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The Disunity of Technocracy in Indonesian Development

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This article observes the competition between two groups of technocrats in Indonesia during the New Order era that has hitherto afflicted national policy making. The first group is the engineers who advocate technology-based development strategy. The other group is the market-oriented economists who promote a comparative-advantages approach in development policies. The rivalry between these technocratic groups occurs in the arenas of policy-making process and bureaucratic structure. To explain how such a clash has emerged, this article offers a notion of disunity of technocracy to examine different logics, rationalities, and argumentations used by each group. It emphasizes that this confrontation is rooted in the epistemological foundations of technocratic expertise.

Keywords: *Indonesia; disunity of technocracy; development policy; Habibienomics; Widjojonomics; epistemological boundary; policy incoherency*

Technocracy is founded upon the use of expert knowledge in public decision making. Born to modern science, it has become a pillar underpinning systems of governance. Technocratic methods operate as indispensable tools for modern governments to create social order, granting technocrats a powerful role in determining how public policies are conceived through a set of problem-solving methods relying on scientific knowledge (Winner, 1977). Yet, as political scientist Frank Fischer (1990) has noted, despite rational approaches used in the practice of technocracy, it is difficult to separate technocracy completely from politics and to sterilize it of ideological biases. This is especially the case in Indonesia's New Order in which two groups of leading technocrats, the engineers, led by Bacharuddin Jusuf Habibie, and the economists, led by Widjojo Nitisastro,[1] were engaged in a struggle over national development policy. The two groups brought in different views not merely on the issue of which economic sectors should be put on priority over others, but more principally, the way development ought to be pursued. Consequently, this has turned the practice of technocracy into a field of contestation between the engineers and the economists. For both imposed their own technocratic agendas on policy making.

This article presents an account of one crucial episode in the history of technocracy in Indonesia that continues to shape politics of policy making to date. To explain how such rivalry between these expert groups has emerged, this article offers a notion of disunity of technocracy. It is drawn from a critical framework used by science and technology studies scholars in identifying the fractures within modern scientific practice. It is generally claimed by the scientific community that science is a unified field, an "ideology" grounded on logical positivist assumption that casts an image of science as a homogeneous enterprise. For the past 20 years or so, social and cultural studies of science have indicated the splits between scientific disciplines in terms of scientific languages, practices, purposes, and forms of argumentation (Galison, 1996; Knorr-Cetina, 1999). These empirical observations unfold the disunity of science that characterizes the production of scientific knowledge.

One can find such disunity in technocratic knowledge, provided science is the mother of technocracy. Thus, the notion of disunity of technocracy employed in this article is a plausible framework to identify tensions, conflicts, and disagreements within technocratic practices. This is the main objective in this article, in which a variety of logic, languages, and argumentations put forward by the technocrats are examined to locate the split between the engineers and the economists observed in this article. By using the notion of disunity of technocracy, this article argues that the clash of technocracy that

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has been taking place in Indonesia is rooted in the epistemological differences molding the perspective of each expert group in conceiving the way in which development strategy and policy ought to be undertaken.

Early Technocracy: The Era of the Economists

The practice of technocracy in Indonesia arose at the dawn of the New Order regime, emerging in the aftermath of the 1965-1966 political unrest, an uneasy period that opened a new chapter in the history of modern Indonesia. Led by former general President Suharto, the appearance of the New Order regime was marked by the growing influences of the technocrats who came to the fore as the primary actors in policy making. The emergence of these professional elites in the New Order was to respond to the social and economic predicaments in the post-Sukarno period.

At the time, many Indonesian people were in great despair after living in prolonged poverty and economic uncertainty. Inheriting a chaotic economy from the Sukarno government, the newborn regime was compelled to find ways of fulfilling people's needs. It then came to rely on the services of Western-trained technocrats in restoring the economy. These technocrats included economics professors at the University of Indonesia (UI). Funded by the Ford Foundation, the economists studied economic sciences abroad around the 1950s to '60s, mostly in the United States. Some of the prominent figures obtained PhDs from the University of California at Berkeley. Widjojo Nitisastro, the leading figure, was the first to study at Berkeley, followed by his juniors, most notably Emil Salim and Ali Wardhana. Some others went to other universities in the United States. They were J. B. Sumarlin, Saleh Afiff, Subroto, and Muhammad Sadli. When these young economists returned to Indonesia, they joined the New Order's bureaucracy by holding key economic ministerial positions that enabled them to implement market economy principles while emphasizing the role of the government to stimulate economic growth. Employing the neo-Keynesian paradigm, the economists decided to undertake a set of economic policies that included balancing the state budget, controlling the money supply, reorganizing financial institutions, and most important, opening wide the gate for foreign investors.

The entry of technocrats into the Indonesian governmental structure was unprecedented. It shifted the nature and orientation of public policy making. This shift was characterized by salient changes in formulation of policies in that the economists viewed the economy as a domain neutral from ideology and politics. Hence, economic policies, according to this view, should follow rational calculations (Nitisastro, 1983). One clear purpose of these economists was modernization, perceived as a process of transforming society from traditional conditions considered obstacles to economic development to a culture based upon rationality and reasoning. They believed that the state bureaucracy was an effective medium for this transformation to happen (MacDougall, 1975).

It took only 3 years for the economists to stabilize Indonesian economy from enormous chaos. Two decades later, at the dawn of 1990s, the look of the Indonesian economy changed totally from that of the 1960s, thanks to the economists' policies. Left with a severely poor economy, the New Order succeeded in turning Indonesia's backward economy into a modern one. From the end of 1960s to the middle of the 1990s, the average economic growth stabilized at 6.5% a year, thus trebling income per capita in just one generation (Hill, 2000).

Calling these modernizing elites the "Berkeley Mafia," David Ransom (1970) sees the rise of the economists as part of an American government plot to divert Indonesia from communism to capitalism. The fact that Indonesia became more open to "interventions" of Western countries was apparent, but Ransom's allegation that the economists were stooges of the American government might not be completely true. Only a few of them went to Berkeley, and their training, as explained by the Ford Foundation, was part of the educational activities approved by President Sukarno to prepare teachers of economics, not to cultivate a new core of public officials.[2] Nevertheless, the term *Berkeley Mafia* and its liberalist connotations have hitherto cast a shadow over the economists. Their work relies heavily on the market-based economy, a belief in the work of "the invisible hand" that would achieve justice in wealth distribution. Moreover, their liberalist paradigm is inscribed in policies that encourage market liberalization, opening the Indonesian economy to foreign products and investment.

The Rise of the Engineers

Whereas the economists joined Suharto's regime during harsh times, the engineers became part of the regime when the Indonesian economy was booming

due to the 1970s oil bonanza. The influence of the engineers began when B. J. Habibie, an aeronautic engineer who had studied and worked in Germany for almost 20 years, was called in by Suharto in 1974 to help him build high-technology industry, about which Suharto was then passionate. Through a close personal relationship with President Suharto, Habibie cultivated unmatchable power in the regime (Amir, 2007b). He held a number of key bureaucratic positions through which he gained access to ample economic and political resources. In 1978, Suharto named Habibie the state minister for research and technology and chair of the Agency for the Assessment and Application of Technology (BPPT). Habibie maintained these top positions for 20 years assisted by a number of engineering technocrats, most notably Rahardi Ramelan, Surasno Paramajuda, Wardiman Djojonegoro, Sutardi Suparlan, and Harsono Pusponegoro.

In contrast to the economists' gradual development approach, Habibie and his engineer colleagues at BPPT offered a technology-based development strategy to accelerate the transformation of Indonesia from an agricultural-based society to an industrial-based one. The scheme of this development strategy is encapsulated in Habibie's phrase *berawal dari akhir, berakhir di awal* (starting from the end, ending at the start), a reversion of the industrialization process consisting of four steps of transformation (Habibie, 1995, pp. 211-217). The first step is the use of technology to produce existing products that lead to added-value creation. The second step is characterized by new product development based in existing technology. Following this step is the development of new technology, which encompasses not only a totally new product but also new technical systems. This is the point where local engineers indigenously develop an original technology. The whole process culminates in another step—conducting basic research. This step is achieved by producing new knowledge in scientific laboratories. As a model for this four-step transformation, Habibie and his group developed the Indonesian Aircraft Industry (IPTN), built in 1976. Located in the city of Bandung, IPTN is a modern aircraft manufacturer that produces propeller airplanes, aircraft components, and weaponry systems. During the New Order period, IPTN was presented to the public as a form of technological nationalism that cast national pride and dignity for the country (Amir, 2007a).

Another important character of Habibie's development strategy is serious attention to producing a group of highly educated scientists and engineers. The significance of capable human resources, in Habibie's view, lies in the fact that economic progress depends less on natural resources than human ones. Habibie was inspired by the incredible economic growth of the Asian Tigers, namely, Japan, South Korea, and Taiwan, a group of countries poor in natural resources but that could manage to achieve high economic growth through well-educated people. The commitment to improve the quality of Indonesian human resources was shown in the long-term program of sending thousands of Indonesian students to study science and engineering abroad under the coordination of BPPT. These students entered many prestigious schools in North America, western Europe, and Japan, from which they obtained PhDs in high-technology-related subjects. Once they completed their studies, they were expected to join Habibie-controlled technological institutions such as BPPT, the Institute of Science, state-owned strategic industries, and nondepartmental research centers (Bishry & Hidayat, 1998).

Bureaucratic Battle

From the 1980s through the fall of Suharto in 1998, national policy making had been affected by the tough competition between Habibie's group and Nitisastro's group. Upholding different policy directions, both groups grew stronger within the regime's structure, yet they possessed different resources to put forth their development agendas. These resources encompass high-level bureaucratic offices, a network of government officials, and an alliance with a prestigious university. Let us first observe the resources held by the economists. In the bureaucracy, the economists attained the Agency for National Development Planning (BAPPENAS). This was a powerful agency created by Nitisastro and his colleagues that held unassailable authority over the state's development planning and budgeting. Along with BAPPENAS, Nitisastro's group also dominated key positions in the ministries of finance, trade, and industry. It is no surprise that trade and industry policies during that era were framed within the economists' liberal approach. Strengthening the economists' position was an alliance with the faculty of economics at UI (FEUI) in which, as mentioned above, Nitisastro and his colleagues began their civil servant careers as faculty members. This alliance is important, because it is the university that perpetuates the economists' development paradigm by producing new generations of market-oriented economists.

On the engineers' side, the most important stronghold was BPPT, a nondepartmental agency created by Habibie deliberately to compete against the influence of BAPPENAS. Whereas BAPPENAS played a

pivotal role in macroeconomic planning, BPPT held the task of microeconomic planning. The multiroles of BPPT included formulating general policies for technology acquisition, coordinating research activities, assessing technological application, and developing technology. As a result of this superfunction, BPPT was endowed with great authority to oversee many development projects, from developing methods for shrimp cultivation to the selection of jet fighters for the air force. While the economists ruled private industrial sectors, the engineers controlled the Agency for Strategic Industries (BPIS), chaired by Suharto himself with Habibie as vice chair. Based on Habibie's conception of strategic industries, BPIS functioned to link research undertaken by BPPT's researchers to 10 state-owned strategic industries under the management of BPIS that included telecommunication, transportation, heavy equipment, and weaponry. Parallel to the economists-FEUI alliance, Habibie's bureaucratic empire was bolstered by an alliance with Institut Teknologi Bandung (ITB). Habibie attended ITB for 1 year before departing for Germany in 1955. A number of Habibie's loyalists were faculty members at ITB, and for years ITB graduates filled many key positions in Habibie's projects. In 1977, ITB decided to grant Habibie a professorship due more to political than academic reasons. Habibie, in fact, never taught at ITB but his professorship was an instrument of symbolic power to balance the popularity of UI's economic professors.

During the 1980s, the influences of the engineers and the economists seemed equal. However, entering the 1990s the situation slightly changed, for the engineers obtained another resource the economists failed to secure. This resource was drawn from the political space that Nitisastro and his economist colleagues seemed reluctant to enter. In contrast, Habibie and his entourage unabashedly became involved in the New Order's hegemonic politics by joining the New Order's ruling party Golongan Karya (Golkar), where a number of individuals from the engineers' group sit in high official positions. Habibie himself served as the daily coordinator of the party's counseling board. Another political resource the engineers harnessed was the Indonesian Muslim Intellectual Association (ICMI), which surprisingly emerged as a powerful group in the political landscape of the New Order during that period. Later, these political resources allowed the engineers to trounce the economists in ministerial positions. When Suharto announced the composition of the Sixth Development Cabinet in March 1993, a few ministerial posts previously held by Nitisastro's protégés were now taken over by the engineers, including the leadership of BAPPENAS, which was given to Ginandjar Kartasasmita, an engineering-trained bureaucrat who strongly sympathized with Habibie's ideas.

Habibienomics vis-à-vis Widjojonomics

Bureaucratic structure was not the only space in which the rivalry of the engineers and the economists took place. Both camps strived in a variety of discursive channels, for example, seminars, newspaper columns, journals, and books through which each presented its own ideas, arguments, and supporting theories. This strife revolved around two concepts, namely, *Habibienomics*, a concept of economic development based on added value that Habibie confidently emphasized as a new paradigm for a future Indonesia, and *Widjonomics*, referring to the economists' neoclassical economic paradigm.[3]

Inasmuch as economic growth is the primary goal of development efforts, Habibienomics and Widjojonomics have that in common. Habibienomics shares with Widjojonomics the idea of trickle-down effect as the mechanism that would stimulate a just spread of wealth in society. Furthermore, Habibienomics places industrial sectors at the core of development, following the assumption held by the economists that industrialization is the fastest track by which to achieve economic growth.

Despite their agreement on economic growth and industrialization, the two schools differ in their views about the sources of economic growth and the foundations of industrialization. The confrontation between the engineers and the economists begins when it comes to the question of what kind of advantages Indonesia should harness for the struggle in a globalized economy. The engineer camp questions the adequacy of Widjojonomics by debunking the concept of comparative advantages that is the foundational logic for the economists in managing the Indonesian economy. In a nutshell, the theory of comparative advantages seeks to identify the kind of good from which a country would gain maximum benefits in its production. A country is said to have a comparative advantage in the production of a good if it can produce the good at a lower opportunity cost than another country. Thus, specialization is key in this understanding.

To identify a country's comparative advantage good requires the comparison of production costs across countries, which are constituted by labor costs and material provisions. In the case of Indonesia, the

comparative advantages are derived first from its abundant natural resource endowment and second from cheap labor. The economists see these two resources as the most significant components in maintaining high economic growth. Accordingly, the economists offer policies to create circumstances that lure both foreign and domestic investors by offering natural resources and low-wage labor as the comparative advantages of Indonesia.

For the engineers, a focus on comparative advantages propounded by Widjojo and his entourage was the right choice for the first 25 years of development. But relying on these advantages in the future, the engineers argue, is not strategic, for two reasons. First, the mere exploitation of natural materials from the archipelago without further processing could only produce low-value commodities. Only by producing technology-based products could Indonesia gain more economic value. After all, the engineers point out, Indonesia's natural resources are not unlimited. The second criticism emphasizes the labor factor. The engineers argue that relying on cheap labor would not be sustainable in the long run since labor wages are likely to rise when the economy starts soaring. The engineers point out that the industrial sector in Indonesia is largely composed of footloose industry that could easily flee to another country offering lower labor costs. This, according to the engineers, is a fatal shortcoming in the economists' comparative-advantage-oriented industrial policies (Juoro, 1996a).

Pointing out the downside of the comparative-advantages concept, the engineers present Habibienomics as a new development paradigm that offers a stronger rationality for strengthening the foundations of Indonesian industry (Rahardjo, 1997). The new approach offered in Habibienomics is drawn from the concept of competitive advantages as opposed to the comparative ones. Michael E. Porter (1990) introduces the concept of competitive advantages to prove that the theory of comparative advantages is no longer adequate to explain why some nations' industries succeed in the international market while others do not. According to Porter, this is because contemporary industries do not depend solely on factors of production, as suggested by neoclassical economics. What have come to be important, in Porter's observation, are factors of competition. Porter thus offers the concept of competitive advantages to explain from what conditions the advanced economies drew industrial forces that enabled them to attain supreme positions in the international trade.

In Habibienomics, the competitive advantages are narrowly interpreted as the capacity to produce so-called added value, which is identical to technological content of a manufactured product created by engineers. Habibienomics underscores the added value as a source of profits that ought to be pursued by a company or a nation. In this view, competitive advantages come from the capacity to enhance the added value of industrial products. Simply said, what matters the most in product competitiveness is technological content, not basic input of raw material. By emphasizing added value as the source of economic strength, Habibienomics rejects the excessive focus on lowering production costs through the use of cheap labor, as suggested in Widjojonomics.

For those taking the side of the economists, the extensive proliferation of Habibienomics in many government policies could jeopardize the stability of the nation's economic structures. A fundamental weakness in Habibienomics, in the eyes of the economists, is its ignorance of the market factor. As Indonesian economist Thee Kian Wie has noted, Habibienomics gives too much emphasis to the supply side while overlooking the demand side (Wie, 1996). In addition to ignoring market realities, Habibienomics offers a concept of high-tech-oriented development, attractive but inefficient and problematic in terms of resource allocation. Given the limited financial resources Indonesia has, concentrating on high-technology development inevitably entails marginalizing the development of other sectors more beneficial for the populace as a whole. After all, Habibie's enormous spending on developing new technologies has failed to address social issues such as poverty and unemployment. His large investments in human-capital and technology-intensive projects might exacerbate the nation's economic problems (Rice, 1998).

Market, Technology, and the State

If one looks thoroughly, the tension between the engineers and the economists is not what each camp has claimed about the other. The economists are not oblivious of technological factors in economic growth, and the engineers do not tend to overlook market factors in developing technology. The economists insist that they are aware of technological influences on productivity and economic growth (Swasono, 1993). Likewise, the engineers show that market considerations were actually included in the process of technological development undertaken by Habibie (Juoro, 1996b).

Thus, the conflict is located in the ways they construe the interrelationship between technology, economy, and the state. For the economists whose view of technology is strongly influenced by neoclassical economics, technology is an exogenous

factor; technical change is an effect of market competition. Demands of technology among manufacturing firms are determined by incentive systems consisting of macroeconomic policies, trade regime, and domestic competition as well as efficiently working production factors. The role of the state thus is limited to ensuring the working of market mechanisms that will provide a more equal distribution of wealth (Wie, 1996).

In contrast, following the theory that views technology as endogenous,[4] the engineers oppose the economists by asserting that technology is not merely a by-product of market mechanisms but is itself the primary source of growth. The engineers firmly believe that the sustainability of economic growth depends on how much effort is undertaken by the state to encourage the development of new technology. For that reason, the engineers call for an active role of the state to support technological endeavors directly, including giving protection and subsidies (Juoro, 1998).

Epistemological Boundary

The intense debate between the engineers and the economists is not confined to questions about what sorts of economic strategy and industrial development Indonesia ought to implement. At a deeper level, this quarrel is caused by the divergence of logics, nomenclature, and assumptions deeply embedded in each technocratic epistemology. In other words, there exists an epistemological boundary that draws a line between the engineers and the economists in terms of how they construe the economic field. For the economists, the economy is a game of networks constituted by players, all of which posses given resources. Because resources are scarce, the goal of the game is to exchange each player's resources based on rules of fairness and openness so that the production and distribution of wealth can occur in an efficient manner. Thus, the rule of the game obliges each player to open access to its resources for other players and to allow capital to flow in and out without any regulatory burdens. In contrast, the engineers employ a metaphor of the economy as a game of war in which technology is the most strategic weapon for the struggle. It is technology that defines how much power a player wields in the battle.

The economists do place technological variables in their calculations. But they hold different epistemological assumptions about how technology is acquired. The economists argue, "Why bother to create technology if we can just buy it?" To this the engineers would reply, "Why bother to buy technology if we can create it?" Differing arguments between the economists and the engineers come from a rationality that calculates the choice of action based on opportunity. For the economists, choices about how to acquire technology depend on the assessment of opportunity costs. This decision-making method stems from the core of economics as a science of scarcity that continuously looks for the best among available options.

The principle of opportunity costs does not work for the engineers, for they view technology as a window of opportunity instead. In this light, the perspective on technology and the economy that distinguishes the engineers from the economists lies in one idealized condition that is present only in the engineers' vocabulary, that is, *mandiri*. This word is all over the discourses of technological development found in the New Order's long-term development plan. Literally meaning "independent" or "autonomous," the idea of mandiri emphasizes a condition of being technologically independent. From this point of view, technology is strongly associated with a state of self-governance, self-sufficiency, and self-determination. In this light, the engineers' technocratic paradigm strongly subscribes to the idea of nationalism, which, as we can observe today, tends to stand against globalization. Hence, the battle between the engineers and the economists is often described as the conflict between the nationalists and the neoliberalists. While the former seek to protect the interests of the country from economic and political dominance of the Western countries, the latter believes that globalization brings virtue for the country's economic development.

Policy Incoherency

Looking at the harsh competition between the two groups of technocrat elites discussed above raises one poignant question. What are the consequences coming from the disintegration of the engineers and the economists to Indonesian development? To answer this question, one needs to look at the Indonesian economy that has suffered from prolonged economic crises. Indeed, there are numerous factors responsible for the fragile structure of Indonesian industry. But one of the most affecting causes is policy incoherency separating the industrial and technological sectors.

As I have described above, the economists' development paradigm has led Indonesia to achieving high economic growth as a result of rapid industrialization. This was boosted by the massive flow of foreign investments lured to Indonesia for its cheap labor and abundant natural resources. The fact that Indonesia is the fourth most populated country, making it one of the biggest markets

in the world, is another factor attracting foreign investments. Realizing all this potential, the economists conceived development policies so as to take the immediate opportunity given by market liberalization. No one would reject what the economists have done. But the problem is that their policies have failed to strengthen the industrial structure underpinned by technological knowledge, for the economists tend to see technology as a merely one production factor.

On the other hand, the engineers have created a variety of technological institutions meant to boost Indonesia's technological capacity that would be strategic to support industrial competitiveness. Their efforts were concentrated on high-technology enterprises funded by the government budget. Billions of dollars have been spent to materialize a development plan based on Habibienomics. The problem is that all these endeavors have been too focused on technological factors alone, ignoring the social, economic, and cultural contexts within which Indonesian development is taking place. As a result, many of the engineers' projects have failed to make productive connections with the reality of the market.

The impact of the policy incoherency resulting from the disintegration of the engineers and the economists is enormous and has afflicted Indonesian economy for a long time. The disjointed economic and technology policies have resulted in low competitiveness of Indonesian industry. The free fall of the Indonesian economy during the Asian monetary crisis is a clear indication of how such policy incoherency created a fragile structure of economic and industrial sectors. On one side, Indonesian industry is characterized by the blatant exploitation of cheap labor. On the other side, Indonesia's many highly educated engineers and scientists, due to institutional impediment, seldom do research that has directly positive impacts on industrial innovation and productivity.

Conclusion

In this article, I have shown the division within technocratic practices that rules national policy making in Indonesia. Although the engineers and the economists base their decisions and actions on rational calculations, they are severely disintegrated in their choices, practices, and institutions. In this article, this disintegration is exhibited in two arenas of rivalry in which both technocratic groups strived to impose their technocratic expertise on national development planning. The first involves the struggle over high bureaucratic positions, a kind of resources each group exploited to attain authority that allowed them to cast their technocratic paradigm onto public policies. The second arena is the discourse of development strategy in which both groups sought to shape public opinions according to their technocratic paradigms. Aside from bureaucratic resources and discursive channels, the engineers and the economists equally built an alliance with a prestigious university from which each group could mobilize intellectual supports, thus cultivating more power to compete.

Despite their equal positions, the political resource enabled the engineers to outmaneuver the economists, who, unlike the engineers' link to the ruling party, lacked connection to a politically powerful group. I have also highlighted in this article the implication resulting from the clash between two groups of technocrats observed above. The price of the competition between the engineers and the economists is pervasive, for it has created policy incoherency between the economic and technological sectors, thus eventually afflicting Indonesia's industrial competitiveness.

Getting at this point, one may ask why such a competition between the engineering technocrats and the economic technocrats has cropped up. In his *A Nation in Waiting*, Adam Schwarz (1999) emphasizes a political factor that has led to the disintegration between Habibie's group and Nitisastro's group. He points to the role played by President Suharto. Schwarz suggests that Suharto had deliberately put Habibie and Nitisastro in such a way as a means to maintain his own power, for both technocrat groups posed advantages and disadvantages to the regime. This analysis may be true but does not tell the whole story. The Suharto factor is no doubt crucial but, as I have explained above, the clash between Habibie and Nitisastro is rooted in epistemological contradiction that leads to the disunity of technocracy.

Notes

1. In Indonesia, Nitisastro's group is commonly called the technocrats (*teknokrat*) while Habibie's the technologists (*teknolog*). These terms are not used here, given that both groups are essentially technocrats. Instead, I use the terms *economists* and *engineers* that refer to their specific expert knowledge.

2. See Ford Foundation (2003).

3. Inspired by an American way of naming a concept of economics after a leader's name such as Reagonomics or Clintonomics, Indonesian economist Kwik Kian Gie first coined the term *Habibienomics* in his 1993 Kompas article. Later, others offered *Widjonomics*, after Nitisastro's first name, as the opponent concept.

4. In the new growth theory, technology is seen as an endogenous factor. See, for example, Solow (2000).

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