Networking Island Societies under Globalization
The Case of the Pacific Islands*

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1. What is Networking?

Networks can be defined as physical linkages to carry humans, commodities, energy and information. Formally networks are composed of links that connect nodes. Figure 1 illustrates a simple network model comprising of a "star network" and "long distance network" (see Economides, 1996). A phone call from A1 to A2, for instance, is facilitated by switching services at Sa (A1SaA2). A long distance exchange between A1 and B1 necessarily involves two switching service points (A1SaSbB1).

![Figure 1 A Simple Star and Distance Network Model](image)

Any mode of information network such as telephone, fax, TV, printed matter or the Internet conforms to the basic structure illustrated in Fig.1.

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Network activities exhibit positive externalities, commonly known as “network externalities” which are well illustrated by Fig.1. If a third person (A3) is connected to a telephone or by e-mail, then the first (A1) and second (A2) persons who are already in the network will benefit from A3's connection without there being extra cost. “The network externality is the reason why many colleges provide universal e-mail for all their students and faculty – the value of e-mail is much higher when everyone participates.” (Samuelson & Nordhaus, 2001, p.115).

The property of network externalities is particularly important in small island societies because the benefits from externalities will be greater as the size or scale of economy increases. Thus the unit cost of networking will be reduced as the number of network participants increases. This fact gives rise to the existence of a critical mass point, that is, a minimum sustainable network size. It is critical to recognize that for a small, isolated society, networking benefits are severely limited and costly compared to bigger ones.

2. Intensity of Networking

The intensity of networking among island societies depends on several factors as illustrated in Fig.2.

Figure 2 The Intensity of Networking Among Island Societies: A Concept

Networking Island Societies under the Globalizing World: The Case of the Pacific Islands

1) Geographical and Cultural Factors

Geographical proximity is probably the most important factor in areas bonding together, because of the greater ease and lower costs of interaction. As such, and as is illustrated in Fig.2, islands within Okinawa Prefecture are intensively linked.

The intensity of networking is also greatly affected by culture, history and language as well as the ethnic or, if you will, “blood” factor. The Amami islands, which belong administratively to Kagoshima Prefecture, have kept a strong network with the islands of Okinawa because of the similarity of the culture and history of both areas. Hawaii is the most strongly networked overseas region with Okinawa because of the large number of “Uchinanchu” or emigrated Okinawans possessing the same blood, and a common cultural and historical background. “Uchinanchu” will be discussed in more detail later in this paper. Crocombe points out that similarities in culture and language are the basic property for networking in the South Pacific islands societies. “Wantok (from English one talk) is extensively used as a broad classification in Melanesia. It refers to someone of the same language community and safe networking implying fellow feeling among Polynesians and Miconesians abroad.” (Crocombe, p.119).

2) Economic Factor (Trade and ODA)

Networking in trade (exports and imports of goods and services) is increasingly becoming an important factor for island societies as economic globalization advances galvanizing entire island societies. Because of the small domestic market and limited resource base, international trade has been a matter of survival as well as an 'engine of growth' for small, open island economies. The degree of trade dependency is customarily measured by the trade to GNP ratio, as is shown for the South Pacific Forum (SPF) countries in Fig.3.

![Figure 3 Intra-regional Trade Among the Pacific Islands Forum Countries, 2000](source: Calculated from ADB' Key Indicators (2002)).
The SPF countries are basically open economies. This is not because they have low trade barriers but because they cannot survive without relatively large import flows. Their total commodity trade (exports and imports) expressed as a % of GNP is fairly high. In 2000, it ranged from over 80% in Fiji and PNG to about and over 50% for all the other SPF countries.

For these islands countries, which have a negligible manufacturing capacity, there is a much greater reliance on primary exports. More than 60% of exports from the Marshall Islands and Micronesia are in fish. Copra accounts for more than 40% of Kiribati and Vanuatu's total exports. Squash accounts for in excess of 40% of Tonga's exports. Exports from these islands are not only concentrated around a small number of primary products, but their export destinations are also limited to a few regional large markets or to their former or current sovereign countries.

Intra-regional trade among the SPF countries has been small among island countries because their economies are more competitive than complementary (see Fig.3). The major intra-regional trading partners among the Forum island countries are Fiji and PNG because of their significant manufacturing base. Fiji has been exporting processed consumer goods, such as wheat flour, cooking oil and biscuits, in fairly large volumes to other SPF countries, particularly Tuvalu and Cook Islands where inter-regional trade is relatively high. Fiji's imports from the other SPF island countries are confined to a very small volume of agricultural commodities. PNG and Fiji's trade is more diversified because of their relatively large size.

Since 1993 the preferential trading arrangements under the Melanesian Spearhead Group (MSG) Agreement among Fiji, PNG, Solomon Islands and Vanuatu have encouraged intra-regional trade in specific commodities such as coffee, kava, and beef. Because of a large increase in imports from the other two MSG countries relative to their exports, however, both the Solomon Islands and Vanuatu have accumulated sizeable trade deficits with Fiji and PNG. As a result, the deficit countries have sought temporary withdrawal from MSG trade arrangements (see Jayaraman, 2003).

It should be noted that a high economic dependency of these islands on external trade does not necessarily mean high economic interdependence or networking with the rest of the world. Instead, they depend crucially on a few large economies for trade and capital inflows including ODA. Good evidence of this is the Asian financial crisis of the late 1990's which devastated larger and more networked Asian societies while having only a negligible impact on the region's smaller island economies. For those island economies, "volatility in dependency" is more important than "volatility in interdependence or networking." As such, volatility in ODA and remittances will be a more crucial matter than volatility in financial and export markets for aid-dependent small states.

3) Political Alliances and Socio-Economic Policies

For small islands, socio-economic interdependence or dependency is quite often a direct consequence of political alliances or socio-economic policies created by colonial governments or by emigration policies. The
Networking Island Societies under the Globalizing World The Case of the Pacific Islands

Australian and New Zealand governments, for example, allow the free entry of migrants from Niue, the Cook Islands and Tokelau because of their past political relationships. People tend to move from a poor region to a rich region given free access. “92% of all Niueans now live in New Zealand and Australia and 83% of Cook Islanders live in New Zealand, Australia and elsewhere.” (Crocombe, p.661)

Another example is the case of Nikkeijin (foreign nationals of Japanese descent). The Japanese government revised its Immigration Control Law in 1990 allowing Nikkeijin up to the third generation to reside in Japan without legal or employment restrictions. “This law has led to a significant increase in the employment of people of Japanese descent from South America, in particular from Brazil, where many Japanese had emigrated during the first half of the twentieth century.” (Carvalho, p.195) In this case, “blood relations” are more important than proximity and economic ties. Nikkeijin networking policy may look strange to non-Japanese because having the same “blood” does not necessarily mean having or understanding the same culture and language. In actuality, third generation Nikkeijin from Brazil often face great difficulties adjusting to Japanese culture.

There has long been debate in the South Pacific over whether or not networking through migration is beneficial to the countries of origin where quite often out-migration means a “brain drain” of the most highly skilled, young labor. Hugo has, however, pointed out that the following beneficial effects for the origin country:

1) Where there is insufficient capacity in the origin economy to productively absorb and use the migrants’ skill.
2) Where the inflow or remittances outweighs what the migrant would have contributed.
3) Where there is significant return migration of the migrants with enhanced skills and capacities.
4) Where the migrants forge productive economic linkages with the home country such as directing investment, providing beachheads for production from the home country etc. (Hugo, 2004)

4) Information Networking

In today’s rapidly globalizing and knowledge economy “know-how replaces land and capital as the basic building blocks for growth” (Norris, 2001, p.6). Businesses in particular are faced with the maxim “collaborate (internet) or die.” Our island institutions must also find creative means of surviving in this digital economy where students have the freedom to receive educational opportunities over the Internet or by other means of distance delivery. It is even argued that imaginary territorial boundaries are truly imaginary in cyberspace.

Moreover, information and communication technology (ICT), particularly the Internet, is said to have a particular beneficial networking effect on small, isolated island societies because it destroys the “tyranny of distance.” Of course there is always a danger that ICT might create a “digital divide” between the rich and the poor islands. In fact, Fig.4 indicates clearly that Internet prevalence rates are closely correlated with
levels of per capita GDP. Small island developing countries are far behind richer countries not only because of lower incomes but also because of higher Internet connection costs than the richer countries.

Within island nations themselves, smaller, remote islands are suffering a serious “digital divide.” A typical case is the State of Chuuk (also known as Truck) of the Federated States of Micronesia (FSM) where there are 105 schools of which 95 are located in outlaying islands and have no infrastructure – no power, phones,
Networking Island Societies under the Globalizing World: The Case of the Pacific Islands

communication (90% of the schools are without such facilities). In these outer islands, the costs for travel to obtain training is very expensive relative to average salaries and wages (see Orita, 2004).

The current status of internet access in the SPF island countries, as shown in Table 1, constitutes more or less a mirror model for other small islands. All SPF countries have access to ICT in some form, be it telephone, facsimile and internet. Access to the internet is generally limited to the workplace, educational institutions, in the home, and through public means such as internet cafes. Although internet use among the SPF countries is on the rise, there are large gaps between and among countries reflecting the number of providers, market, regulatory and cost structures. The SPF countries face various constraints in their ability to access internet services, including the high cost of telecommunication equipment and services, inadequate budgetary allocations, limited number of providers and trained personnel, not to mention the need to educate the internet users themselves. Retention of trained personnel is always a big problem in small island countries because they tend to emigrate overseas for better pay.

Norman Okamura of the University of Hawaii, one of the foremost experts on island information networking, outlined the key principles to be considered in developing distance learning networks for islands: (1) prioritize the interconnection of existing networks, rather than build new ones, (2) encourage the development of shared networks instead of separate networks for lower education, higher education, healthcare and the like, (3) advance open networks that enable interaction between many users and organizations, and (4) build partnerships for collaboration (see Higa, 2002).

The Pacific Islands Digital Opportunities (PIDO) Research Committee of the Sasakawa Pacific Island Nations Fund has recommended the following action plans to enhance networking among SPF island countries:

1. Information sharing and joint content development for human capacity building;
2. Develop and promote e-Health and Tele-center projects;
3. Utilize wireless LAN technology to reduce costs of networking;
4. Promote “one island, one product” projects
5. Strategic approach utilizing ICT for tourism industry development;
6. Group study and collaboration among school teachers;
7. Utilize existing network interconnection for education, training, and conferences. (see Chapter 1, PIDO Report, 2004)

3. Networking Island Societies: The Case of Okinawa

Okinawa, or the Ryukyu Islands, has a long history of networking domestically as well as internationally. This experience may be usefully applied to other island societies. Okinawa is unique among Pacific island societies because of its rich culture, high living standards, having the world's highest longevity, diversity in
ecosystems, etc. Amid the rapid depopulation of most of Japan's outlying islands, Okinawa has kept its
dynamic growth even after reversion to mainland Japan in 1972, as shown in Table 2.

During the past three decades, the population has increased by 28% from less than one million to over 1.3
million. Okinawa's per capita GDP is higher than the average of the OECD countries, and its life expectancy,
particularly for women, is the highest (86 years) in the world. The secrets of Okinawa's longevity have
recently been revealed (see The New York Times' bestseller book on The Okinawa Program: Learn the
Secrets to Healthy Longevity by Willcox and Willcox, 2001).

1) Networking Uchinanchu (Overseas Okinawans)

In the past, Okinawa quite skillfully balanced her limited land resources, particularly in terms of food
production, with population growth. Out-migration became the primary mechanism for keeping the
population of Okinawa at a sustainable level. The population remained almost constant prior to World War
II, due in large part to net migration. Out-migration all but ceased after the war.
Okinawans, or “Uchinanchu” in the local dialect, migrated to Hawaii, North and South America, Southeast Asia, the South Pacific and other areas. It is estimated that these overseas migrants and their descendants, excluding mainland Japanese, numbered about 300,000 (see Fig.5 & 6). They were prosperous in their settled lands, and continued to remit money to their motherland until just after World War II. At one point, these remittances covered Okinawa’s trade deficits entirely. It was only quite recently, however, that they actively organized or networked themselves to enhance their “Uchinanchu identity” beyond national boundaries.

One active organization is the “Worldwide Uchinanchu Business Association (WUB, initiated by Dr. Bob Nakasone of Hawaii’s East-West Center),” which was inaugurated in Hawaii in 1997 with the support and sponsorship of the Okinawa Prefectural Government and business groups for the purpose of creating businesses through a worldwide network of Okinawans.

Uchinanchu worldwide networking first started informally with government approved emigration from
Okinawa to Hawaii in 1900 and then to South America. Initially networking was limited to their family, relatives and "hometown". Money was sent to their families in Okinawa. Their culture of music, song, dance and family values maintained their identity (Nakasone, 2005).

As is shown in Fig.6, the WUB has now been organized across the five continents and in the Pacific. The WUB is considering plans for a global company that will trade Okinawan products. It is ironic that during the early years of migration, around the turn of the last century, people were driven out of Okinawa by conditions of abject poverty and were regarded as "kimin," or deserters, whereas today they have become valued catalysts in the networking of Okinawa with the rest of the world.

To survive, in the era of globalization, island nations and communities with small populations must internationalize through overseas networking. Oversea Chinese, Indians and the Jews networks are outstanding examples of ethnic diasporas. China and India both have a worldwide population base of over one billion. The Jews have a smaller population base of 13 million. By contrast, the worldwide Uchinanchu population is less than 2 million. Of this two million, 670,000 (32%) live outside Okinawa. Can such a small group have an effective network? We will soon find the definite answer.

2) Networking Within the Islands of Okinawa

There are currently 41 inhabited islands in Okinawa, comprising Okinawa Island, the Miyako Island group, the Yaeyama Island group, the Northern Islands group and the Southern Islands group (see major islands in Table 3). The number of inhabited islands changes slightly every survey year due to emigration, migration and the construction of landbridges or reclaimed land roads which connect two separate islands.

Okinawa Island, the main island of Okinawa Prefecture, accounted for 91% of Okinawa's total population in 2000, whereas the share was 83% in 1960. All the island groups experienced depopulation from 1960-80, but in recent years the Yaeyama Island group recorded positive population growth and the continuous depopulation of the Miyako Island group has stopped. A close examination of Table 3 indicates that outlying islands such as Iriomote, Zamami and Aka have turned from negative to positive population growth in recent years. The common contributory factor for such positive growth is growing tourism activities particularly eco- and blue-tourism.

Okinawa experienced net out-migration to mainland Japan over the past five years (1995-2000) (see Fig.7). It is interesting to note, however, that both the Yaeyama and Miyako Island groups recorded net in-migration from mainland Japan while simultaneously recording net out-migration to Okinawa Island. This relatively recent phenomenon is serving to halt depopulation of these areas.

The indigenous population of Okinawa's outlying small islands has long emigrated to neighboring larger islands, particularly Okinawa itself. An increasing number of Japanese mainlanders, in contrast, and particularly elder people, have been attracted to the healthy, relatively inexpensive, and leisurely "island lifestyle." If this trend in population dynamics continues, the entire population of these islands may be
replaced by outsiders, or non-islanders in the future. Nobody can predict what the socio-economic impact of these cultural dynamics might be. If migrants are environmentally conscious and skilled, they can be welcomed in to help resolve an island's skill shortages and promote ecotourism. It should be pointed out, however, that we do not have solid empirical data on whether these migrants are temporary or “circular migrants” or permanent ones. It should also be noted that an increasing number of the elderly Japanese prefer to live temporarily in low cost countries such as Thailand and Malaysia where there is reasonable security and where good communication and transportation systems are readily available.
### Table 3 Population Changes of Okinawa’s Islands

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Source: Compiled from Statistics Division, Okinawa Prefectural Government
3) What Can a Simple Model Tell Us?

The most frequently used tool to predict the flow of people, goods, or communication between any two places is probably the gravity model which is based on Newton's Law of Gravitation as follow:

\[
\frac{\text{Population of region 1} \times \text{Population of region 2}}{(\text{Distance between them})^2} \text{ or } \frac{\text{GDP of region 1} \times \text{GDP of region 2}}{(\text{Distance between them})^2}.
\]

The above model shows that the relative strength of the bond between two regions is determined by multiplying the population (or GDP) of region 1 by the population (or GDP) of region 2 and then dividing the product by the distance between the two regions squared. Since the larger region attracts more people and goods than the smaller region, and with all other things being equal, the closer region has a greater attraction. This model has been particularly useful in explaining flows of trade and migration between two regions where the relatively free movement of goods and services including labor are guaranteed.

Actual estimations of migration flows between the regions (or islands) of Okinawa are made based on a logarithmic form as follow:

\[
\text{LogMij} = a_1 + a_2 \log Y_i Y_j + a_3 \log D_{ij} + E_{ij}.
\]

Migration from i region (or island) to j region (or island) is positively related to the size of GDP of the both regions \((Y_i Y_j)\), but negatively related to the distance between the two regions \((D_{ij})\). \(E_{ij}\) is an error term. Therefore, the expected signs of the parameters are:

\[a_1, a_2 > 0, a_3 < 0.\]

The estimated results for the period of 1995-2000 based on a cross section of data are shown in Fig.7. The parameters on migration from Okinawa to mainland Japan satisfy our assumptions and are significant at a 5% cut off value. It is noteworthy, however, that distance \((D_{ij})\) plays positive when it comes to migration from Yaeyama to Okinawa Island. That is to say, people from the distant islands of the Yaeyama region tend to migrate more to Okinawa Island. This can be explained by the 'push' and 'pull' factors between the two regions.

Persons from smaller, distant islands tend to migrate to more prosperous, larger islands where social and economic opportunities are greater than in neighboring small islands. Of course, ease of transportation between these islands is also an important factor. The model confirms a frequently observed theory of "circular migration" among islands societies, though we certainly need to base it on more reliable data (see Kakazu, 1994).

Based on the preceding discussion, it is extremely important to establish global learning networks for small island societies which, left to the mercy of market forces, would experience a widening of the information gap with larger economies rather than a narrowing. We should start by better connecting existing networks and focus on creating a competitive advantage for islands by providing unique and quality contents.

A simple networking scheme among the Pacific islands is illustrated in Fig.8. Using UH Net (PEACESAT), the “Micronesian Distance Learning Consortium” has been established. The purpose of the Consortium is to reduce geographic isolation, and to expand technical infrastructure, human resource development, local decision-making, and bring all Micronesians into the “global village” while preserving the positive aspects of local culture. All credits from the College of Micronesia are now transferable to the University of Guam. The goal is for students to be able to obtain their prerequisite coursework from an educational institution in their home location, with transferable credits to earn a bachelors degree from the U. of Guam or other universities in the region.

USPNet covers 12 USP member countries and territories. The USP-owned satellite communications network, using VSAT (Very Small Aperture Terminal) earth stations, is located at USP headquarters in Fiji and connects USP centers in eleven other members. When completed, the network will be able to provide satellite tutorials to all USP centers, and in the future, video capability for live lecture delivery and interactive video conferences (see University of Hawaii, 2000). Similar networking arrangements can be made between

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**Figure 8** Pacific’s Major On-going Academic Networkings on Nissology, 2005
Networking Island Societies under the Globalizing World The Case of the Pacific Islands

To promote such Pacific islands networks we need to work on strategic human resource development, capacity building programs and opportunities. We also need to encourage resource sharing in the region and support activities that will further the development of sustainable infrastructure. A review of the best practices for network utilization and maximization should be undertaken.

The Center for Asia-Pacific Island Studies of the University of the Ryukyus has Memoranda of Understanding with several universities and colleges in the Pacific islands. It seeks to promote international collaboration and academic exchange focusing on interdisciplinary approaches to problems associated with islands, and aims at contributing directly to the advancement of measures for island development with a focus on issues such as environment, culture, human resources and limited island resources.

The University of the Ryukyus jointly with USP, the University of Hawaii, the United Nations University, Keio University and the Asia Institute of Technology has started an advanced seminar on international environmental studies through eLearning. The two-credit graduate course will provide a venue for international education and research and will involve a hybrid delivery structure that enables student participation through in-class video teleconference.
Major global, regional and local networking sites are also listed in Table 5. The most extensive collection of island links and contacts is the Global Islands Network (GIN) which was officially launched after the Islands of the World VI conference on Prince Edward Island. The GIN site covers 11 geographic island regions and more than 200 individual islands or island groups.

References:


Summary

Network activities are particularly important in the context of small, remote island societies where the benefits from network externalities are greater than one might think. The intensity of networking depends on several factors including: geographical location, culture, socio-economic interdependence, political affiliations and information and communication technology (ICT), all which are examined in this paper.

This paper has focused on external and internal networking of Okinawa's islands as a case study. Externally, Okinawa's “Worldwide Uchinanchu” network, which was created by overseas emigrants from Okinawa, is unique because it is progressing beyond a mere network of Okinawan identity. Internally, this study reveals that the networking structure within Okinawa's inhabited islands has been changing dynamically, reflecting the islands' changing lifestyles and rapidly progressing information technology.

It is important to realize that the seemingly irreversible trends of globalization and the ICT revolution have merits as well as demerits for small island societies. Globalization, on the one hand, has brought about the increasing integration of island societies into larger ones, thereby enlarging socio-economic opportunities for islands. On the other hand, it has increased their socio-economic vulnerability. The ICT revolution has also created new and wider opportunities for island societies where distance has been a “tyranny” imposing severe handicaps on islands' socio-economic activities. There are, however, mounting fears among islanders that the new ICT technology may create a “digital divide” by-passing small, remote islands.