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The role of social networks in understanding language maintenance and shift in post-colonial multilingual communities: The case of the Republic of Palau in the Western Pacific[1]

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Abstract

This paper aims to reveal the mechanisms of language maintenance and shift in the rural post-colonial multilingual island community of Palau in the Western Pacific, using social networks as an explanatory framework. We explore the usefulness of social networks from three perspectives, investigating whether and how social networks can explain changes in the use of former colonial languages in a *post-colonial* community; the functions of strong and weak ties in a *multilingual* community; and the *social characteristics of communities* in which social network as an analytical tool may have explanatory force. Methodological and theoretical issues involved with the concept of social network are also scrutinised. With some cautions about the limits to the explanations made possible by network analysis, we conclude that the social network is indeed a valuable and important social variable in sociolinguistic investigations, *alongside* other factors, such as, sex and identity.

[1] We would like to thank: all those in Palau who kindly extended their warm hospitality to the first author during fieldwork trips in 1997, 1998, 2000, 2004 and 2006; Phil Scholfield for his statistical assistance; and audiences in Newcastle, Bristol and Brisbane for useful comments on previous versions of this paper.

INTRODUCTION

'Social network' was one of the first social variables recognised as potentially alternative or complementary to 'socio-economic class' in sociolinguistics. Social network models have been applied to communities where the social class distribution of community speakers is uneven or problematic: e.g., small rural and non-industrialised communities (Gal 1979; Lippi-Green 1989; Holmquist 1985); urban ethnic minority communities (V. Edwards 1986); urban migrant or immigrant communities (Bortoni-Ricardo 1985; Li Wei 1994; Reynolds and Akram 1999); and adolescent communities (Eckert 1988; Labov 1972; Cheshire 1982; W. Edwards 1992). However, social networks have offered us not only a methodological tool in that they gave us a technical apparatus by which to measure the structure of those communities, but also new theoretical insights into the mechanisms of the interplay between social and linguistic differentiation in the community. It made us realise that, in some communities, what determines a person's place in the hierarchy is not the socio-economic class of a person abstracted on the basis of his/her occupation, income, education and so forth, but the degree of his/her involvement in established local networks. Therefore, even if socio-economic class were methodologically feasible as a speaker variable in the investigation of such communities, the results of such an analysis would not so brightly illuminate the underlying social motivations of language behaviour as well as an investigation of people's actual interactional ties in their communities.

So far, much sociolinguistic research has demonstrated that the concept of social network is a useful analytical tool for explaining the systematicity of linguistic variation in various settings, such as in rural and urban *monolingual* (e.g., L. Milroy 1987a; Bortoni-Ricardo 1985; Lippi-Green 1989; Salami 1991; W. Edwards 1992) and *bilingual* communities (e.g., Gal 1979; Schooling 1990; Li Wei 1994; Reynolds and Akram 1999).

However, very few sociolinguistic studies have applied the social network framework to examine the mechanisms that underlie the process of language maintenance and shift in *multilingual post-colonial* communities. It is not always clear, therefore, whether and how social networks can help us account for the use of former colonial languages in such post-colonial communities where most of the former colonial residents have returned to their original countries. Furthermore, neither is it evident whether the apparent functions of

strong and weak ties as norm reinforcers and norm diffusers respectively - often reported in monolingual communities - ring true for *multilingual* communities.

Therefore, this paper aims to explore the usefulness of social network from three perspectives, examining language behaviour in the trilingual Republic of Palau in the Western Pacific, where two former colonial languages, Japanese and English, and the indigenous language, Palauan, are juxtaposed. First, we investigate whether the strength of the islanders' network links with the former colonial power can predict the levels both of the maintenance of Japanese and the shift from Japanese to a more recent colonial language, English. Second, we examine if the functions of strong and weak ties found in monolingual communities are applicable to the multilingual Palauan community. Thirdly, cross-examining three subgroups in Palau, each of which offers individuals different degrees of freedom in their choices of group allegiance *and* different degrees of susceptibility to social change in recent Palauan history, we investigate in which subgroup social network has the greatest explanatory force.

Another aim of this paper is to explicitly discuss the methodological and theoretical issues involved with the concept of social network. Methodologically, it is concerned with how to re-orient existing social network models in such a way that reflects the community's characteristics. Special attention is paid to the different approaches needed to study the social networks of *immigrant* communities as opposed to *non-immigrant* communities, and for *rural* communities compared to *urban* communities. At a theoretical level, we consider the limits to the explanations made possible by network analysis. We investigate the applicability of social network analysis to cases where the causes of on-going language shift involve *indirect* institutionalised or authorised language enforcement as opposed to cases where the cause of language change involves *direct* face-to-face interaction; and furthermore, to *language shift* research in *languages*-in-contact situations as opposed to *language change* research in *dialects*-in-contact situations.

We begin by drawing a brief sketch of Palau - its history of language contact. This overview is essential to portray the different types of 'contact' that each colonial power brought about and the consequent multilingualism in contemporary Palau. We then describe the methodology adopted for this study. We argue for the crucial role of an ethnographic

approach. Such an approach enables the researcher to observe and/or participate in local communities of practice, so that he/she can obtain insightful information on the social networks of the community members. This is indispensable not only in interpreting statistical findings in the local context, but also in formulating a network model in a way that both reflects the characteristics of the community and facilitates quantification of the relevant structures of the community under investigation. The third section will revisit some of the previous studies on social networks, in order to specify and refine the research questions of this study. The final section will present the findings of this study both statistically and ethnographically. We demonstrate that the social network analysis offers a fundamental understanding of the social mechanisms that underlie the process of language maintenance and shift in this post-colonial multilingual community in a number of ways, while discussing the limits to the explanations made possible by network analysis.

BACKGROUND TO THE REPUBLIC OF PALAU

The Palau Islands are an archipelago located in the Western Caroline region of the Pacific, with a population of 20,300 (The Office of Planning and Statistics 2005). The Austronesian indigenous language, Palauan, has, as a result of a century of colonial domination by Spain, Germany, Japan and the U.S., come into prolonged contact with a number of non-local languages. Table 1 below summarises, in chronological order, the relationship between the colonial contact languages and the specific factors during their reign that engendered language contact.

Although Palau finally became an independent nation in 1994, the impact of Japan and the U.S. still appears to be of significance for Palau. There seem to be three reasons for this: firstly, the recentness of their colonisation; secondly, prolonged and ongoing financial support from both countries, upon which the Palauan economy still heavily relies; thirdly, the strategic social and educational reforms that Japan and the U.S. embarked upon in Palau during their administrations. More specifically, both countries introduced their own legal and educational systems using textbooks and teachers from their homelands. During each colonial era, their languages, namely, Japanese and English, were enforced as official languages in Palau. After independence in 1994, English has remained as the official language along with the indigenous language, Palauan, while the teaching of Japanese as a

Table 1: Language contact history in Palau

Period	*Language in contact*	*Factors engendering contact*	*Administration*
1885 – 1899 (14 years)	Spanish	Christianity	Spanish administration
1899 – 1914 (15 years)	German	Commercialism Christianity Militarism	German administration
1914 – 1945 (30 years)	Japanese	Imperialism Militarism Commercialism	Japanese administration as Japan's Mandatory authorised until 1933 by the League of Nations
1945 – 1994 (49 years)	(American) English	Politics Militarism	American administration as the US Trust Territories of Pacific Islands authorised by the United Nations
1994 to Present Day	English and Japanese	Politics Cultural Hegemony	The Republic of Palau

foreign language has been widely adopted in Palauan schools. Such past and present relationships between Palau and the former colonial nations have contributed to the formation of the current multilingualism. Most older Palauans over the age 75 are Palauan-Japanese bilinguals, but since 1945 competence in Japanese has diminished rapidly, leaving many middle-aged Palauans as 'semi-speakers', and the younger islanders, who are bilingual in Palauan and English, as potential L2 learners (see Matsumoto and Britain 2006 for a sociolinguistic profile of the Republic of Palau). The legacy of the Japanese language period, however, in terms of lexical, semantic and phonological borrowing, has been dramatic (see Matsumoto and Britain 2003a). Furthermore, in recent years, the growing Japanese tourist industry in Palau has promoted Japanese as a foreign language, providing job security for young Palauans in what is a fragile and dependent economy (Yamashita 2009).

However, in terms of demography, the Japanese and American administrations each led to quite different outcomes. During the reign of the Japanese administration, there was a

massive influx of Japanese *civilian immigrants* into Palau, while little anglophone immigration took place during the American period. Japanese immigrants outnumbered Palauans in an approximate ratio of four to one in 1941; in other words, about 24,000 Japanese and 6,000 Palauans were living in Palau (Nan'yō-chō 1942). Futhermore, the majority of these Japanese immigrants were farmers and fishermen who were recruited from Japan for their labouring skills, and who worked with the islanders in Japanese enterprises in Palau. These Japanese civilian immigrants in Palau lived with indigenous Palauan residents in the same neighbourhoods, rather than establishing exclusive Japanese communities. As a result, a large number of marriages between the Japanese and Palauans occurred, which led to the emergence of a considerable Japanese-Palauan population on the islands. In contrast, the small number of Americans who were *temporarily stationed* in Palau were military and administrative personnel, missionaries, school teachers and members of the Peace Corps. Thus, the degree and frequency of everyday interaction between Japanese and Palauans appear to have been far greater than between Palauans and Americans.

For our analysis here, we distinguish between three different family types in Palauan society. The majority – here we label them **'Palauan-families'** – have lived in Palau all their lives. The Japanese-Palauans can be subclassified into two groups on the basis of differing personal experiences of the different political administrations. One group has Japanese citizenship since their parents were officially married before 1945 and, because of this, they were expelled and then successively relocated between Japan and Micronesia during the U.S. administration (we call these **'returnee families'**). The other group does not have Japanese citizenship because their parents were not officially married, and hence, were allowed to remain in Palau after 1945 (**'Japanese-Palauan families'**). In this paper, we will examine the language behaviour of all of these three family types found in contemporary Palau.

Thus, over the last century, Palau has experienced dramatic socio-political, educational, economic and demographic changes, creating intensive language contact between Palauan, Japanese and English. Palau is therefore a fascinating community in which to observe evolving language patterns associated with social change – with the arrival of the Japanese in 1914, their departure following the Second World War, the arrival of English brought by

the American Trust Territory administration, the return of the repatriated Japanese-Palauans, and the development in post-independence Palau of a service based-economic sector serving predominantly East Asian tourists. We will now examine in depth how those social changes have contributed to language maintenance and shift, using social network as an explanatory framework.

METHODOLOGY

This research forms part of a broader investigation into multilingualism, language obsolescence, dialect contact and cultural and linguistic hegemony in Palau (see Matsumoto 2001a; 2001b; 2001c; Matsumoto and Britain 2003a; 2003b; 2003c, 2006). A variety of data were gathered in what was then the Palauan capital, Koror, in 1997, 1998, 2000 and 2004, involving nearly a year of participant observation; 121 ethnographic interviews; 233 ethnographic questionnaires; and over 100 hours of recorded spontaneous conversation, as well as many hours of informal discussions. For this article, however, we selected only the relevant data to investigate the mechanism of language maintenance and shift with special reference to social network. We chose to study the following social variables that we felt might well be indexed by language behaviour in Palau - age, generation, sex, ethnic identity, self-rated oral language ability and actual language use in family conversations as well as social network structure. This section will just briefly look at the first six variables, while the following section will scrutinise the methods used both in formulating a social network model and in collecting social network data while addressing some theoretical issues involved in social network analysis.

The fundamental linguistic variable examined in this study is **actual 'language use'** in spontaneous conversations produced by 53 Palauan, Japanese-Palauan and returnee family members in a variety of situations, such as at home, at work, in restaurants, pubs, schools, the Ageing Centre (a meeting centre for retired Palauans), *Sakura-kai* (the Japan-Palau Association) and outdoors. The first author recorded the conversations[2] first in her presence (i.e., she became a regular but marginal participant in local interactions) and

[2] See Matsumoto (2001a) for details on how the individual speaker's language use was calculated and encoded for statistical analysis.

second in her absence (i.e., she asked the participants to record informal conversations when she was not present).

However, we also included one additional linguistic factor - **self-rated oral language ability** in Japanese and English, such as understanding and speaking ability - since it is interesting to see how the different forms of 'contact' that Japan and the U.S. brought about (i.e., direct face-to-face contact vs. indirect institutionalised contact, respectively) have affected the Palauans' perceived ability as well as their use of the former colonial languages, Japanese and English. The subjects self-assessed their abilities at speaking and understanding Japanese and English (separately on an 11-point scale) ranging from 'not at all' (0) to 'completely' (10). In the data analysis, ratings for understanding and speaking are combined to show 'oral language ability' in Japanese and English[3].

Generation and **sex** are key social variables, since a family having three living generations with both males and females in each was the determining criterion for deciding whether (or not) to include a particular family for this specific network study. **Age** seems to be a particularly crucial variable that affects language behaviour in the case of Palau, given the country's dramatic periods of social and political transition. Therefore, the subjects were classified into four emic age groups, in consideration of the speakers' experience of the major historical events that had occurred during the age span of the population[4]. Both sex and generation of the subjects have been biologically determined in this study. Table 2 shows the number of the subjects by family type and generation. This paper focuses on 53 people from nine families, taking three generations from each family.

Ethnic identity also appears to be a particularly important variable in this post-colonial context, since personal experiences resulting from subcommunity-specific histories within the different political administrations are likely to have helped shape perceptions of their ethnicity as 'Palauan', 'Japanese' and/or 'American'. Therefore, we examined speaker

[3] Data on both oral self-rated language ability and ethnic identity were extracted from the ethnographic questionnaire survey (see Matsumoto 2001a for more details).

[4] The four emic age groups are: above 68 years old in 1998; 56-67 years old; 26-55 years old; below 25 years old. For an in-depth examination of the relation of age groups to historical periods of social change in the community, see Matsumoto (2001a; 2001b).

Table 2: The number of subjects by family type and generation[5]

	Grandparent	*Parent*	*Child*	TOTAL
Palauan families	8	9	6	23
Japanese-Palauan families	4	5	6	15
Returnee families	4	5	6	15
TOTAL	16	19	18	53

'ethnic identity', by directly asking the subjects to rate the extent to which they identified themselves as Palauan, Japanese and American separately.

Formulating a social network model for Palau society

This study has adopted the social network model, which was firstly introduced into research on bilingual communities by Li Wei (1994) in his sociolinguistic study of Chinese immigrants in Newcastle, England, and which was subsequently applied to other immigrant communities in Sheffield (Reynolds and Akram 1999; Reynolds 2000) as well as, for example, Oslo (Hvenekilde and Lanza 2000). In the following section, we explain what it is and how it was adjusted in order to more closely reflect the characteristics of the Palauan society.

Following Li Wei (1994), we adopted three different types of social network, namely, **'exchange'**, **'interactive'** and **'passive'** networks, along with an **'ethnic index'**. This is based on Milardo's (1988: 23) concepts of **active and passive ties** in social networks:

> 'paradoxically, …there may be little correspondence between those individuals considered important and those individuals with whom interactions occur on a routine basis... It is likely that networks of significant others are composed of both **active and passive ties**; in other words, ties based on considerable face-to-face interaction and

[5] In Palau, extended family members generally live together, and divorce, remarriage and unmarried couples are quite common. Therefore, 'grandparent' and 'parent' in this study include those who are 'grandparent and parent generations', who live in the same house during the fieldwork.

ties based on affective bonds with irregular or infrequent interaction'.

That is, both exchange and interactive networks are more concerned with *active ties*, which measure *physical* conditions (e.g., regular face-to-face interactions), while passive networks are associated with *passive ties*, which measure *psychological or symbolic* resources (e.g., pride and moral support). The difference between exchange and interactive networks is 'the probability of rewarding exchange'; the former has a high probability, while the latter has a low one. 'Exchange network' refers to the network ties that involve routine interaction and exchange of direct aid, advice, criticism, support and interference (Milardo 1988: 23). For instance, kin and close friends fall into this category. In sociolinguistic investigations, therefore, these kinds of ties can be identified as **'strong ties'** (Milroy and Li Wei 1995: 138). 'Interactive network' refers to the network ties which include frequent interactions, perhaps over prolonged periods, but which are not likely to exchange direct aid, support, criticism and interference. Good examples are workmates and neighbours. Therefore, these network ties often represent **'weak ties'** (Milardo 1988: 36; Milroy and Li Wei 1995: 138).

'Passive network', on the other hand, refers to the link between the people who do not interact on a regular basis, but whose impact on a particular speech community member may well be strong (Milardo 1988: 23; Li Wei 1994: 119). Good examples are relatives and close friends with whom, because of geographical distance, it is difficult to keep in regular contact, but who provide moral support. In the case of Palau, relatives and close friends on a remote island of Palau where they were born and raised or those in Japan and the U.S. may fall into this category.

However, three problems in utilising Li Wei's social network model have been pointed out by Reynolds and Akram (1999), Reynolds (2000) and Hvenekilde and Lanza (2000). Firstly, they found the distinction between exchange and interactive networks too subtle for their studies. This may have been because they adopted in their research the same interactional criteria as Li Wei (i.e., the frequency and duration of interaction). As L. Milroy (1987b: 107-9; 1980: 143) rightly claims, the criterion of a social network does vary, depending on the community's characteristics, and it is the researcher's task to find out 'the most relevant and easily measurable cultural categories' (L. Milroy 1987a: 216) for his/her community under investigation.

In the case of Palau, the most relevant cultural category was found to be speakers' engagement in the traditional exchange customs called *siukang* and *musing*. *Siukang* refers to practices of family custom and their concomitant contributions and obligations. For instance, for *oheraol* (house-building ceremonies), *elebe'il* (funerals) and *bu'ul dil* (births), and for the schooling costs of children, a definable group, mainly on the basis of matrilineal linkages, holds a gathering, not only to prepare a feast to welcome everybody in the community, but importantly, to encourage people to lend the necessary money. Therefore, the person who actually builds a house or sends his/her children to school spends nothing in doing so.

Another reciprocal custom *musing* expands the range of its participants from kin to non-kin. Regardless of clan links, a group of close friends or neighbours organise a banking system, through which any member who needs financial support can call a meeting and other members lend him/her money. These reciprocity and redistribution customs have continued to be accepted and practised in Palau. Thus, to what extent and with whom the individual is engaged in such reciprocal exchange custom appears to uncover aspects of Palauan social structure. Because the relationships of these people do, to a great extent, rely on personal favours and other material resources, it is very likely that the network links between those who are engaged in such reciprocal rewards and obligations are much stronger than between those who are not. Therefore, this study set up the participation in *siukang* and *musing* as criteria for distinguishing between exchange and interactive networks. That is, those who were involved in *siukang* and *musing* with the target speaker (i.e., having a high probability of mutually rewarding exchange) are categorised as having an exchange network with him/her (i.e., strong ties), while those who were not (i.e., a low probability of such rewarding exchange) are classified as having an interactive network (i.e., weak ties).

The second problem concerns the number of ties investigated. Reynolds and Akram (1999), Reynolds (2000) and Hvenekilde and Lanza (2000) claim that it was impossible to collect information about 20 exchange, 20 interactive and 10 passive ties from each speaker, which Li Wei (1994) had succeeded in doing, since the subjects in their studies simply did not have such extensive links. This was true for the interactive network ties in our study; the subjects normally had many exchange network ties, but fewer interactive and passive network ties in Palau. Such a discrepancy between Li Wei's (1994) and our research site

may be due to the fact that different types of community are involved: i.e., an *urban immigrant community,* whose members were dispersed over a wide geographical area; and a very close-knit and isolated *rural island community*, respectively. Some sociological studies have demonstrated that weak ties in social networks amongst *urban city dwellers* have been increasing (e.g., Harman 1988). In addition, it has been argued that, for practical reasons, somewhere between 20 and 50 network links of individuals are normally adequate for empirical research (Mitchell 1986: 74 in Li Wei 1996: 806 and L. Milroy 1994: 3986). Therefore, although in his study of Newcastle *urban city dwellers* it was possible for Li Wei (1994: 120-122) to examine 20 interactive weak ties, it appears to be sensible to reduce the number of interactive network ties to 10 in the case of the Palauan rural islanders.

The third problem was that, although Li Wei (1994: 120-1) excluded kin from speakers' exchange networks, it was impossible for the subjects of their studies to enumerate 20 non-kin, with whom they had exchange network links. Again, we faced the same difficulties as others in finding 20 non-kin for the exchange networks in Palau, where extended family members dominate daily interaction and exchanges of direct aid, advice, criticism, support and interference with the target speakers. Palau is a small *rural* non-industrialised isolated island nation where "everybody knows everybody else" and the people you interact with at work are friends and relatives as well as neighbours. In other words, Palau is characterised by typically dense and multiplex networks, forming close-knit networks. In particular, it is very clear that the basic unit or the foundation of networks in the Palauan community is "kin". It turned out that almost all Palauans were related to one another by blood or through marriage. It hardly even happened that a Palauan told the first author that he/she did not know the person she asked about. Their replies were typically in the order of "She is a sister of my cousin's husband", "She is an auntie of my stepfather" and so forth. It was very common for several relatives to live in the same house, next door or in the same hamlet, spending most of their time together, while cooking, eating, chatting, and working in the taro-patch. Therefore, it seems reasonable for this study not to exclude kin from any network type. There is further evidence to support this: Milardo (1988: 36) exemplifies two network studies (Fehr and Perlman 1985; and Milardo 1986), in which a large proportion of the exchange networks are actually kin (about 40% to 50% on average). In this study, therefore, some relatives of the subject are categorised not only as having interactive or passive network links with him/her, but also as having exchange network ties.

Finally, how to treat 'ethnic index' in this study needs discussing. In Li Wei's study, a 'Chinese ethnic index' was devised to calculate how many ties the subject has contracted in each of the exchange, interactive and passive networks that are related to Chinese pre-migration links. Such pre-migration ties in *immigrant* communities may seem to be rather irrelevant to this study. However, in *post-colonial* communities where almost all of the former colonisers have gone back to their own countries, the indigenous people's network links with the former colonial power appear to have somewhat similar functions as pre-migration network links. Therefore, 'ethnic index' was applied to this study in such a way that it can reflect the degree of closeness of the subject to the former colonial legacy. For this purpose, this study adopts a **Japanese ethnic index**, which measures the extent to which the speakers are *associated with* or *detached from* the norms and values of the 'Japanese'[6].

We considered including an American ethnic index in addition to a Japanese ethnic index. However, the problem arose that there were no occasions in which the Palauans had frequent and routine face-to-face interaction with Americans or where Americans actively participated in local communities of practice, such as *siukang* or *musing* (see above) in Palau. Thus, in theory, although it was obvious that adding an American ethnic index to this network study would advance the reliability of this network model and the validity of the results, in practice, considering such a community-specific condition, it seemed meaningless. Thus, in this study, the exchange and interactive networks represent strong and weak ties respectively, but overall manifest active ties, which indicate the degree of the speaker's physical exchanges and routine interaction with Japanese-oriented links. The passive network represents passive ties, which indicate the degree of psychological integration into 'Japaneseness'.

In sum, this study highlighted the necessity for us to adjust the various approaches to the social network model in a way that will adequately reflect the characteristics of the community under investigation, rather than forcefully 'fit' the community under study into existing sociolinguistic social network models. However, at the same time, in order to keep

6 The criterion for who could be "Japanese" was rather subjective; whether network ties that the target speaker has kept in his/her social networks were "Japanese-oriented links/ties" or not was a matter for that speaker to decide.

the data comparable, researchers need to keep a balance between established social network models and community-specific network properties.

Collecting social network data

Although Boissevain (1969: 11) says, 'there is no standardised way of recording the information about networks', following Gal (1979) and Li Wei (1994), we generally employed a combination of participant observation and ethnographic interviews in our attempt to enhance their reliability. What appeared to be important when collecting network information were: (a) to find out the best way to ask about their social networks in simple plain words, so that all the subjects understood what sort of personal links we were interested in; (b) to visit the subjects frequently, in order to check the reliability of their self-reports on their social networks. However, since the young-adults and the middle-aged were apt to have a wider range of network links, it was sometimes difficult to check the reliability of their self-reports. Furthermore, as far as *passive* networks were concerned, the information received depended solely on the self-reports from the subjects during interviews, since it was impossible to observe who they contacted at a distance (e.g., by means of telephone or through correspondence) and from whom they received psychological moral support.

Aside from those difficulties in collecting their *present-time* networks, there is one more important caveat regarding the strength of network studies to explain data. That is, how to reconstruct and quantify *past* social networks that almost certainly will have affected their language behaviour, but that are now impossible to systematically observe. During the last century, many Japanese civilians migrated to Palau, but were then expelled by the US army. Subsequently, a small number of temporary American government officials, military personnel and schoolteachers were stationed in Palau. It would be too unreliable to attempt to reconstruct the detailed personal networks that the islanders had contracted at different times and under different political regimes, during their lives. For instance, many elderly Palauans claimed that they used to exchange information, goods and support with their Japanese neighbours, or used to receive moral support from the former Japanese Emperor, Hirohito. However, this was obviously impossible to observe and reconstruct. Another common pattern was that the elderly Palauans who used to have dense and multiplex

networks with Japanese residents still maintain a high level of Japanese; however, it turns out that some currently do not have a single network link with any Japanese person. In this case, their former links with the Japanese have to be disregarded from the calculation of their network scores, since our main focus has to be, for practical reasons, on the *present* network links that the speakers have (although qualitatively, of course, these former links can be commented upon). Thus, social network analysis is not easily able to reveal the effects of the long-term social networks that informants had, during certain periods, at different times over the course of their lives.

Similar difficulties were reported by Boissevain (1987) who argued that network analyses are capable of accounting for 'the movement and location of migrants', but not 'the **long-term social processes** that underlie migration'. J. Milroy and L. Milroy (1997: 60) also express their uncertainty on 'whether the social networks of individuals who are **no longer accessible** to systematic observation can be adequately reconstructed', although some research (e.g., Van der Wurff 1990) has applied the concept of social network to past states of language. Such limits to the explanations made possible by network analysis may be a more serious problem in the studies of *post-colonial communities*, where the network links between the locals and the former colonial residents who have already returned to their original countries are no longer accessible, but where the former colonial languages are still in use.

Ethnographic approaches

Finally, it is essential to mention the field research strategies employed. During over a year of field research, the first author handled a variety of participant modes, ranging from active participation to passive participation, by combining three social roles with the role of a researcher working in the community. Firstly, as a member of the family that she stayed with, she helped fulfil numerous family obligations. On the occasion of traditional ceremonies, *siukang*, for instance, she helped to prepare food, organise the meeting place and distribute food to guests. Also, whenever there was a need in their family business, she worked as a waitress, translator or deliverer. Second, after frequently visiting the Ageing Centre, she was asked to co-operate in traditional Palauan dinner shows for tourists that the elderly Palauans held. She assisted them by checking the Japanese in their speeches, posters

and programmes, and also went with them to Japanese-owned hotels, in order to obtain permission to distribute the advertisements for the shows to the Japanese tourists. Thirdly, she worked as a volunteer for the Palau Conservation Society, where she co-operated in marine-biological research and took part in boat patrols with sea rangers to warn Japanese tourists/fishermen who had entered nature preservation areas without permission. It was through those social roles and activities that she acquainted herself with the nine families investigated here, observed and took part in their social networks and exchange customs, and recorded their family conversations.

PREVIOUS SOCIOLINGUISTIC RESEARCH ON SOCIAL NETWORKS IN URBAN AND RURAL, IMMIGRANT AND NON-IMMIGRANT MULTI-DIALECTAL COMMUNITIES

Here we revisit social network studies by L. Milroy (1987a), Bortoni-Ricardo (1985) and Lippi-Green (1989), as they appear to be the most relevant to this study. Firstly, Bortoni-Ricardo (1985) investigated the extent to which rural migrants to urban areas in Brazil shifted away from the rural dialect and integrated urban linguistic features into their speech. She found that the more pre-migration links they kept in their social networks, the more rural linguistic features they retained. Conversely, the more detached they themselves were from pre-migration network links, the more integrated they were into urban life and the more urban linguistic features they used.

As explained earlier, in *post-colonial* communities where almost all of the former colonisers returned to their own countries, the indigenous people's network links with the former colonial power appear to have somewhat similar functions to pre-migration network links. Therefore, we will investigate the applicability of the relationship between social networks and language behaviour found in Bortoni-Ricardo's (1985) urban migrant study to this rural post-colonial community. Thus, the first research question is concerned with whether there is a relationship between the former colonial links in their social networks and their language behaviour. More directly, by investigating the historical transition from more network ties with the former-colonial power to fewer, we will address the following questions. First, can the extent to which individuals have kept Japanese links in their networks predict the level of maintenance of Japanese? Conversely, can the extent to which

individuals have detached themselves from Japanese ties in their networks predict on-going language shift in their second language from Japanese to the subsequent colonial language, English?

Secondly, L. Milroy (1987a) demonstrated that the network strength effect argued by Bott (1957: 60) and Granovetter (1973: 1376) is applicable to her study of urban monolingual Belfast communities. More precisely, it was found that strong ties have dual functions: as a consensual norm reinforcer, maintaining vernacular linguistic features and as a shelter against in-coming linguistic features. Weak ties, on the other hand, fulfil a bridging role through which linguistic features can flow from one close-knit group to another. In other words, strong ties lead *both* to the maintenance of conservative language use *and* to resistance to change from outside, while weak ties help to spread innovations.

As discussed earlier, exchange networks in this study are approximately equivalent to strong ties, while interactive networks are equivalent to weak ties. Therefore, we will investigate the applicability of the relationship between strong/weak ties and language behaviour found in urban monolingual communities to this rural multilingual community. Thus, the second research question addresses: whether strong ties (i.e., exchange networks) lead *both* to the maintenance of conservative language behaviour (i.e., Japanese use, which became conventionalised during the Japanese regime) *and* to resistance to the on-going language shift toward English; and whether weak ties (i.e., interactive networks) help to spread innovative language behaviour (i.e., both the advent of English and the second wave of Japanese).

Lippi-Green (1989) studied a small rural Austrian alpine community, where recent industrialisation had affected the language use of the villagers. Her social network study demonstrates that complex patterns of social network links often develop between the clusters of network links of different functions. Each cluster offers the speakers different degrees of freedom in their choice of group allegiance and the different degrees of susceptibility to social, political and economic change in the community history. She investigated three sets of clusters of the community, namely, the local workplace, kinship and voluntary associations. In terms of the degree of freedom in an individual's choice of group allegiance, kinship provided individuals with the least freedom; voluntary association

the most freedom; and the local workplace was in-between. However, regarding the extent to which social change has affected these clusters, the least social change appeared to have occurred in voluntary associations; there was more change in kinship structure (due to intermarriages with outsiders); but the greatest degree of change was in the nature of the workplace (owing to an improvement in transport links to a nearby urban centre). The results suggest that only in the workplace network cluster, which had been the focus of rapid social change and which had given individuals an intermediate free choice, were social networks strongly correlated with the language behaviour of the villagers.

This study deals with the three ethnic family types (i.e., the Palauan, Japanese-Palauan and the returnee families) as subgroups of the community, each of which offers individuals different degrees of freedom in their choice of group allegiance and different degrees of susceptibility to social change in the community history. Therefore, the third research question concerns whether social networks have a differential effect upon language behaviour among three different subgroups of the community. More directly, it asks in which subgroup of the community does social network have the greatest explanatory force, and what are the social characteristics of the subgroup? Finally, we will discuss to what extent and in which way social networks provide a useful explanatory variable for linguistic variation alongside the many other factors investigated, such as age, generation, sex, ethnic identity and language ability.

RESULTS

In order to investigate the mechanisms of language maintenance and shift in Palau using social network as an explanatory framework, we have taken three different approaches to analysing our data. Firstly, with the specific aim of pursuing the effect of social networks upon language maintenance and shift in Palau, our first approach is to investigate the relationship between social networks and language use *alone*, taking *all the speakers* in the sample *all together*. The effects of colonial network links upon language use are compared to those of migrant network links, while the functions of strong and weak ties in rural multilingual Palau are examined. For this purpose, a *Pearson r Correlation Test* was employed.

The second approach is to investigate the relationship between social networks and language use *alone*, analysing the three subgroups of the community *separately*; i.e., the Palauan, the Japanese-Palauan and the returnee families. By doing so, we aim to reveal differential effects of social networks upon language behaviour between the three subgroups. More precisely, we will investigate in which subgroup of the community social networks have the greatest explanatory force. For this purpose, a *Pearson r Correlation Test* was conducted.

Finally, including various factors, such as age, generation, sex, ethnic identity and language ability in addition to social networks, our third approach is to employ *Stepwise Multiple Regression* to examine the relationship between language use and other relevant social factors. Although our research interest here primarily lies in social networks, it is not our intention to take social network as the primary factor, treating other variables only as having secondary effects upon language behaviour. By giving equal weight to each variable under analysis, we will investigate which variables best account for actual use of either Japanese or English in the three family types in Palau.

APPROACH 1: SOCIAL NETWORKS AND LANGUAGE USE OF THE COMMUNITY

We begin with an analysis of the relationship between social networks and language use alone, taking all the speakers in the sample all together. The results of the *Pearson r Correlation Tests* are shown in Table 3. In the following sections, on the basis of those results, firstly, the effects of colonial network links upon language use will be compared to those of migrant network links. Secondly, the functions of strong and weak ties in Palau will be examined.

Former colonial network links in a post-colonial multilingual community

Firstly we address whether there is a relationship between social network links with the former colonial power and their language behaviour. As Table 3 shows, the number of Japanese ties in all three network types as well as the combined network show a significant correlation with Japanese use as well as English use, suggesting that there is a strong

Table 3: The number of Japanese ties in different social network types and speakers' use of Japanese and English

		Exchange	*Interactive*	*Passive*	*Combined*
Japanese	Pearson Correlation	**.705**	**.642**	**.657**	**.738**
	Sig. (2-tailed)	**<.0005**	**<.0005**	**<.0005**	**<.0005**
English	Pearson Correlation	**-.320**	**-.278**	**-.275**	**-.324**
	Sig. (2-tailed)	**.020**	**.043**	**.047**	**.018**

Correlation is significant at the 0.05 level (2-tailed).

relationship between the number of Japanese ties in their social networks and the use of the former colonial languages. The consistent *positive* correlation for Japanese use (r=.705 for exchange; r=.642 for interactive; r=.657 for passive; r=.738 for the combined network) indicates, as one might expect, that the more Japanese-oriented ties the subjects have contracted in their networks, the more likely they are to use Japanese, while the consistent *negative* correlation for English use (r=-.320 for exchange; r=-.278 for interactive; r=-.275 for passive; r=-.324 for the combined network) indicates that the more the speakers have detached themselves from the Japanese links in their networks, the more the language shift toward English progresses. Thus, similar to Bortoni-Ricardo's (1985) findings, the retention of Japanese links in their social network is associated with the level of maintenance of their Japanese, whereas a historical transition from more Japanese-oriented network ties to fewer can predict the level of the on-going language shift towards a more recent colonial language, English in the now independent Palauan Republic. Both results above demonstrate that the mechanisms that have been found to account for language change in migrant monolingual communities appear to act similarly in this *post-colonial multilingual* community.

Strong and weak ties in a rural multilingual community

Second, in order to examine whether and how the functions of strong and weak ties are applicable for the multilingual Palauan community, closer attention needs to be paid to the results for exchange and interactive networks in Table 3. That is, (a) do strong ties (i.e., exchange networks) lead *both* to the maintenance of the conservative language (i.e.,

Japanese use) *and* to resistance to the on-going shift towards English?; (b) do weak ties (i.e., interactive networks) help to spread innovative language behaviour? As Table 3 shows, the significant *positive* relationship between exchange networks and Japanese use (r=.705; p<.0005) and significant *negative* relationship between exchange networks and English use (r=-.320; p=.020) suggests that **exchange networks** do have the dual functions of **strong ties** to reinforce network-internal norms and resist the incursion of network-external language influences. Strong ties, *at a local level*, reinforce the use of Japanese, so that the more Japanese-oriented links the speakers have kept in their exchange networks, the more Japanese is maintained. At the same time, strong ties shelter networks from outside influences, so that the more Japanese ties the islanders have kept in their exchange networks, the more strongly the use of the in-coming language, English, is resisted. Thus, in accordance with Bott's (1957) claim, the correlation between the dual functions of strong ties is found. These dual functions of strong ties may appear as if they are two opposing actions driven by different mechanisms. However, as this study demonstrates, they can be, in fact, described as two sides of the same coin, two ways of looking at the same phenomenon. Thus, enforcing the use of Japanese and resisting the use of English are the result of the same pressure.

Next, whether or not **weak ties** (i.e., interactive networks) help to spread innovative language behaviour (i.e., both in-coming English and the second wave of Japanese) in Palau is considered. As Table 3 shows, significant *positive* and *negative* relationships were pointed out between interactive networks and Japanese use (r=.642; p<.0005) and between interactive networks and English use (r=-.278; p=.043) respectively. Firstly, in terms of **Japanese use**, the significant *positive* relationships *both* between exchange networks (i.e., strong ties) *and* Japanese use and between interactive networks (i.e., weak ties) and Japanese use reveal that not only is *first-wave* Japanese "maintained" through *siukang* and *mujing* activities (exchange networks), but also the second wave of Japanese has "spread" to Palau in the interactive network ties made in schools and workplaces. It is true that Japanese language and life styles became integrated into Palauan daily life during the reign of the Japanese regime and this appears to be being maintained through strong ties in exchange networks. However, since the 1980's when Palau was struggling for its independence, there has been a second wave of Japanese language and culture in Palau; the growing Japanese tourist industry in Palau has promoted Japanese as a foreign language

that assures job security in a fragile economy, and as a result, the younger generations, born during American rule, have become motivated to learn Japanese.

In the case of **English use**, Table 3 illustrates that the significant *negative* relationships were found not only between exchange networks (i.e., strong ties) and English use and but also between interactive networks (i.e., weak ties) and English use. Regarding interactive networks, the patterns found are the same as for the exchange networks; i.e., the more Japanese links the subjects have kept in their interactive networks (weak ties), the more strongly English use is resisted. Therefore, it seems that interactive networks facilitate the same kind of behavioural pattern as exchange networks, but importantly, slightly less strongly ($p=.020$ for exchange network; $p=.043$ for interactive network). Therefore, in cases where the same number of Japanese links are maintained in both exchange and interactive networks, the interactive networks bring about a weaker resistance to the use of English than the exchange networks. In this relative sense, therefore, the interactive networks are more likely to provide an 'entry point' for English than the exchange networks.

APPROACH 2: SOCIAL NETWORKS AND LANGUAGE USE OF 3 SUBGROUPS OF THE COMMUNITY

So far, we have examined the language use of *all the speakers* in the sample *all together*. This time, however, we present *separate* analyses of the language use of the *subgroups* in the sample, on the basis of their family background. Here we address whether social networks have a differential effect upon language behaviour for the different subgroups of the community, that is, between the Palauan, Japanese-Palauan and returnee families. More directly, we investigate in which subgroup of the community social network has the greatest explanatory force.

Social networks and Japanese use among 3 subgroups

As Table 4 presents, it was only for the **Japanese-Palauan** families that all three network types as well as combined network can predict the use of Japanese. For the **Palauan families**, passive networks do not correlate with their use of Japanese. As far as the Palauan families are concerned, it is important to remember that we are not reliably able to

Table 4: The relationship between number of Japanese ties in different social network types and speakers use of Japanese according to family type

		Exchange	*Interactive*	*Passive*	*Combined*
Palauan	Pearson Correlation	**.415**	**.520**	.371	**.476**
	Sig. (2-tailed)	**.049**	**.011**	.081	**.022**
Japanese-Palauan	Pearson Correlation	**.770**	**.797**	**.624**	**.809**
	Sig. (2-tailed)	**.001**	**<.0005**	**.013**	**<.0005**
Returnee	Pearson Correlation	**.643**	.414	**.810**	**.672**
	Sig. (2-tailed)	**.010**	.125	**<.0005**	**.006**

Correlation is significant at the 0.05 level (2-tailed).

reconstruct and quantify *past* networks that have affected language behaviour, but which are no longer accessible to systematic observation. Most of the Palauan families did not keep in touch with Japanese neighbours and friends who used to live in Palau during the Japanese administration, although the elderly members report once having had multiplex and dense networks with them, and still maintain a high competence in Japanese and use it in family conversations to some extent. Thus, passive networks cannot reflect the *long-term social process* that underlies migration, and hence, cannot predict the use of Japanese by the Palauan families.

For the **returnee families**, interactive networks do not correlate with their use of Japanese. The returnee families were found to have the highest Japanese oral ability as well as the largest number of Japanese-oriented links in all three network types among three subgroups. Their exchange and passive networks are predominantly Japanese-oriented, and hence it makes sense that their frequent use of Japanese in family conversation correlated highly with a large number of Japanese links in their exchange and passive networks. In the case of interactive networks, however, the parents' and children's generations did not show a high proportion of Japanese ties in their interactive networks, because some of the adults work in the Palauan civil service, and all of the children have Palauan friends at school. Thus, it is understandable that their frequent use of Japanese in family conversation cannot strongly correlate with the relatively few Japanese ties in their interactive networks. Thus, a *separate* analysis of the three family subgroups uncovers that it was for the

Japanese-Palauan families that social network had the greatest explanatory force; only for the Japanese-Palauan families did all three network types as well as the combined network predict the use of Japanese.

Social networks and English use among 3 subgroups

As Table 5 shows, analyses of the relationship of social networks and the use of English show results quite different to those for Japanese use. Virtually no network type shows any significant correlation with English use. The only exception is for the **Japanese-Palauan families** in which interactive networks correlate with English use (p=-.562, r=.029). The negative correlation indicates that the more the speakers have detached themselves from the Japanese links in their interactive networks, the more the language shift toward English progresses, suggesting that the function of weak ties as a norm diffuser seems to be valid for the Japanese-Palauan families in this study. Thus, although significant influence of all three network types upon English use was found when *all the subjects* were examined *all together* (Table 3), a *separate* analysis of three subgroups individually reveals that it was only for the Japanese-Palauan families that weak ties (interactive networks) encourage language shift toward English[7].

Table 5: The relationship between number of Japanese ties in different social network types and speakers use of English according to family type

		Exchange	*Interactive*	*Passive*	*Combined*
Palauan	Pearson Correlation	-.340	-.171	-.240	-.305
	Sig. (2-tailed)	.113	.437	.271	.158
Japanese-Palauan	Pearson Correlation	-.354	**-.562**	-.248	-.429
	Sig. (2-tailed)	.195	**.029**	.374	.111
Returnee	Pearson Correlation	-.005	-.267	.217	-.081
	Sig. (2-tailed)	.985	.336	.438	.773

Correlation is significant at the 0.05 level (2-tailed).

[7] An independent test, *Stepwise Multiple Regression Test* was also conducted. The results show that there is only one independent significant relationship between interactive networks and English (R square=31.6%, F=6.014, Significance = 0.29).

Thus, overall, it turned out that social networks could not account for the use of English as much as they could for the use of Japanese. This seems understandable when considering the difference in colonial strategies between the Japanese and American governments in Palau. Whilst the Japanese era gave rise to an influx of many civilian immigrants, the U.S. period did not. In other words, during the Japanese era, personal network links in Palau were dramatically affected by face-to-face interaction with Japanese, such as through intermarriage, friendship and in local neighbourhoods. During the subsequent American period, however, personal network links were not directly affected by the Americans; few American educators or government officials arrived, so there was very little local integration. The only influence upon the local networks that the American era brought about was that the Japanese and some Japanese-Palauan families were segregated from the Palauans and expatriated to Japan after the war. This raises the question as to how social networks can contribute to understanding the mechanism of language shift in a post-colonial community where direct face-to-face interaction was minimal even during the colonial period, but where the former colonial 'High' language continues to thrive.

Finally, the answer to the third research question (i.e., in which subgroup of the community does social network appear to have the greatest explanatory force?) is the Japanese-Palauan families. Only for the Japanese-Palauan families does Japanese use show a significant correlation with all three network types as well as combined network (see Tables 4), while English use displays a high correlation only with interactive networks and only for the Japanese-Palauan families (see Table 5). The social characteristics of the Japanese-Palauan families will be further explored in the next section.

APPROACH 3: SOCIAL CORRELATES OF LANGUAGE USE OF 3 SUBGROUPS OF THE COMMUNITY

By considering social variables, such as, age, generation, sex, ethnic identity and oral language ability in addition to social network, our final approach was to investigate which social factors showed the highest correlation with the use of either Japanese or English across the 3 family types in Palau. For this purpose, *Stepwise Multiple Regression* was used. Here we address whether or not social networks better account for the language use of the three family subgroups of the community than these other factors, and what are the social

characteristics of subgroups in which social networks seem to represent the strongest explanatory force.

Social correlates of Japanese use of 3 subgroups

As Table 6 shows, the results reveal that different variables most strongly correlate with Japanese use depending on family type[8]. It was found that social networks were the most important predictor of language behaviour only for the Japanese-Palauan families. Therefore, firstly, we briefly look at the results for the Palauan and Returnee families, before taking a closer look at the results for the Japanese-Palauan families.

Table 6: Social variables as predictors of Japanese use

	Variable	R square	F	Sig.
Palauan families	Japanese identity	72.2%	54.534	<.0005
	Japanese oral ability	83.4%	50.413	<.0005
Japanese-Palauan families	**Combined social network**	66.5%	24.689	<.0005
Returnee families	Japanese oral ability	78.8%	48.448	<.0005
	Sex	91.7%	66.553	<.0005

Correlation is significant at the 0.05 level.

In the case of the **Palauan families**, Japanese identity and Japanese oral ability, independently, most highly correlate with their use of Japanese. Firstly, a positive relationship between the extent to which Palauans identify themselves as Japanese and Japanese use suggests that the more strongly the Palauans feel that they are Japanese, the more Japanese they use. Secondly, a positive relationship between Japanese oral ability and Japanese use indicates that the higher level of Japanese oral ability the Palauans have, the more frequently they use Japanese; conversely, the lower the level of Japanese oral ability, the less frequently they use Japanese.

Both results clearly reflect the Japanese colonial policies on education and immigration.

[8] There are other factors which demonstrate statistical significance to $p<.05$. However, this table only shows the strongest and independent correlations.

Older members of Palauan families were urged during the time of the Japanese regime to value both the Japanese social system as well as the language, in school, in the workplace and in their local neighbourhoods. Due to the mixed settlement patterns of civilian Japanese immigrants, they grew up with Japanese children as neighbours and learnt Japanese fairy tales, songs and customs. Thus, for the Palauan families, Japanese identity and Japanese oral ability, which are deeply rooted in pre-War Japanese colonial policy, turned out to be the best predictors of their Japanese use. In the case of the **returnee families**, Japanese language oral ability and sex, independently, most highly correlate with Japanese language use (see Matsumoto and Britain 2003b for further discussion of this).

Now, for the **Japanese-Palauan families**, the Japanese ties in the three social networks combined most strongly correlate with the use of Japanese. Figure 1 illustrates the clear pattern that the more Japanese-related links the speakers have, the more Japanese is used in family conversation. Although Table 4 shows that the exchange, interactive and passive networks independently correlate with Japanese use, it was the combined network that showed the strongest relationship among the different network types. As explained earlier, the combined network in this study represents a combination of all "significant others" consisting of both active and passive ties (Milardo 1988: 23). In other words, the extent to which our subjects have maintained their former Japanese colonial links in their networks *overall* can better predict their Japanese use than their active ties (exchange and interactive networks) or passive ties (passive network) *alone*.

Lippi-Green's (1989) social network analysis provides us with a clue to help us understand in which type of community social networks will have the greatest explanatory force. As discussed earlier, she pointed out two important measures for analysing the effect of social networks upon language behaviour; *the availability of choice in their group allegiance* and *the susceptibility of those networks to social, political and economic change.* In the case of Palau, the three different family backgrounds represent different experiences and perceptions of the policies of the three different administrations; i.e., the Japanese, American and Palauan governments. Oral history collected during our fieldwork suggests that during the Japanese administration, Palauan families were urged to value the Japanese social system as well as the language. Thereby, the individual had little choice but to participate. The lifestyle of the returnee families, on the other hand, was notably distinct

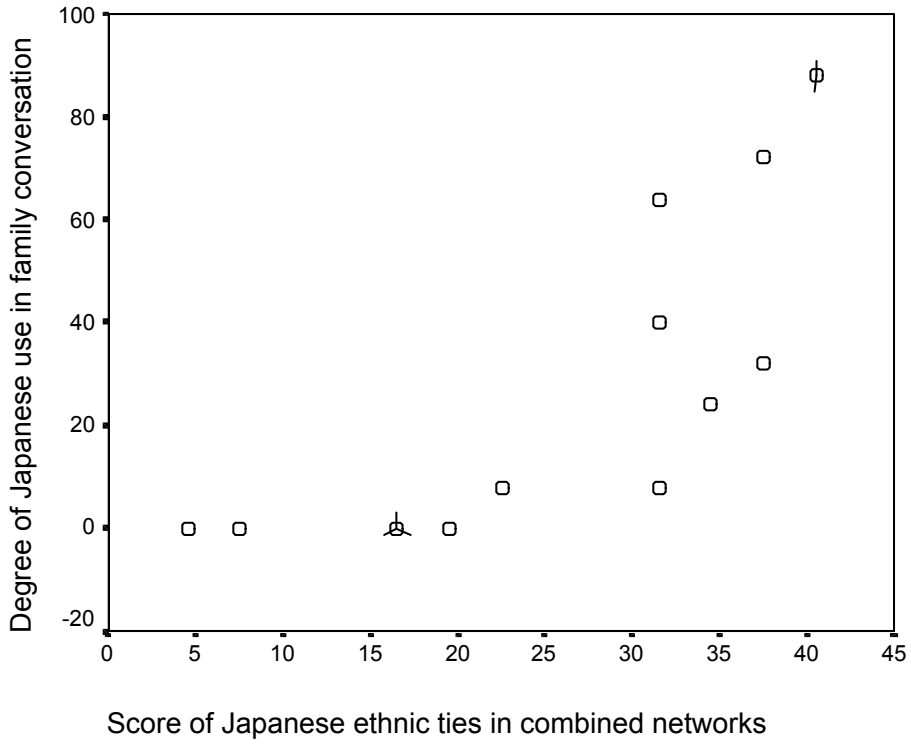


Figure 1: A correlation between Japanese ties in the three combined social networks and speakers' use of Japanese: The case of Japanese-Palauan families
(Degree of Japanese use: 0=never used, 100=the dominant language)
(Each dot and spike represents one person; a dot represents one person, a dot with two spikes represents two people, a dot with three spikes represents three people)

from that of both the Palauans and the Japanese-Palauan families. The returnee families had Japanese citizenship, since their parents were officially married. Hence, as 'Japanese' at that time, they enjoyed some privileges. For example, higher education in Japan tended to be more open to these Japanese children in Palau, and they attended schools exclusively for Japanese pupils, rather than those for Palauan children. Thus, they used to live within Japanese norms and values with only a limited amount of contact with Palauan traditions and language. Therefore, many of these Japanese-Palauans were not able to speak Palauan at that time, although they were raised in Palau. The Japanese-Palauan families, then, appeared to have been between these two extremes; they did not have Japanese citizenship because their parents were not officially recognised as being married, and they participated

in Palauan traditional exchange customs alongside maternal Palauan relatives and neighbours, but they nevertheless enjoyed the prestige of being 'the Japanese' to a certain extent. Hence, they had access to both Japanese and Palauan social norms, values and languages. Given this, Japanese-Palauans had an intermediate free choice of group allegiance.

Subsequently, since the end of WWII (the start of the U.S. administration), Palau has undergone a transitional period both politically and economically, from Japanese to American domination. Many Japanese-Palauans with Japanese citizenship were expatriated to Japan, with their Japanese fathers and Palauan mothers, as a result of U.S. policy, and since then have been successively relocated between Japan and Micronesia until the U.S. Navy granted them permission to return to Palau, while the Palauan families gradually began to accept the American system and also became aware of their own national identity. Japanese-Palauans without Japanese citizenship were separated from their Japanese fathers and stayed in Palau with their Palauan mothers and maternal relatives, hoping that their fathers would shortly return. Those Japanese-Palauan families who stayed in Palau after the war experienced a rapid change in social values as well as in their social status as 'the Japanese' during the transitional period in which Japanese colonial power prospered and then fell under American power. Thus, similar to Lippi-Green's findings (1989), for the Japanese-Palauan families who *had an intermediate free choice of group allegiance* and who *experienced the greatest upheavals* in the community history, the (combined) social network is the best indicator of their Japanese use.

In summary, in the case of Japanese use, it was found that social networks were the most important predictor only for the Japanese-Palauan families. It also turned out that their social characteristics correspond to those found in Lippi-Green's study (1989). For the Palauans, the strength of Japanese identity and Japanese oral ability can predict the use of Japanese better than social networks; and for the returnee families, their Japanese oral ability and their sex/gender give a better explanation for Japanese use than social networks.

Social correlates of English use of 3 subgroups

We turn now to examine which factors most strongly affect the use of English in the three

different ethnic family types in Palau. As Table 7 presents, the results of *Stepwise Multiple Regression* reveal that different variables most highly correlate with English use depending on the family type, but no social network measure was the predominant predictor of English use in any of the three family types.

Table 7: Social variables as predictors of English use

	Variable	R square	F	Sig.
Palauan families	English oral ability	35.4%	11.533	.003
Japanese-Palauan families	Generation	54.1%	15.321	.002
Returnee families	Japanese identity	31%	5.849	.031

Correlation is significant at the 0.05 level.

In the case of the **Palauan families**, English oral ability has the highest correlation with English use. A positive relationship suggests that the higher the level of English, the more frequently they use English; conversely, the lower the level of English, the less frequently they use English. In the case of the **Japanese-Palauan families**, generation most strongly correlates with English use. A negative relationship indicates that the older they are, the less frequently they use English; conversely, the younger the speakers are, the more frequently they use English. In the case of the **returnee families**, the extent to which the islanders feel that they are Japanese shows the strongest (negative) correlation with English use[9]. The more strongly they identify themselves as Japanese, the less frequently they use English; conversely, the less strongly they identify themselves as Japanese, the more frequently they use English.

Thus, in the case of English use, it turned out that other variables, such as oral English ability, generation and Japanese ethnic identity, are better explanatory variables for each of the family subgroups in the community than social networks[10].

[9] The *Pearson r Correlation Test* indicates that it is a negative correlation (p=.031; r=-.557).

[10] Since the focus of this paper is upon social networks, the detailed interpretation of the results for English use and other variables are omitted. See Matsumoto (2001a) for further details.

CONCLUSION AND DISCUSSION

This study highlighted the usefulness of social network analyses from three perspectives. First, when examining all the subjects in our sample altogether, we witnessed that social networks can help us understand the use of the former colonial languages, Japanese and English, in a post-colonial Micronesian community where most of the former colonial residents have returned to their home countries. The mechanism of language change that Bortoni-Ricardo (1985) found in her network study of a *monolingual migrant* community turned out to be very similar to the mechanism of language maintenance and shift in this *post-colonial multilingual* Palauan community. To recap, the more former colonial Japanese links the speakers have kept in their social networks, the more Japanese is maintained; conversely, the further they have detached themselves from Japanese links, the more the language shift from Japanese to a more recent colonial language, English, progresses. Thus, this demonstrates that the social network approach is a very useful analytical framework, which may enable us to analyse and compare language maintenance and shift patterns found in other post-colonial communities in the world.

Second, the functions of **strong and weak ties** as *norm reinforcers/resisters* and *norm diffusers*, respectively, identified by L. Milroy (1987a) in her network study on language change in the *urban monolingual* community of Belfast turned out to be applicable for this study of language maintenance and shift in a *rural multilingual* Palauan community. When examining all the subjects in our sample altogether, we saw that strong ties (exchange network in this study), *at a local level*, serve to enforce the use of Japanese, such that the more Japanese-oriented links the speakers have kept in their exchange networks, the more Japanese is maintained, while strong ties, *at a societal level*, facilitate a capacity to resist outside norms and influences, so that the more Japanese ethnic ties the islanders have kept in their exchange networks, the stronger the resistance to the use of the in-coming language, English. We also found that weak ties ('interactive networks' in this study) play a role as a bridge: weak ties, on the one hand, diffuse modern Japanese; on the other, weak ties make it easy for English to spread by providing an 'entry point' for English.

Thirdly, we were able to identify, through separate analyses of the language behaviour of three subgroups of the community, whether social networks had any explanatory force to

explain that language behaviour. Among the three family types investigated in this study, it was only for the Japanese-Palauan families that Japanese use consistently displays high correlation with all three network types (see Table 4). It was also only for the Japanese-Palauan families that the use of English has a significant relationship with interactive networks (see Table 5). Furthermore, when analysing the effects of other factors, such as age, generation, perceived ethnic identity, oral language ability in addition to social networks, it turned out that only for the Japanese-Palauan families did the combined social network ties most strongly correlate with Japanese use (see Table 6). All these consistent results suggest that it is within the Japanese-Palauan families that social networks can best explain contemporary language choice.

In exploring the social characteristics of the Japanese-Palauan families, the two measures for analysing the effects of social networks upon language behaviour pointed out by Lippi-Green (1989), namely (1) the degree of *freedom in their choice of group allegiance* and (2) the degree of *susceptibility to social, political and economic change* in the community, helped us understand the patterns of language choice in our data. It would be interesting to see if these social characteristics are key elements in other social network studies too.

Furthermore, this study reveals the limits to the explanations made possible by network analysis. For example, we saw that network analysis cannot re-constitute *past* social networks. Social network analysis was not able to account for the Japanese use by the Palauan families who *used to* have dense and multiplex social networks with Japanese neighbours and friends during the Japanese regime, but who currently do not have contact with them. The second limit to the explanations made possible by network analysis is that in cases where the cause of on-going language shift does not involve either *direct face-to-face interaction* in the local community or moral psychological support from a distance, but involves *indirect institutionalised or authorised language enforcement*, social networks as a speaker variable might not offer much. This seems to be reflected in the results of the examination of English use by the three different family types. The U.S. period did not bring about either an influx of American immigrants into Palau or informal face-to-face interaction between civilian Americans and Palauans, so that local networks between them on the islands have been very weak, and the networks among the Palauans

were not directly affected. Therefore, it is not surprising to see that other factors, such as English oral ability, generation and the strength of Japanese identity have stronger effects upon English use in each family type than social networks.

Studies of *language change* in *dialect* contact situations tend to assume that *direct* face-to-face interaction is necessary before change takes place (Trudgill 1974; 1986; 1988; Chambers 1997). In studies of *language maintenance and shift* in *language* contact situations, by contrast, there might seem to be different mechanisms where indirect institutionalised or authorised language enforcement, such as education and job access, may lead to a language shift, without direct face-to-face interaction. Nevertheless, a closer examination suggests that there is no real shift in the case of Palau. English has become a "High" L2, but it is likely that direct face-to-face contact is necessary for English to replace Palauan as an L1. The lack of infiltration of English in the home is because there is little face-to-face contact which would motivate and enforce people to use English. In short, although this is still speculative, language shift may begin institutionally, but ultimately may need to reach local everyday interaction before substantial L1 shift can occur. Thus, the crucial role of social infiltration and *informal face-to-face contact* in language shift is highlighted.

To sum up, this study explored the usefulness of social network from three perspectives. (1) Social networks can to a significant extent explain changes in the use of former colonial languages in a *post-colonial* community, in cases where there was and remains informal face-to-face contact between the former colonial residents and the colonised; (2) the functions of strong and weak ties found in monolingual communities (as a norm reinforcer/resister and a norm diffuser) are applicable to *multilingual* communities; (3) the specific social and historical profiles of communities in which social network models may have explanatory power have been identified.

This study also revealed the limits to the explanations made possible by network analysis. (1) Social networks cannot re-construct either past social networks or the long-term process of migration. (2) Social networks appear to be a less useful variable in cases where the cause of on-going language shift involves indirect institutionalised or authorised language enforcement.

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