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The Missing Link: Planetary Precarity and a Globalizing Machine for the Philippines, 1972–1985

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Abstract

For the vast majority of agricultural workers in the tenant peasantry class, the direct relation to a landscape valorized by a plantation economy is simultaneously a constantly mediated, ever-precarious economic relation to global capital. Since 1945, discourses of development have only deepened extractive and deeply unequal modes of governance and sociality in this context and across the Global South*. It is in this context that I aim to assess the politicized technics of precarity, weather prediction, and economics of agriculture in the Philippines under the authoritarian rule of Ferdinand Marcos. In studying the Philippines during its violent neoliberal transformation period, I hope to extract an ideal portrait of the environmental, technological, and economic logics of postcolonial globalization. To do so, I will assess a subtle yet crucial point in the Philippines' history of science, technology, and the environment: the implementation of a meteorological telecommunications network and Marcos's reordering of these stations as the Philippine Atmospheric, Geophysical and Astronomical Services Administration, or PAGASA (meaning "hope" in Tagalog). By understanding the several scales of political economy at work in direct relation to such a network, this paper seeks to illuminate the multiple dimensions of social instability rooted in the Philippine government's neoliberal conflation of environment and economy. The architectures and technologies of network, then, highlight the numerous ways in which weather forecasting, agricultural production, and political control intersect in infrastructural development.

*To turn to Arturo Escobar's work on postcolonial histories of science, the development discourse "has created an extremely efficient apparatus for producing knowledge about, and the exercise of power over, the Third World. This apparatus…has not since ceased to produce new arrangements of knowledge and power, new practices, theories, strategies, and so on. In sum, it has successfully deployed a regime of government over the Third World, a 'space for "subject peoples"' that ensures certain control over it. (2011, 275-276)"

Keywords: infrastructure, globalization, disaster, Philippines, dictatorship

TOWARD A "MORE COMPREHENSIVE WORLD SYSTEM"

Prior to 1972, this loose network of weather stations around the Philippine archipelago operated under the Jesuit aegis of the Manila Observatory, a mid-nineteenth century Spanish institution renowned for its scientific observations of seasonal weather processes and volatile geological activity. The science of the environment in the Philippines was always already a colonial science, its import directly correlated to the Pacific Rim's climatic conditions for agriculture, overseas travel, and profits gained from importing and exporting goods. Observation

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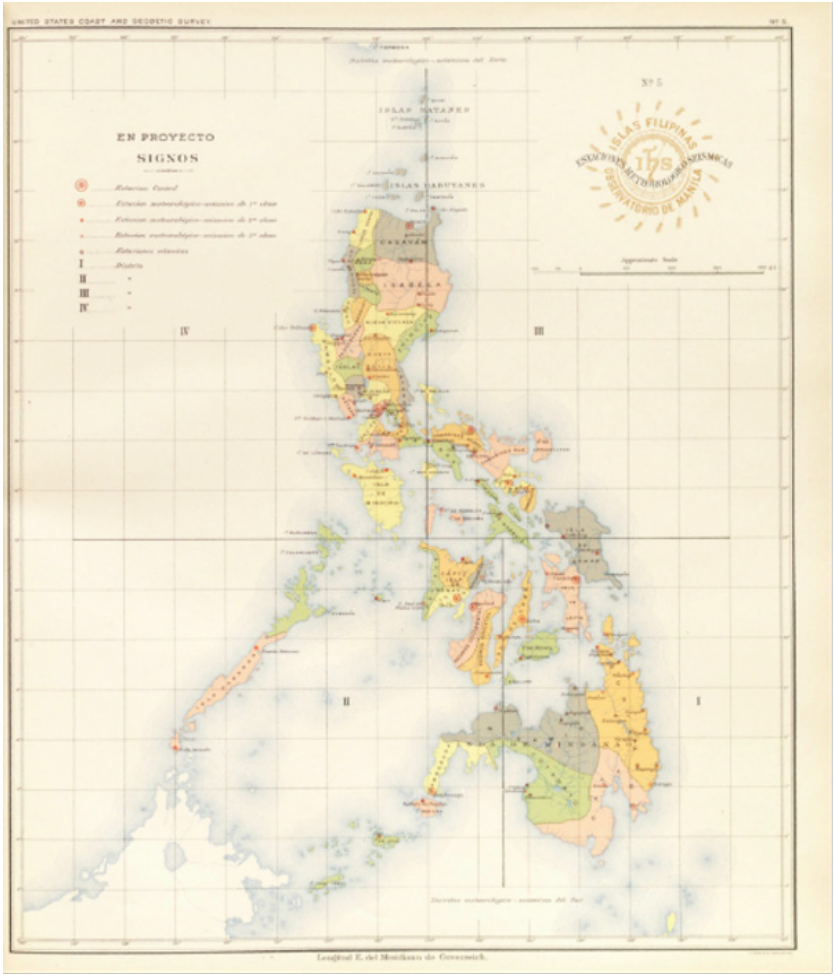


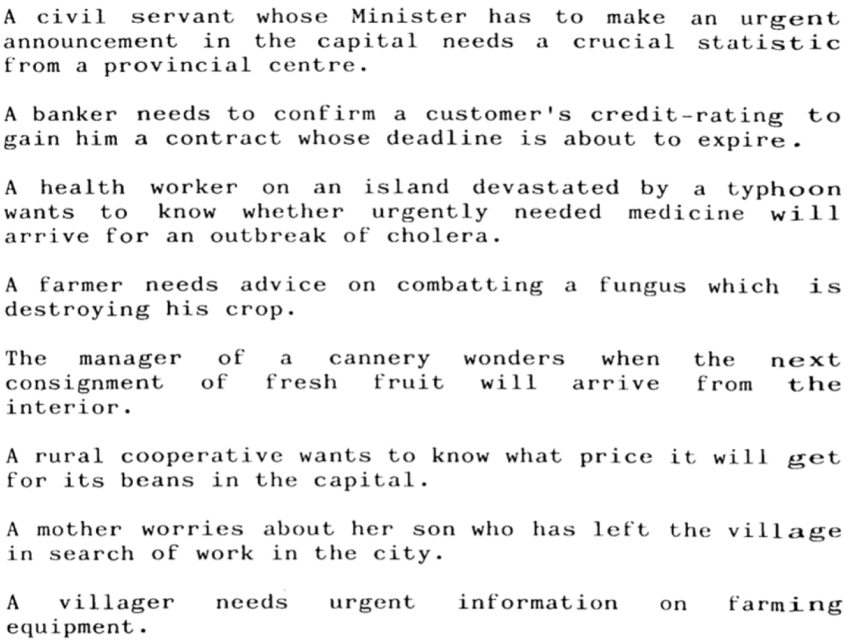
Figure 1: From U.S. Coast and Geodetic Survey, Atlas of the Philippine Islands, 1900.

stations expanded periodically, typically following broader colonial governmental reconfigurations.

Marcos's transformation of the institution under martial law was the first such reordering of these stations since the state was given formal independence by the US in 1946. This occurred within the context of socioeconomic crisis and international debt: in the late 1960s, with the support of loans from the International Monetary Fund, Marcos launched $50 million USD worth of infrastructural projects.[1] The instability inherent to such lending processes led to the rescheduling of debt payments and an agreement with the IMF to reorient the Philippine economy toward export-oriented industrialization and agricultural modernization. Inflation, economic crisis, and increasingly-organized social unrest ensued. In response, Marcos declared martial law on September 22, 1972. One year later, on September 10, 1973, Marcos gave a speech to the armed forces of the Philippines in which he affirmed a focus on control, first lauding the soldiers for having "given the most of himself, in order that the New Society may be built." However, having suffered a regional drought, and after deploying largely unsuccessful farming industrialization and efficiency policies, Marcos also gestured to the control of agricultural production, population, and the environment: "Through modern technological methods, we tried to produce rain by seeding the clouds, but in most of these attempts we failed…Not only must we control the rate of human growth, we must also make sure that we remain in control of the biosphere."[2] Control did not only apply to the Philippine citizenry; for Marcos's regime and the international interests influencing it, the environment was a complementary aspect of economic efficiency to be controlled by enhanced technological means.

1 For a historical, political analysis of international development organizations working in and pressuring the Philippine government, see Bello et al. (1982).

2 Speech of President Marcos, "An Ideal for All," September 10, 1973 (*Official Gazette* of the Republic of the Philippines, n.d.).



A civil servant whose Minister has to make an urgent announcement in the capital needs a crucial statistic from a provincial centre.

A banker needs to confirm a customer's credit-rating to gain him a contract whose deadline is about to expire.

A health worker on an island devastated by a typhoon wants to know whether urgently needed medicine will arrive for an outbreak of cholera.

A farmer needs advice on combatting a fungus which is destroying his crop.

The manager of a cannery wonders when the next consignment of fresh fruit will arrive from the interior.

A rural cooperative wants to know what price it will get for its beans in the capital.

A mother worries about her son who has left the village in search of work in the city.

A villager needs urgent information on farming equipment.

Figure 2: From The Missing Link: Report of the Independent Commission for Worldwide Telecommunications Development (Maitland et al. 1985).

The meteorological network, which for over a century had monitored the region's volatile environmental conditions, was re-established as PAGASA by Presidential Decree in 1972. The decree tasked PAGASA with providing "an adequate communications system for efficient reception and transmission of meteorological, seismic, and astronomical reports or information to and from field stations throughout the country and to provide the same for an efficient international communication system"; and with coordinating "national activities in meteorological, geophysical, and astronomical data problems with the world scientific organizations." Marcos's main international collaborator for this project was the Japan International Cooperation Agency, which provided technical expertise as well as an efficient and expanding Japanese international investment program in cooperation with the IMF and World Bank. JICA began operations in the Philippines in 1974, establishing yet another channel for capital flow to the oligarchic Philippine state under the label of natural hazard mitigation and telecommunications development.

To scale up: on the international stage at the onset of modern globalization, international expert-written reports were published on industry, trade, energy, and telecommunications, instituted as a practice for developing and maintaining the emergent neoliberal global order.[3] One such document, *The Missing Link: Report of the Independent Commission for Worldwide Telecommunications Development*, published in 1985, lays the political groundwork for modern telecommunications development in the language of international economics. To quote: "A more comprehensive world system will mean an increase in international traffic from which all operators will benefit. Where information flows so does commerce" (Maitland et al. 1985, 9). In the first chapter, the report lists use case scenarios. In these cases, telecommunications acts as a single technological solution for the problems of efficient governance of expanding state territory, agricultural demand and industrialization, debt and credit management, and disaster relief, particularly in underdeveloped nations with high rural populations like the Philippines. The same year, JICA published an efficiency and development analysis of all of the Philippines' weather stations, titled "Republic of the Philippines Meteorological Communication Network Development Plan Survey Report," which offers a comprehensive and totalizing view of the recently-networked apparatus for environmental measure and management (Jigyōdan1985).

READING A NETWORK

The document includes a handful of photographs of a small selection of the weather stations, representing a visual sampling of different weather station forms and

3 For a view into the role of expertise in the technocratic development of post-war infrastructural projects and their international implications see Timothy Mitchell (2002).

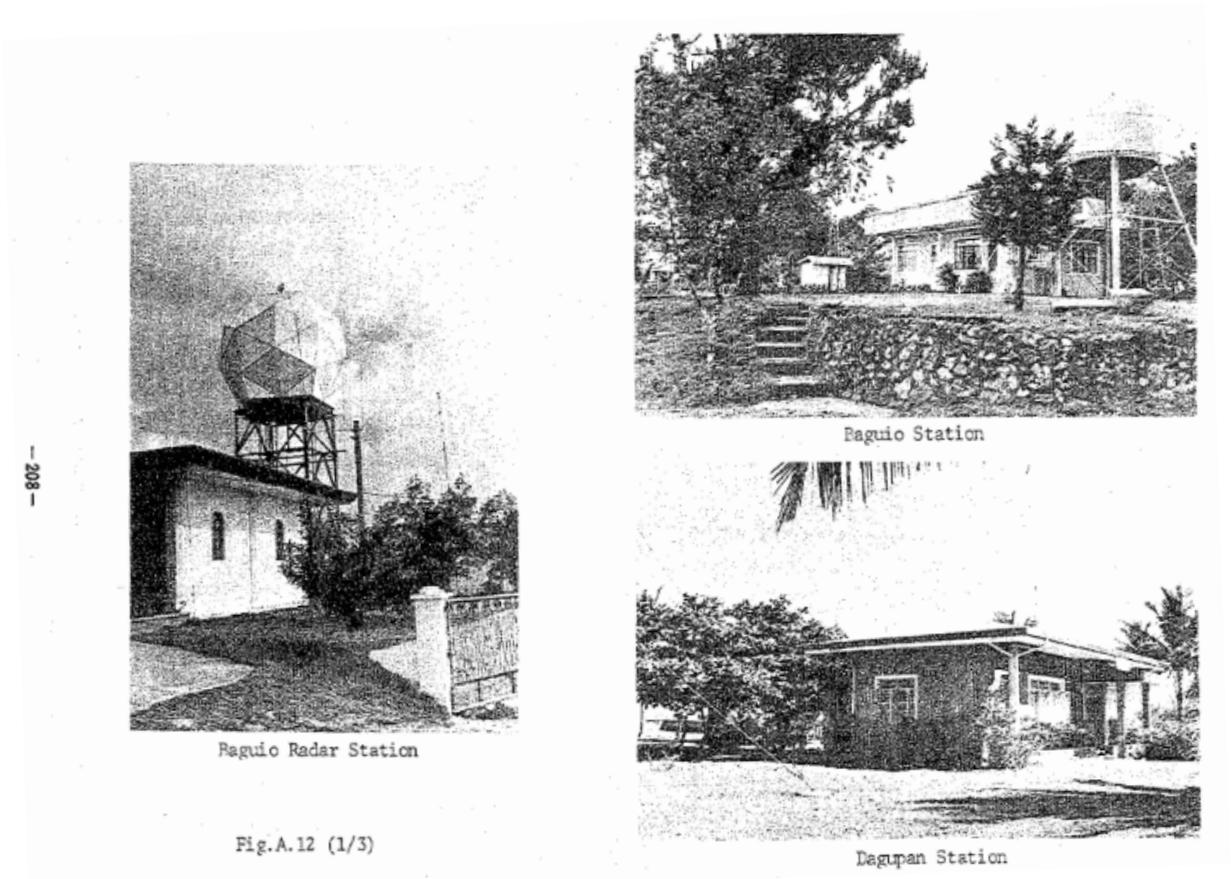


Figure 3: From the "Meteorological Communication Network Development Plan Survey Report," (Jigyōdan 1985)

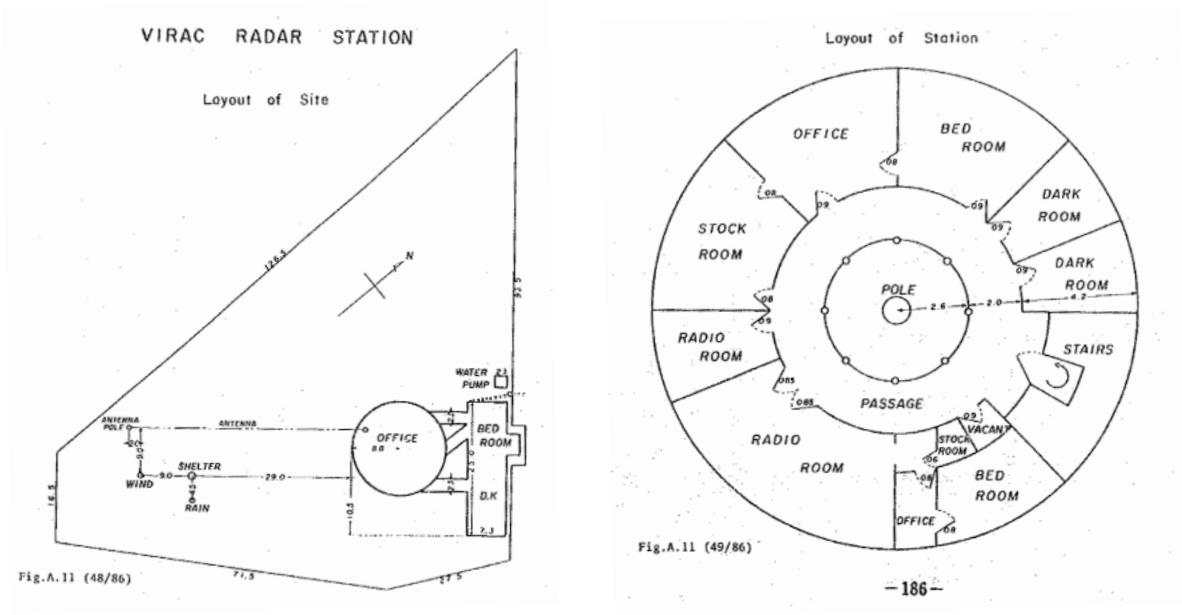


Figure 4: From the "Meteorological Communication Network Development Plan Survey Report," (Jigyōdan 1985).

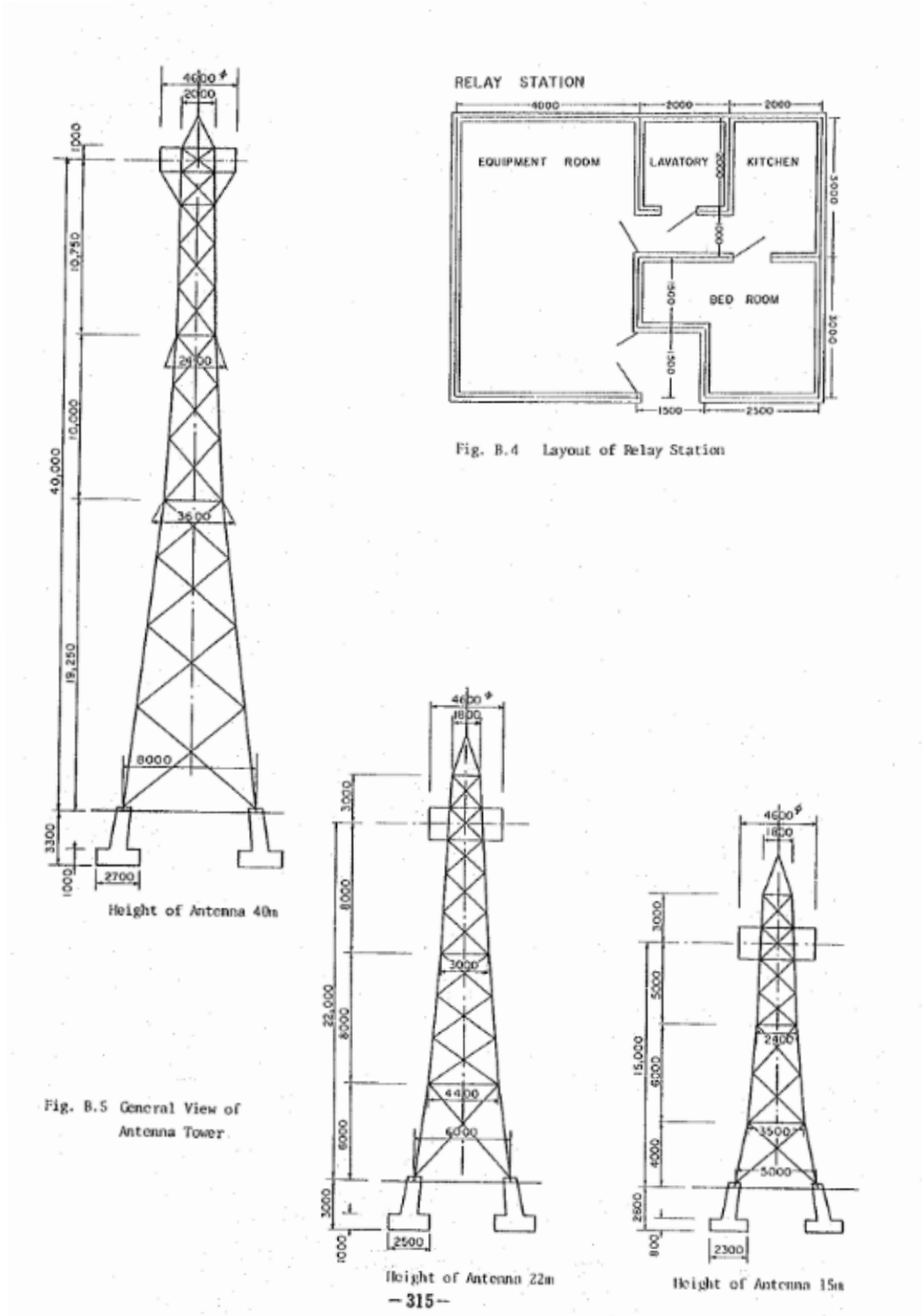
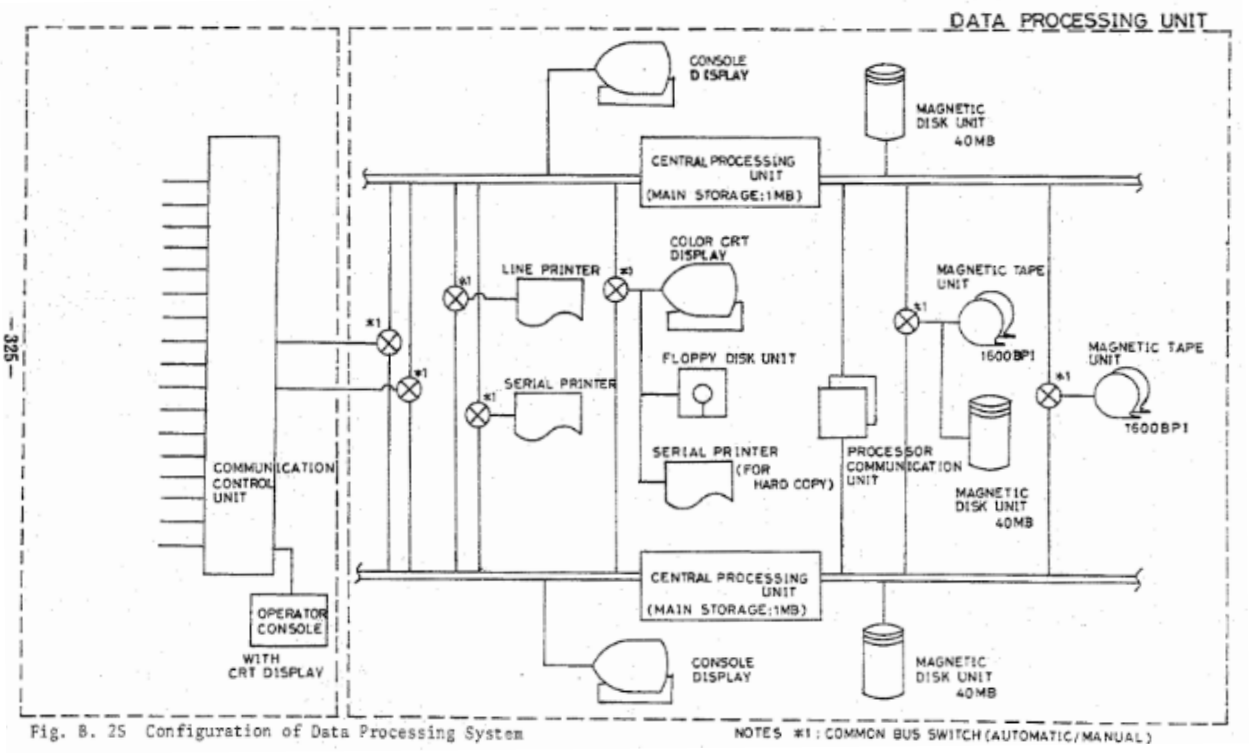


Fig. B.4 Layout of Relay Station

Fig. B.5 General View of Antenna Tower

Figure 5: From the "Meteorological Communication Network Development Plan Survey Report," (Jigyōdan 1985).



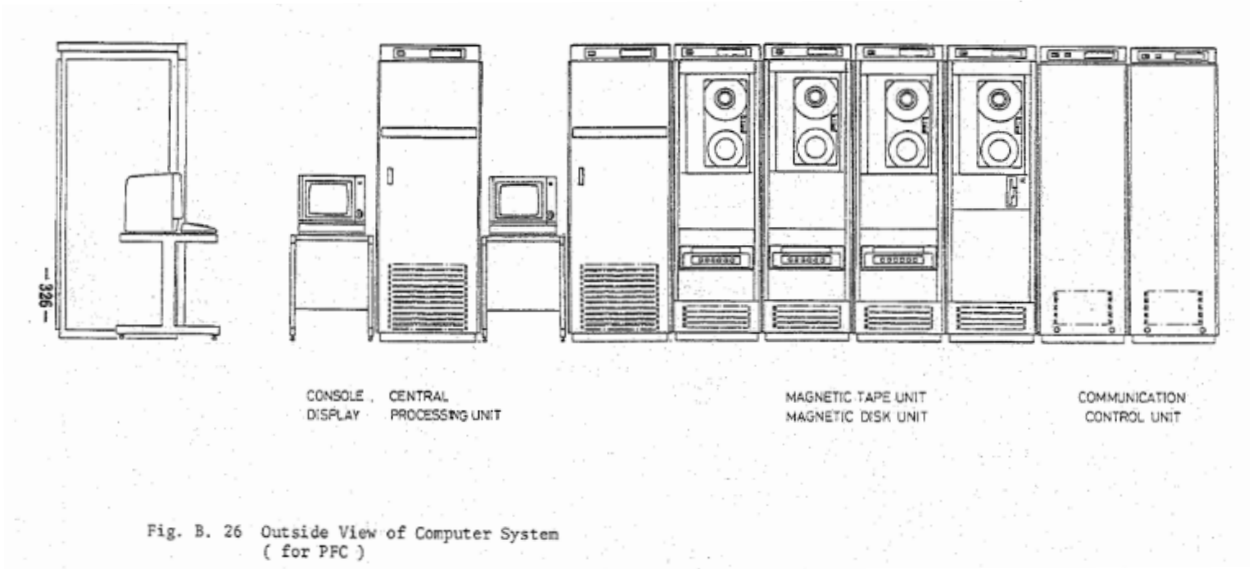
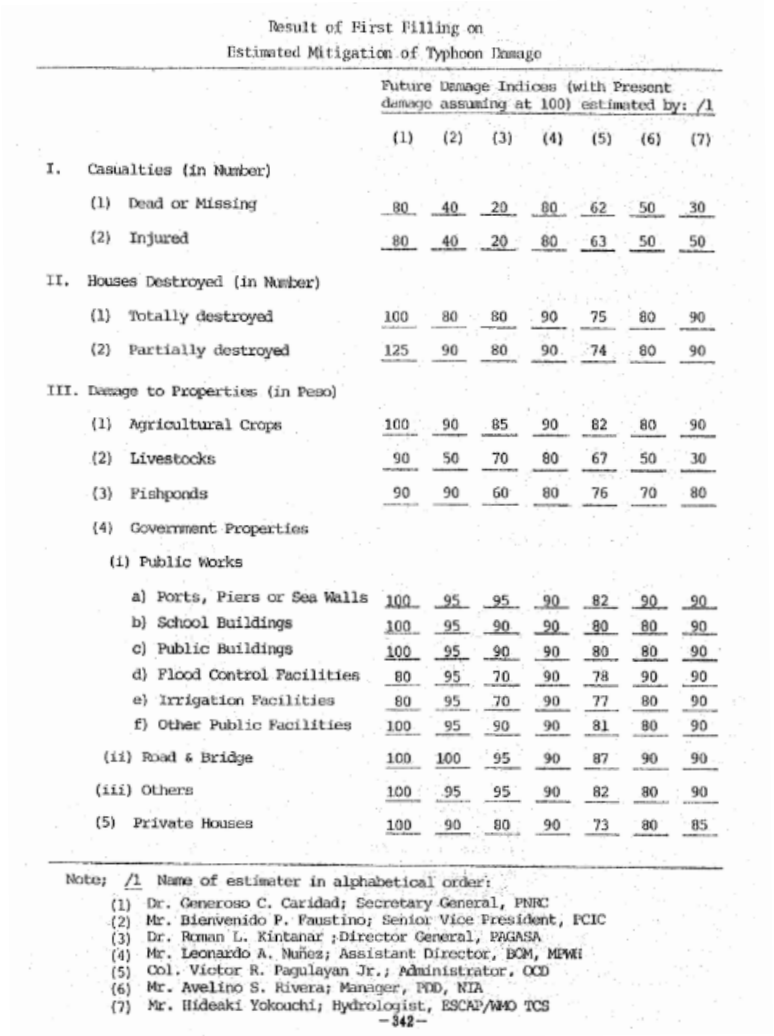


Figure 6: From the "Meteorological Communication Network Development Plan Survey Report," (Jigyōdan 1985).



Result of First Filling on
Estimated Mitigation of Typhoon Damage

	Future Damage Indices (with Present damage assuming at 100) estimated by: /1						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
I. Casualties (in Number)							
(1) Dead or Missing	80	40	20	80	62	50	30
(2) Injured	80	40	20	80	63	50	50
II. Houses Destroyed (in Number)							
(1) Totally destroyed	100	80	80	90	75	80	90
(2) Partially destroyed	125	90	80	90	74	80	90
III. Damage to Properties (in Peso)							
(1) Agricultural Crops	100	90	85	90	82	80	90
(2) Livestocks	90	50	70	80	67	50	30
(3) Fishponds	90	90	60	80	76	70	80
(4) Government Properties							
(i) Public Works							
a) Ports, Piers or Sea Walls	100	95	95	90	82	90	90
b) School Buildings	100	95	90	90	80	80	90
c) Public Buildings	100	95	90	90	80	80	90
d) Flood Control Facilities	80	95	70	90	78	90	90
e) Irrigation Facilities	80	95	70	90	77	80	90
f) Other Public Facilities	100	95	90	90	81	80	90
(ii) Road & Bridge	100	100	95	90	87	90	90
(iii) Others	100	95	95	90	82	80	90
(5) Private Houses	100	90	80	90	73	80	85

Note; /1 Name of estimater in alphabetical order:
(1) Dr. Generoso C. Caridad; Secretary General, PNRC
(2) Mr. Bienvenido P. Faustino; Senior Vice President, PCIC
(3) Dr. Roman L. Kintanar ;Director General, PAGASA
(4) Mr. Leonardo A. Nuñez; Assistant Director, BOM, MPWH
(5) Col. Victor R. Pagulayan Jr.; Administrator, OCD
(6) Mr. Avelino S. Rivera; Manager, PDD, NIA
(7) Mr. Hideaki Yokouchi; Hydrologist, ESCAP/WMO TCS

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Figure 7: Mitigation assessment sheet. From the "Meteorological Communication Network Development Plan Survey Report," (Jigyōdan 1985).

structures. However, the document prioritizes the systematic redrawing of the layouts of each of PAGASA's forty-seven stations, pulling into view an architectural picture of the scope of the telecommunications project. Interestingly, these layouts also betray hierarchies of geography and of administrative space, with more complex layouts corresponding to proximity to cities; in other words, sites with the highest concentration of technical administrators trained by JICA.

These technicians would likely have referred to this and similar documents for training and reference. The maintenance of the antennae and their attendant equipment requires the technical information presented here, presented entirely in Japanese and English. Its audience, then, is clearly Japanese administrators and English-speaking, educated Filipino technicians. The document also presents data graphs, which illustrate the variance in the height and rotation patterns of each installed antenna and assess the antennae's variable efficiencies and environmental effects on the structure itself. All of this data, coupled with the climate data to be transmitted, proved an impressive amount to be collected, disseminated, and analyzed at the time, and required new computing technologies that JICA provided. These images showing the inner and outer workings of this installed tech can be seen as both a theoretical and historical entry point into the newly networked, economic and environmental machine that the PAGASA network here represents. The climatic data collected by the pre-existing stations could then be collected, consolidated, processed, and transmitted in real time, providing a totalized picture of the Philippine environment through a telecommunications system that geographically centralized weather prediction expertise in Manila. The intent of this report is written

Figure 8. *Reference Materials for Economic development Planning and Guides to Philippine Agriculture* (Presidential Advisory Council on Public Works and Community Development 1985).

in the final pages of the document: assessment forms to be used in analyzing the effectiveness of the system in mitigating disaster in terms of loss of life and property. The first and second fillings of this sheet are included in the document, but it is difficult to tell from the numbers if the system had much effect.

ECONOMIC DEVELOPMENT, ENVIRONMENTAL CONTROL

To better understand this particular element of precarity in context, I will turn to a book published by the Office of the President, "Reference Materials for Economic Development Planning and Guides to Philippine Agriculture," also from 1985. The importance of agricultural development and control of the biosphere seems almost a design brief for the book, its color and back covers insisting on the economic fertility of the nation. The book consists of maps detailing previously collected climate data sets, including rainfall, temperature, humidity, fog cover, and cloudiness, as well as typhoon, earthquake, and volcano eruption frequency throughout the Philippines. Of particular interest is the book's framing text. The first pages consist of a string of statements from government officials, beginning with Marcos: "The benefits to be gained from these maps are obvious: for one thing, economic investors can be more accurately apprised of various conditions they must contend with, with the public as well profiting from such knowledge (Presidential Advisory Council on Public Works and Community Development 1985)." As a government document with little public distribution, it was very likely sent to investors with specific relations to the both the Office of the President and/or the Philippine government more broadly. Indeed, the book was only the most recent of a trail of inviting messages sent to the international investment community, including a number of features and ads in the United States-based *Fortune Magazine* over the 1970s. The book acted almost as a teaser for the deregulated Information Era stage in the Philippines' economic and environmental development. More totalized and efficient climatic forecasting, applied to agricultural exports and industrialization and projected to future investment, could only mean increased profit. It is in this context that we can more clearly understand the Meteorological Telecommunications System as a kind of techno-evolutionary "Missing Link" between the environment and the economy; the national, the global, and the planetary; and the Filipino and international elite.

These modes of economic development for Philippine landscapes, however, have largely been carried out by the aforementioned destabilization of peasant relations to land, deemed "land reform area" in 1972 and enforceable by martial law.[4] In the National Capital Region around Manila, this has often meant the encroachment of factory spaces onto smallholder land in the form of Export Processing Zones. Philip Kelly's *Landscapes of Globalization: Human geographies of economic change in the Philippines* articulates the case of the Cavite Export Processing Zone, over which a struggle for control over land ensued: "When President Marcos declared 275 hectares in two municipalities to be the site of the CEPZ in 1980…it was then prime irrigated rice land under cultivation. Contractors

4 Ferdinand Marcos's second presidential decree after the declaration of Martial Law was an announcement proclaiming "the entire country as land reform area" (The LAWPHiL Project 2023).

Figure 9: Back cover detail. *Reference Materials for Economic Development Planning and Guides to Philippine Agriculture* (Presidential Advisory Council on Public Works and Community Development1985).

employed by the Export Processing Zones Authority and the provincial government started to bulldoze the site in March 1981, but faced opposition farmers who organized themselves into the Samahang Magsasaka at Mamumuwisan ng Cavite (Association of Farmers and Leaseholders of Cavite). A Supreme Court ruling in 1981 halted construction on the site, but was overturned when the government produced an unpublished presidential decree dated seven months earlier that inhibited the courts from interfering with government development projects. As a result, construction continued and most farmers succumbed to pressure and accepted a compensation package. (Kelly 2000, 119)." This is only one of many similar stories around the archipelago that illustrate the material experiences of Filipino farmers whose relations with landlords and the state have often resulted in displacement and continued oppression (Putzel 1992; Hanisch 1977; Kerkvliet 1974).

In contrast to the factory construction carried on in the form of steel and concrete, the agricultural worker dwellings depicted in Kelley's research are bahay kubo (*bahay* meaning home; *kubo* meaning hut or shelter), made from nipa and bamboo. These bahay kubo are a millennia-old tradition, environmentally sustainable yet structurally impermanent (and, as Will Davis's scholarship articulates, politically salient[5]). In their organization of space, the bahay kubo requires collectivity, long-term collaboration, and community support to be functionally inhabited. Given contemporary discourse around the environment, ecology, and climate change, we know that such forms of life are far more feasible for long-term planetary sustainability than high-density urbanism, factory production, and monoculture cash cropping. These forms of life, however, have been made increasingly precarious by the interests of the landowning elite, the further enclosure of cultivated and uncultivated land, and international development opportunities that the Philippine state has eagerly supported even beyond Marcos's ousting in 1986.

Yet behind processes of legal and technological control, economic deregulation, and international development, is *always* the land, the farmers that work it, and the activists and organizers that protect it. The efficiency of technological expertise and international development models are based entirely on existing governance structures, material conditions, and social processes. In postcolonial contexts such as the Philippines, this often only deepens national inequalities and oppressive forms of political life. These visible and material forms of precarity are left out of totalizing network processes and international collaborations such as the one that JICA introduced into the PAGASA weather network, and must be recentered. By creating a networked view of the Philippine climatic environment, JICA's meteorological network report acts as a documentation of economic and environmental control while obscuring the ecological risks caused by government-led land reform.

5 See Davis (2021). Nipa palm as a building material, as Davis shows, holds a history of social and political experimentation in fluctuating relationship to economic production for export.

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