

# Nationalist rhetoric and technological development: The Indonesian aircraft industry in the New Order regime

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## Abstract

This paper discusses the impact of the combination of nationalist rhetoric and technological development in a Third World country. Using the Indonesian aircraft industry during the New Order regime as its focus, this paper considers the ways in which nationalism becomes an impetus for technology development. It also provides a vignette of how nationalist rhetoric shapes the symbolic and physical construction of technology. Technological nationalism is a form of ideology that functions at three levels: integration, legitimation, and distortion. The author argues that while the social and cultural effects of technological nationalism encourage greater integration of society, they also spawn far-reaching implications by giving technological elites tremendous power to determine technological choices.

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## 1. Introduction

In 1976, Indonesia made its debut in the world of high-tech development. Harnessing the oil bonanza at that time, Indonesia's New Order government sought to industrialize the country by establishing *Industri Pesawat Terbang Nusantara* (IPTN).<sup>1</sup> Headquartered in the city of Bandung, IPTN manufactures a variety of aircraft products ranging from helicopters and propeller airplanes to jet aircraft components. By 1995, the industry employed 16,000 skilled workers and hired hundreds of Indonesia's best scientists and engineers, especially those with doctoral degrees from prominent universities in Europe and North America. Over the course of the next two decades, the New Order government invested more than US\$ 2 billion in IPTN, an enormous amount for a developing country with a GNP per capita under US\$ 1000.

As one of few aircraft producers in Third World countries, IPTN was a prominent symbol of Indonesian national esteem and pride. In the eyes of its proponents, IPTN was a vehicle that would enable the country to take off toward a brighter future. Some claimed that it inspired the Indonesian people to think of themselves as equal to Western nations. In truth, IPTN was a political construct emanating from circumstances

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<sup>1</sup>In 2002, IPTN was renamed Indonesian Aerospace by President Abdurrahman Wahid.

constituted by power relations, industrial-oriented development, and technological imagination—and all hinging on the rhetoric of nationalism.

Considering the juncture of nationalist rhetoric and technological development, this paper examines how nationalism can become an impetus for technological development. It also examines the ways in which nationalist rhetoric influences the symbolic and physical construction of technical artifacts. There are two key objectives in this paper: (1) to provide a vignette of how nationalism enters technological realms, and (2) to give an account of an important piece of modern Indonesian history, an episode that highlights the concept of nationalism and the obsession of high technology.

## 2. The ideology of technological nationalism

In this paper, I discuss the concept of technological nationalism, and explain the ways in which technology is discursively and materially affected by nationalist ideology. At the same time, I provide scenarios through which national identity, prestige, and sovereignty are expressed. Using a definition of “ideology” expressed by Ricouer [1], I conclude that technological nationalism is an ideology that has both constructive and destructive meanings.

Drawing on Marx, Geertz, and Weber, Ricouer posits three functions of ideology that include both neutral and pejorative connotations. Starting with Marx, Ricouer shows how ideologies emerge from ideas that appear as an autonomous reality and claim to provide paradigms for construing experience. The distortion function of ideology results from its tendency to limit choice by suppressing alternatives while at the same time overemphasizing specific choices as inevitable and natural. In following Geertz, Ricouer explains that prior to its distortion function, ideology must be understood to have an integrative function whereby ideology works as a symbolic system that provides a network of templates through which a society identifies itself. However, as Ricouer points out, a problem arises as to how ideology can play these two contradictory functions. Seeking an explanation, Ricouer turns to Weber’s notion of legitimation and explains that legitimation is a function of ideology that bridges the neutral concept of integration and political concept of distortion. Ricouer argues that ideology plays a significant role in providing the needed authoritative concepts in society. As it serves as the platform for interpretation, ideology legitimates the authority of the governing through the consent and cooperation of the governed.

Based on Ricouer’s framework of ideology, I highlight three ideological characters of technological nationalism. First, technological nationalism functions as a medium of integration that unites socially and culturally diverse people in a nationalist sentiment through the sublime of technological systems and artifacts [2]. Technological nationalism dissolves both horizontal and vertical boundaries between people in which all national elements are homogeneously fluid. In this light, technology is seen not merely as a physical object but is constituted by collective symbolism through which social and cultural materials such as language, histories, myths, and utopias are blended together. Within such a repertoire, technology becomes a medium of an imagined community [3].

Second, as technological nationalism mediates political and cultural interpretations of nationalist spirits, it legitimates all technological endeavors and actions pursued under the label of collective and national interests. Technological nationalism forges a social trust for nationalist actions in technological development. This legitimates technological elites who bring in the idea of technological development using nationalist rhetoric.

Third, following Maurice Charland [4], technological nationalism is a rhetorical strategy to gain political power through discursive registers in which technological projects are associated with the “people.” As a rhetorical strategy, technological nationalism encourages people to fully trust technological elites, thus giving elites exert tremendous power to pursue their interests. Technological nationalism evokes a feeling of pride, yet at the same time hinders people from being critical to the choices and actions of technological elites.

It is through these multiple effects that technological nationalism performs its distortion function. Using an anthropological tool provided by Downey and Dumit [5], I present historical narratives of Indonesian aviation and examine within those narratives the intertwined presence of the three ideological characteristics of technological nationalism outlined above.

### 3. From Nurtanio to Habibie

The embryo of Indonesian aviation has grown since the early days of independence in 1945. It began when three young men in a junior aero club—Nurtanio Pringgoadisurjo, Wiweko Soepono, and R.J. Salatun<sup>2</sup>—decided to join the newly formed Indonesian Air Force in Yogyakarta. These young men were concerned that the condition of the Air Force fleet was too dependent on imported parts. In 1946, in an early effort to create locally made aircraft, Nurtanio and Wiweko constructed a glider called NWG-01 entirely out of local materials. The glider flew successfully and caught the attention of their superior who authorized a small order for the glider to be used for training purposes. Two years later, Wiweko created a modest airplane made out of metal and wood and using a Harley Davidson engine. Named RI-X, this was the first motor-powered plane produced by an Indonesian [6].

The next step toward creating more advanced aircraft was implemented after Nurtanio returned from his study at FEATI Institute of Technology in the Philippines in September 1950. He was assigned to the Air Force's Flight Maintenance Depot in Bandung. In 1957, this small workshop became the Aircraft Research, Experiment, and Construction Depot (DPPP). Assisted by a few technicians at DPPP, Nurtanio developed a series of single-seat aircraft—*Kumbang* (Beetle), *Belalang* (locust), and *Kunang* (firefly). Nurtanio tested all the planes he designed.

Nurtanio's success attracted the attention of Sukarno, Indonesia's first president. In 1960, the Sukarno government formed the Preparatory Agency for Aviation Industry (LAPIP), which was meant to be the start of an aircraft producer. Under the supervision of the Air Force, LAPIP operated as an expanded version of Nurtanio's research depot. In 1961, with a loan of US\$ 2.5 million from the Polish government, LAPIP built a manufacturing facility at nearby Husein Sastranegara Airport in Bandung. With a license from Polish Cekop, it started producing a modified version of PZL-104 Wilga named *Gelatik* (rice bird) used for agricultural purposes, light transport, and by the aero club [6].

Nurtanio's career at LAPIP was unfortunately short-lived; he died in 1966 in an accident while flying one of his modified airplanes. His tragic death caused deep grief throughout the Indonesian Air Force. In honor of his legacy, the Air Force renamed LAPIP to LIPNUR after Nurtanio. During the harsh times of the early 1970s, LIPNUR struggled to survive. It could only afford to produce a small number of Gelatiks, mostly for Air Force use.<sup>3</sup> This diminished vitality lingered through the mid-1970s until the arrival of Baharuddin Jusuf Habibie, which marked a watershed in the history of the Indonesian aviation industry.

Unlike Nurtanio, who built his career in the military, Habibie is a civilian industrialist. He received a doctoral degree in aeronautical engineering from Technische Hochschule Aachen in Germany in 1965, and he worked for over 10 years for Messerschmitt-Boelkow-Blohm (MBB) where he reached the position of vice president and director for technology application. In 1974, Habibie returned to Indonesia after President Suharto asked him to join his cabinet. At that time, the New Order regime began bringing in economic development and industrialization never seen in the Sukarno regime. With oil prices skyrocketing, the Suharto government could afford to finance capital-intensive projects [7]. Given Habibie's prior relationship with Suharto, when he joined the New Order government, he became Suharto's most trusted lieutenant. Not surprisingly, Habibie was granted enormous privileges by the regime leader [8].

In 1978, Habibie was named State Minister for Research and Technology, a position he held for 20 years. Although Habibie was given the task of handling technology development in general, his agendas focused primarily on developing the aircraft industry. Assisted by a group of Indonesian engineers he had trained at MBB [9], Habibie soon developed a plan to establish a modern aircraft industry. Despite criticism from many economists [10], this initiative gained full support from Suharto who was very enthusiastic about high technology. He once said, "We have to make a long-term plan to anticipate the future, which will be determined by our own mastery of modern science and high technology" [11]. This statement illustrates Suharto's conviction that high technology was a strategic tool for the country, a belief that was imposed upon the national development agenda [12].

<sup>2</sup>In 1963, Salatun was involved in the founding of the National Aeronautics and Aerospace Institute (LAPAN).

<sup>3</sup>Personal communication with Yuwono, June 14, 2005.

With economic and political support from Suharto, Habibie and his team began to implement the plan. Initially, they decided to build an aircraft industry in Pondok Cabe on the outskirts of Jakarta. This plan changed when the Air Force officials approached Suharto offering LIPNUR in Bandung for Habibie's plan with the condition that he would retain Nurtanio's name.<sup>4</sup> Habibie and the Air Force then made a deal. On April 5, 1976, Suharto launched decree no. 12, which merged all the available assets of the state-owned oil company Pertamina, with LIPNUR, into a new company named *Industri Pesawat Terbang Nurtanio* (IPTN) and headed by Habibie as president director. On August 23, 1976, IPTN officially started operating, marking a new era for modern aviation industry in Indonesia. At that time, IPTN consisted of two small hangars (11,000 m<sup>2</sup>) located on a 45,000 m<sup>2</sup> site with 860 employees.

Ten years after IPTN began its operations, Habibie unilaterally decided to change the corporate name from "Nurtanio" to "Nusantara,"<sup>5</sup> thus breaking the deal he had made with the Air Force. This action outraged the Air Force community [6]. Yet with Suharto's approval, Habibie was certain that the new name was necessary to create a better image of IPTN as a national corporation. The new name was also an attempt by Habibie to break IPTN away from its historical past. Habibie argued that what he had done with IPTN was not a continuation of Nurtanio's legacy but a new page in Indonesia's aviation history.<sup>6</sup>

What distinguishes Habibie from Nurtanio? In terms of nationalist vision, Habibie and Nurtanio both shared a desire to make Indonesia independent of foreign technology. However, Nurtanio's technical practice tended to emulate *bricolage*, a process of constructing different versions of technology [13]. Unlike Nurtanio, Habibie's technical practice went beyond constructing technology and situated IPTN in the larger context of national development involving capital, power, and nationalist ideology. For Habibie, IPTN was not merely a manufacturing industry but a machine of social change that could transform Indonesian society from an agricultural to an industrial culture. Based on his own experiences during the post-war German economic miracle, Habibie saw that social evolution is a process that could be deliberately accelerated. In this light, Habibie prescribed a shortcut trajectory to accelerate the processes of social evolution through a scheme of technology transfer encapsulated in Habibie's famous phrase "*berawal dari akhir, berakhir di awal*" ("starting from the end, ending at the start"). It refers to the process of mastering Western technology via four steps: importing technology modifying existing technology, designing new products, and conducting basic research [14].

#### 4. Mastering Western technology

IPTN operations began with agreements with MBB and Construcciones Aeronauticas, S.A. (CASA) of Spain. These two European companies provided technological assistance to IPTN during its infancy. As a startup, IPTN produced under license MBB's BO-105 helicopters and CASA's 12-passenger C-212 Aviocar. It took 3 years for IPTN technicians to learn how to construct an aircraft down to its smallest parts. This process required both technical and administrative skills, for every part had to be drawn and documented. During the first decade, IPTN grew rapidly in terms of employee numbers and projects. Several joint ventures with Western corporations were signed. For example, IPTN and French Aerospatiale agreed to produce the PUMA SA 330; IPTN and Bell Helicopter Textron manufactured 100 Bell-412 helicopters. In 1986, IPTN succeeding in getting an order from General Dynamics to manufacture F-16 components [15].

In 1979, IPTN and CASA agreed to jointly develop a new propeller aircraft called CN235. This 35-seat aircraft was designed for medium-range distance based on the US FAR Part 25. It cost US\$ 20 million, a cost shared equally by IPTN and CASA through ownership of Aircraft Technologies Corporation (AIRTEC) based in Madrid. During the project, IPTN engineers flew back and forth to Spain to learn from and work together with their counterparts at CASA.

The CN235 was designed to suit two different purposes. For Indonesian purposes, IPTN wanted to use it in military operations in remote areas. It was intended to replace the C130 Hercules, which was used extensively

<sup>4</sup>Interview with B.J. Habibie, July 6, 2005.

<sup>5</sup>*Nusantara* means the archipelago.

<sup>6</sup>Interview with B.J. Habibie, July 6, 2005.

by the Indonesian military. For its part, CASA needed an aircraft that could transport a F-16 engine in order to fulfill its business strategy of maintaining American aircraft in Europe.<sup>7</sup> For more than a year, engineers from the two companies and both nations engaged in a design process filled with tension and negotiation. The result of this collaboration was a wide-body airplane equipped with a ramp door that would facilitate all-purpose transport. Its basic configuration was 35 passenger seats, extendable to 44. The construction sections were equally divided into two groups, one produced by CASA, the other by IPTN. CASA was responsible for the center and forward fuselage, wing center section and inboard flaps, and engine nacelles; IPTN built the outer wings and flaps, ailerons, rear fuselage, and tail unit.

After 4 years, the CN235 project resulted in four prototypes, two for each company. CASA's Infanta Elena and IPTN's Tetuko were used for flight tests, the other two for static testing. On December 29, 1983, Tetuko made its maiden flight in Bandung a month after Infanta Elena did in Madrid. After completing more than 500 flight hours, on June 21, 1986, CN235 was granted an airworthiness certificate by the Joint Certification Board of Indonesia and Spain.

On December 3, 1986, the US FAA certified CN235, but only Spain's CASA prototype because all of CN235's flight hours witnessed by the FAA used Infanta Elena. This unexpected result was especially disappointing to IPTN because the Indonesian civil aviation authority had no bilateral agreement with FAA. Consequently, IPTN had to go elsewhere to get certification for the Indonesian-made CN235s. Eventually IPTN obtained an airworthiness certificate from the British aviation authority, making Indonesia's CN235s marketable in certain countries.<sup>8</sup>

## 5. Technological independence

The CN235 project taught IPTN valuable lessons, not only technical but political. The certification mishap was just one among several. Although IPTN and CASA made equal contributions to the project, IPTN eventually benefited less than its Spanish partner. Despite a market-sharing agreement between the two, many customers preferred to purchase CN235s from CASA because of the backward image of developing countries associated with IPTN.<sup>9</sup>

Thus, a year after the completion of CN235 project, IPTN embarked on another project. This time it proceeded alone, with no foreign counterpart—a risky endeavor given that IPTN was a relative rookie in the business. The risk of failure aside, however, Habibie believed the time had come for IPTN to develop its own technology independently, and he felt certain IPTN engineers were capable of carrying out such a mission. In addition, he wanted IPTN to build a commercial aircraft that would be competitive in the civilian airline industry, as building solely for the military market did not produce enough profit.<sup>10</sup>

In 1987, a small team of IPTN engineers conducted a survey of the emerging market in regional flights with a range of 800 miles. The team learned that many of the Fokker 27 airplanes used by Indonesian airlines were about to be phased out. A moderate estimate suggested 400 mid-range airplanes, with possibly a higher number in foreign markets. In the early stage, the new project sought to design a 30-seat aircraft, hence the title N230. Later, the project was renamed N250<sup>11</sup> after further study revealed that the market wanted a 50-seat aircraft. At the 1989 Paris Air Show, Habibie publicly announced the N250 project to the international aviation community.

The N250 is a propeller aircraft that cruises at speeds up to 330 knots, the fastest propeller airplane in the subsonic class. It relies on a fly-by-wire flight control system that provides fully powered, electrically controlled hydraulic service for both primary and secondary control surfaces of an airplane. The N250's fly-by-wire covers three axes—directional, lateral, and longitudinal—a great innovation considering similar systems covered only one or two axes. IPTN engineers later extended the N250's structure to accommodate 70 seats without additional engine power, making it more attractive in the market [16]. Habibie was confident

<sup>7</sup>Interview with S. Paramajuda, July 2, 2004.

<sup>8</sup>Interview with S. Paramajuda, July 2, 2004.

<sup>9</sup>Interview with S. Paramajuda, July 2, 2004.

<sup>10</sup>Interview with B.J. Habibie, July 6, 2005.

<sup>11</sup>N stands for *Nusantara*, 2 for two engines, and 50 for fifty passengers.

that the N250 would be competitive in the world market [17]. To penetrate the North American market, IPTN opened a branch office in Seattle. It also planned to build a manufacturing plant in Mobile, Alabama [18].

The superiority of the N250's technical features became a source of pride for the whole country. Claimed to be entirely created by Indonesian engineers, the N250 marked what Habibie called the "stage of technological independence" [19] which helped to prove that IPTN had the capability to master sophisticated technologies and move forward in the development of new ones. The N250 was the symbol of technological nationalism that Habibie and his engineers at IPTN had relentlessly advocated.

Considering how the N250 was represented by the New Order elites, it is intriguing to examine how such a product of technical rationality was transformed to represent the grandeur of Indonesia's national identity. Adopting John Breuilly's arguments about the way nationalist symbolism and ceremony reinforce ideological agendas [20], it is helpful to look at two main attributes of the N250 that embody the traits of technological nationalism. One is the airplane's name; the other is the day of the roll out ceremony.

The first prototype of the N250 was nicknamed by President Suharto after Gatotkaca, a heroic flying character in Hindu–Javanese mythology. In the Javanese tradition, the story of Gatotkaca and other stories in *Mahabrata* are performed as *wayang* (shadow puppets) in an all-night performance led by a *dalang* (story teller) and accompanied by gamelan music. Like most Javanese, Suharto enjoyed watching *wayang*, both as entertainment but also as a source of philosophy and virtue in his life. In fact, many of Suharto's political decisions were inspired by *wayang* stories [11]. It was Suharto's great love of *wayang* that motivated him to name CN235 after Tetuko<sup>12</sup> and to follow later with a series of the flying hero's names for the four N250 prototypes: Gatotkaca, Koconegoro, Krincingwesi, and Putut Guritno. IPTN itself was often metaphorically called Candradimuka Crater, a place where, in the story, Gatotkaca obtained his power.

Naming the aircraft after the flying hero was not a matter of personal taste. It was driven by a set of perceived values and virtues defined in the myth. In this light, the mythology serves to bestow symbolic meanings on the technology itself. Seen from such an anthropological perspective, Gatotkaca's name is not just an attempt to resurrect the flying hero; it also combines two separate worlds, similar to the way Partha Chararjee describes the nature of post-colonial culture [21]. One world is material, the other one is spiritual. The former is characterized by rationality, physics, and Western cultural facts from which modernity was derived. But the embrace of modernity, as exemplified by the development of aircraft industry in Indonesia, does not necessarily mean that Indonesia is, or wants to be, fully Western. The technology absorbed from the West must be wrapped in a spiritual force that will strengthen it as an indigenous creation. This is the underlying purpose of the Gatotkaca symbolism: bringing virtues, values, and essence to balance the dominance of technological materiality. By attaching the mythology of the flying hero to the N250, the aircraft is no longer spiritless. Rather, the N250 has a "soul" that reflects a state of perfection while combining Western and Eastern cultures.

Another form of nationalist symbolism attached to the N250 is the rollout ceremony, which was held on November 10, 1994. The N250 roll out was not ordinary, as it was conducted in a traditional ceremony comprised of sequential processes in an atmosphere that elicited feelings of pride from the audience. The "sacred" ceremony began when the twin doors of the hangar that housed the N20 were slowly opened, allowing blue and yellow smoke to drift out from inside. After the smoke completely dispersed, the front of the N250 appeared. Two lines of 16 men walked out of the hangar together, holding a rope tied to the airplane, seeming to pull Gatotkaca by hand. All the while, a choir was chanting *Syukur*, a national prayer of thanksgiving. The plane stopped in front of a two-meter high platform where President Suharto waited, accompanied by Habibie and Vice President Try Sutrisno. The New Order leader poured flower-scented water over the N250's nose from a jasmine-decorated earthenware pitcher. When the pitcher was empty, he released his grip, letting it fall and break into pieces on the ground. In the Javanese tradition, this act signifies a relationship between Suharto and the N250, symbolizing a father blessing his baby and praying that the baby will be safe, healthy, prosperous, courageous, and long-lived. This ceremonial procession attached a cultural meaning signifying that the N250 project of technological nationalism was achieved via a blend of mythology and modernity imposed on the artifact (Fig. 1).

<sup>12</sup>Tetuko is Gatotkaca's childhood name.



Fig. 1. The N250 roll out ceremony on November 10, 1994.

Another important feature of the N250 rollout ceremony is that it was deliberately scheduled for Patriots Day. The whole ceremony of the N250 roll out was intended to evoke patriotic feelings among those witnessing the event. It was symbolically linked to the historic day of November 10, 1945 in Surabaya, when thousands of people died fighting the Dutch who were attempting to reoccupy the archipelago in the aftermath of World War II. This memory was reinforced by Habibie's speech, which emphasized the N250 as an endeavor that would sustain the patriotism of *generasi '45* (the generation of the 1945 revolution) through *generasi penerus* (succeeding generation). As part of the succeeding generation, Habibie said that while the old generation's mission was to claim freedom from the colonial power at the cost of blood and lives, it was the task of the succeeding generation to fill that freedom with prosperity through technological development. In this context, IPTN engineers were treated as patriots who deserved a salute for their struggle in achieving technological independence by producing an advanced technological artifact fully on their own.

The intertwining of symbolism and ceremony attached to the N250 roll out serves the rhetorical purposes of constructing identity and mobilizing popular support. Matthew Levinger and Paula Franklin Lytle developed a model of the triadic structure of nationalist rhetoric that consists of three elements:

- the glorious past,
- the degraded present, and
- the utopian future [22].

To be effective, three interlocking elements that link myth and action are needed:

- First, tension is established through binary opposition between the nation's past and degraded present, as well as between present and imagined future conditions.
- Second, a diagnosis of the source of the nation's decline is offered.
- Third, a prescription for the action required for national redemption is offered.

Using the triadic model as template enables us to analyze three elements of nationalist rhetoric delivered through the N250.

A first element is the use of Hindu–Javanese symbolism. Putting Hindu–Javanese symbolism on the technological artifacts of IPTN is a form of revivalism that reflects a firm conviction in the virtues of ancient Javanese civilizations in which contemporary Indonesian culture is rooted. This implies that Indonesia found its technological superiority that had been lost for hundreds of years. In an interview with *Republika Daily*, Habibie said:

Indonesian sons and daughters are best quality seeds. But they did not have opportunities to blossom and grow. Why? Because for 350 years they had been hindered from growing by a manipulative force [of

colonialism]. During those 350 years, we were shaken and humiliated [by colonialists power] so appallingly that it took away our confidence that we are equal to other nations. [19]

This statement clearly shows how Habibie imaginatively linked this technological project with the long history of colonialism in Indonesia. He accused the colonialists of having destroyed all the opportunities Indonesian people had to become a great nation. He further blamed colonialism as the cause of the inferiority overwhelming the Indonesian people today. Finally, he argued that the Indonesian people are, in many ways, equal to Western nations. Such an assertion creates an entry point for a third rhetorical element whereby high-technology industry was proposed as a prescription for regaining national glory. This is where lies the significant cultural meaning of IPTN. As Habibie relentlessly advocated, IPTN was a vehicle for the bright future of the nation; it was a bridge to reach modernity and grasp a measure of prosperity that would in time strengthen Indonesia to become a fully sovereign, respected nation in the world.

This rhetoric produces powerful effects. As Levynger and Lyttle note, the rhetoric of technological nationalism has great power to persuade its audience to join collective actions. Emphasizing the symbolic and ceremonial attributes of the N250, the rhetoric of technological nationalism was an effective means of generating people's enthusiastic support for the New Order's technological nationalist projects. Enabled by the psycho-political effect of technological sublime, Habibie and his devotees employed that rhetoric in efforts to secure popular consent.

Such popular consent was reinforced by the events of August 10, 1995, when the N250 Gatotkaca successfully completed its maiden flight. Despite apprehension stirred by a report in *Asiaweek* magazine, which predicted Gatotkaca would fall, thus ruining the New Order's reputation [23], Gatotkaca took off and flew perfectly—a great relief to everybody, but especially to Habibie and his engineering team. As Habibie intended, the N250's first flight was a memorable present for the fiftieth anniversary of Indonesian independence.

The euphoria of the N250's successful flight test gave a tremendous boost to Habibie's reputation. It vindicated his high-technology project, rescuing it from skepticism and cynicism. As many press headlines confirmed, the euphoria also created great joy and pride in the Indonesian people. Accepting a proposal from the Indonesian Engineers Association (PII) and United Islam (Persis), the New Order government then designated August 10 as National Technology Awakening Day [24,25]. This gave the N250 extraordinary significance in modern Indonesian history. In the name of the special day, the word “awakening” suggests that the time has come for Indonesia to wake up from its long sleep and regain its lost grandeur. In this light, the N250 is viewed as the commencement of the resurrection of the nation's past supremacy. It bears a distinctive meaning for the nation's dignity and self-determination. As Habibie put it, “the N250 successful flight enables us to walk tall and equal to any nation” [26] (Fig. 2).

## 6. Depriving the forest

The N250 was clearly a colossal project. The human resources devoted to it grew from a team of 30 to more than 1500 engineers. IPTN sent its brightest employees abroad to study aircraft-related subjects at universities in Europe and North America. When they returned, they were expected to bring home with them new knowledge of advanced technology encompassing structural engineering, material science, avionics, control



Fig. 2. First flight of the N250 on August 10, 1995.



systems, and more. Additionally, IPTN developed new research facilities including a wind tunnel, flight test simulator, bird impact laboratories, and others indispensable to the success of the project.

Compared to the CN235, the N250 program had a much larger budget. An initial budget proposal reached US\$ 600 million, which Habibie revealed to the public [18]. But as the airplane gradually developed, new requirements kept coming, and spending also rose. Later costs for the N250 programs compelled IPTN to revise its budget to \$1.2 billion, which included certification, training programs, and manufacturing facilities.<sup>13</sup> Although this money was technically justifiable for a project with the scale of the N250, some of the funding overrun was also caused by inefficiency. According to one N250 project official, clumsy handling by IPTN management in many of its programs led to ballooning costs.<sup>14</sup>

As the N250 first prototype neared completion, IPTN desperately needed cash to finish construction. Habibie had planned to demonstrate the N250 to the public as a present for Indonesia's fiftieth anniversary in August 1995. Troubled by slow bureaucratic processes in the Finance Department, Habibie went straight to Suharto, requesting quick cash for the project. On June 2, 1994, Suharto allowed IPTN to take an interest-free loan of 400 billion rupiahs (then approximately US\$ 200 million) from the *Dana Reboisasi* (reforestation fund) [27] in the Forestry Department to support completion of Gatotkaca. In return, a 5% royalty from sales of the N250 would go to the Forestry Department. The reforestation fund was created in 1990 [28]. Collected from every forest concessionaire, this fund was meant to finance programs that would preserve and rehabilitate the Indonesian forest. In 1992, the fund had reached 2.4 trillion rupiahs deposited in Bank Indonesia certificates. In 1992, the interest alone from this deposit amounted to 825 billion rupiahs from which money for Gatotkaca was taken.

One month after the presidential decree, the scandalous use of the reforestation fund by IPTN was revealed to the public, and it attracted enormous cynicism and commentary from the mass media. Soon a group of environmental NGOs joined together to file a lawsuit against President Suharto at the State Administrative Court (PTUN) in Jakarta [29]. But PTUN eventually dismissed the charge on the grounds that it had no adequate authority to examine the President's policies. According to the PTUN, the President is accountable only to the People's Consultative Assembly (MPR) [30]. The case was closed. A year later, the loan from the reforestation fund was converted into government shares in IPTN, eventually releasing IPTN from any obligation to return the money.

One can speculate as to why Suharto decided to give the N250 project precedence over environmental concerns. Was the N250 sufficiently significant to override reforestation endeavors? This is indeed a puzzling question, one that can only be answered by noticing the factors of power from which many of Suharto's arbitrary decisions were drawn. One important factor concerns the connection between the N250 prototype and the historical events of Indonesia's fiftieth anniversary. As noted previously, the reforestation funds were used because Suharto and Habibie were eager to give a grand birthday present to the nation. At first glance, the two leaders wanted to celebrate the nation's golden year. However, they also sought to achieve a reverse impression: that it was the fiftieth anniversary that gave special meaning to the N250. By presenting the N250 as part of the fiftieth year celebration of Indonesian independence, Suharto and Habibie imposed nationalistic meaning upon the whole process of the N250's creation. The hidden goal of this machination was to legitimize the N250 project, for it was deemed as a symbol of sovereignty marking the nation's technological independence. The N250 project was the stage at which IPTN proved its ability to produce designs of its own.

From this perspective, then, the damage done to the forests by the reckless decision to use the reforestation fund was driven by a passion to create an allegedly indigenous artifact that would function as a medium for nationalistic imagination.

## 7. Concluding remarks

This paper examines the workings of nationalist rhetoric manifested through the realm of a national artifact. The analysis presented focuses on the concept of technological nationalism as vividly described in the

<sup>13</sup>Of this amount, only \$900 million was actually spent before the International Monetary Fund terminated the project. Interview with Joko Sartono, July 1, 2004.

<sup>14</sup>Interview with Hari Laksono, June 19, 2004.

case of IPTN and its epic project. As shown throughout this paper, technological nationalism works as a form of ideology to create a shared feeling of national identity and pride through technological artifacts. What distinguishes IPTN as a technological nationalist project of a Third World country from similar projects in developed countries lies in the imagination of post-colonial modernity [31]. From this perspective, IPTN not only represents the history of technology in Third World countries, but also the cultural history of a post-colonial nation seeking to break way from its colonial past.

Looking at the level through which the ideology of technological nationalism is materialized, I discussed the N250 project as an amalgamation of technical rationality, the rhetoric of nationalism, and the cultural meaning of modernity. This revealed the underlying logic that connects the material and symbolic realms [32] vividly blended in the creation and representation of the N250. Equally important in this account is the attachment of national identity to IPTN products, which confirms technological development as a cultural practice. This is demonstrated in the use of traditional nomenclature and ceremonial practices in the N20 project meant to reflect the past glory of Indonesia.

The use of nationalist rhetoric in technology is not without consequences. As a rhetorical strategy, technological nationalism has far-reaching implications. The tension between the N250 and the denigration of environmental preservation indicates how technological nationalism can produce a paradox. On the one hand, there is a spirit of liberation that drives the desire to be technologically independent. Here, technological independence bears great economic, political, and cultural significance. It refers to self-sufficiency, self-determination, and self-identity. On the other hand, technological nationalism creates a dilemma, for it governs decision making from the basis of ideological interests. The effect of this approach, I would argue, is to affirm a distorted rationality that guides those acting on the rhetoric of technological nationalism to narrowly define the meaning of liberation. In the case of the N250 project, liberation was signified by the prestige and glamour of a technological artifact while disregarding crucial ethical considerations and at the same time distorting any reasonable hierarchy of human needs. From this distorted view, an airplane seems to have become more important than environmental protection and the well-being of the Indonesian people. As Langdon Winner aptly puts it, technology is like a big magic [33]. It offers an excitement of progress that seems to be inevitable for modern society. Yet, a blind embrace of high technology generates illusions that have the potential to divert people's consciousness from ethical concerns in their decisions and actions.

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