia-maya-04-2001.rtf>. Accessed October 6, 2008.

[WorldCat](#)

———. 2001d. Membuat Teknologi Lebih Memihak Pada Rakyat & Pencita-nya. <http://www.bogor.net/idkf/idkf-wireless/aplikasi/hukum/membuat-teknologi-lebih-memihak-pada-rakyat-05-2001.rtf>. Accessed October 6, 2008.

[WorldCat](#)

p. 218 ———. 2003a. Ceraah Harapan Dari World Summit on Information Society 2003. <http://yb1zdx.arc.itb.ac.id/data/OWP/library-onno-ind/onno-ind-3/application/policy/ceraah-harapan-wsis-12-2003.rtf>. Accessed October 6, 2008.

[WorldCat](#)

Purbo, Onno W. 2003b. Membangun Bangsa Merambah Manca Negara. <http://125.160.17.21/speedyorari/view.php?file=library/library-onno-ind/onno-ind-3/application/policy/membangun-bangsa-merambah-manca-10-2003.doc>. Accessed October 6, 2008.

[WorldCat](#)

———. 2004. Motivating Community Based ICT Infrastructure Development. http://www.choike.org/documentos/community_ict_infrastructure.pdf. Accessed October 6, 2008.

[WorldCat](#)

Rip, Arie, and René Kemp. 1998. "Technological Change." Pp. 327–99 in *Human Choice and Climate Change*, Volume 2: Resources and Technology, edited by Steve Rayner and Elizabeth L. Malone. Columbus, OH: Battelle Press.

[Google Scholar](#)
[Google Preview](#)
[WorldCat](#)
[COPAC](#)

Siegel, James T. 1997. *Fetish, Recognition, Revolution*. Princeton, NJ: Princeton University Press.

[Google Scholar](#)
[Google Preview](#)
[WorldCat](#)
[COPAC](#)

Turner, Fred. 2006. *From Counterculture to Cyberculture. Stewart Brand, the Whole Earth Network, and the Rise of Digital Utopianism*. Chicago: University of Chicago Press.

[Google Scholar](#)
[Google Preview](#)
[WorldCat](#)
[COPAC](#)

van de Poel, Ibo. 1998. "Changing Technologies. A Comparative Study of Eight Processes of Transformation of Technological

Regimes." PhD diss., Universiteit Twente, Enschede.

Warner, Michael. 2002. "Publics and Counterpublics." *Public Culture* 14(1): 49–90.

[Google Scholar](#) [WorldCat](#)