Social structure and phoneme inventories

PETER TRUDGILL

In her "Call for debate" on Quentin Atkinson's article, Joan Bybee writes that "[a]n article by Peter Trudgill published in *Linguistic Typology* (2004) with a series of reacting articles noted that as the Austronesian groups expanded across the Pacific the languages that thus evolved had fewer phonemes the farther they were from the center of dispersal." – something which Atkinson now purports to have demonstrated.

It is true that in my article (Trudgill 2004a), I did note that a loss of phonemes during migration was precisely what had happened during the eastward spread of Austronesian languages across the Pacific Ocean, with the end-point being a number of Polynesian languages with very small inventories indeed. However, I did not in fact try to elevate this observation into a general principle. My concern was rather to try to see if an explanation for this particular Austronesian phenomenon could be advanced, from a sociolinguistic-typological perspective – explanation is not, it seems, something which very many commentators have actually engaged with when discussing inventory size. (Explanations which we do not yet have include, for example: if there is a straightforward correlation between population and inventory sizes, why would that be?; and "if phoneme distinctions are more likely to be lost in small founder populations", as opposed to other small populations, why would that be – particularly given that, as Johanna Nichols reminds us, population sizes in the Palaeolithic were all relatively small?) I simply asked in my article whether there was any reason why this particular Austronesian migration should have led to the loss of phonemes – and I suggested that a sociolinguistic perspective could well turn out to be helpfully explanatory. There was no suggestion in my work – and I do not believe – that migration in general leads to inventory reduction in general. Why would it?

My proposal, then, was not that the reduction in Austronesian inventories had any direct connection with the migration itself. I supposed rather that what

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had happened was that, because of the topography of the remote Pacific, the Polynesian migrations had led to the development of increasingly small and isolated communities – something which is not inevitably associated with migration; and it was the consequences which this diminution and isolation had for the social structures of the East Polynesian communities which was important, not the fact of the migration itself.

Against a background of my earlier work in (I like to think) sociolinguistically-informed linguistic typology, my attempt at a sociolinguistic explanation for differential phoneme inventory sizes then went on to focus on a number of the social characteristics of East Polynesian (and similar) communities which I supposed might be relevant: small (vs. large) community size, low (vs. high) degree of linguistic contact, dense (vs. loose) social networks, large (vs. small) amounts of communally shared information, and high (vs. low) social stability (for an extended discussion see Trudgill forthcoming).

Joan Bybee refers in her "Call for debate" to Hay & Bauer 2007, which was written partly in response to my *Linguistic Typology* article (Trudgill 2004a), as was, to an even greater extent, Pericliev 2004. Unfortunately, both Hay & Bauer and Pericliev focused on just one of the five social factors which I had isolated in my article: they concentrated exclusively on community population size. As I said in my replies to Pericliev and others who were invited to contribute to Volume 8(3) of *Linguistic Typology* (Trudgill 2004b), my suggestion was never that there was any sociolinguistic reason to suppose that there would be a straightforward relationship between population size and phoneme inventories as such. There were two major points in my original article which demonstrated this and which are therefore relevant to the present discussion.

The first relates to population size, the focus of Pericliev and Hay & Bauer. My suggestion was very much that the five social factors could be expected, IN COMBINATION, to have various kinds of influence on phoneme inventory size; it will never, I suggest, be sufficient to look at population figures alone. It is of course not surprising that Pericliev and other statistically-minded linguists have neglected this point and focussed on population size to the exclusion of the other factors, because the other factors are much less readily susceptible to quantification than community population size. But from my perspective this is actually a mistaken exercise – I see no sociolinguistic reason to suppose that population size alone will have any straightforward consequences for phoneme inventory size. It is true that some of my five factors, though all in principle independent, will often to an extent be linked, e.g., small communities are likely, other things being equal, to have more tightly-knit social network structures. But other things are NOT always equal, and it is not the case that population size can be used as a proxy for all the other factors. There is no particular reason, for example, why small communities should necessarily be isolated (see Trudgill forthcoming).

My second major point related more specifically to the discussion of large vs. small phoneme inventory sizes. My strong suggestion was that we cannot expect to find meaningful statistical correlations between inventory size and community size. This was because my attempted explanatory approach suggested that there is in fact a tendency for small, tightly-knit, stable, low-contact communities with large amounts of communally shared information to be characterised either by unusually large inventories or by unusually small inventories. Why would this be? In Trudgill (forthcoming) I propose that insights into the distribution of certain linguistic features over the world's languages can be gained by noting that: (i) short-term adult language contact tends to lead to simplification; (ii) long-term language contact involving whole communities tends to lead to additive complexification; and (iii) isolation tends to lead not only to preservation of complexity but also to the generation of spontaneous, i.e., non-additive complexification:

(i) There is considerable evidence to show that short-term adult language contact leads to simplification in phonology. Pidgins generally have smaller phoneme inventories than their lexifiers; and the picture is broadly similar for creoles. The English-lexifier pidgin/creole Bislama, as spoken in Vanuatu, is typical in its mesolectal form in having fewer consonants, viz. 18, than its lexifier, lacking a number of articulations found in most varieties of mainstream English. Different basilectal varieties lack even more of the consonants of English. The same is true of vowel systems. Bislama has a 5-vowel system, compared to the 20 or so of most varieties of English English.

(ii) Long-term contact involving childhood bilingualism tends to lead to complexification in terms of larger phoneme inventories. The long-term presence of neighbouring languages means that segment types can more readily be borrowed from one language to another, leading to increased inventories. Rivierre (1994) supplies a range of phonological examples of contact-induced phonological complexification in the Austronesian languages of New Caledonia. And the process can also be seen in the case of the Polynesian outlier languages: Hajek (2004: 349) observes that "there is no doubt that language contact through close proximity with non-Polynesian languages has led to phoneme borrowing, through intensive and longstanding childhood bilingualism".

(iii) I also suggest that small isolated communities are more able, not only to maintain, but also to PRODUCE complexity (I argue that this has to do with their network structures – for a full discussion see Trudgill forthcoming). For phonology, consider the fact that the San languages of southern Africa are known to have very large inventories: on one analysis, !Xu has 95 consonants. This is very unlikely to be due to additive complexification resulting from a high degree of contact, as just discussed under (ii),

and must therefore be explained in terms of internally generated complexification.

However, there are also a number of other small, isolated languages in the world, such as the East Polynesian languages, which actually have very small inventories. Given that small inventories are a typical result of contact-induced simplification, the Austronesian reductions would seem to represent a puzzling development: the East Polynesian languages can be supposed to have been isolated, low-contact varieties. However, I do see a role for a sociolinguistic-typological explanation here which I also put forward in my *Linguistic Typology* article, though this has not received any comment. This is that when attenuation of consonant systems develops to a very extreme extent, this actually represents not a simplification but a genuine complexification, of the sort typically associated with tightly-knit communities. My reasoning is as follows. According to Maddieson (1984), Hawaiian, with 5 vowels and 8 consonants and CVCV phonotactics, has only 162 possible syllables. As a comparison, the total number of possible monosyllables in English approaches 6,000,000, according to Harley (2006).) My suggestion is that the possession of only a small number of available syllables – and therefore a relatively small amount of redundancy – may lead to greater communicative and/or cognitive difficulty because of a lack of contrastive possibilities. This is entirely unproblematical for native speakers, but languages such as Hawaiian cause difficulties for non-natives because they lead to problems of memory load for speakers and recognition for listeners – they are L2-difficult.[1] The problem lies in the relative lack of distinctiveness between one vocabulary item and another, due to the necessarily high proportion of usage of possible syllables: Harlow (2001) says of North Island New Zealand Maori that a very high proportion of all possible words consisting of two morae actually occur. The difficulty is one of confusability. According to Lively et al. (1994: 274), there are neighbourhood effects which have to do with what other words a given word has to be differentiated from. "Neighbours" are words that differ from a given target word by only one phoneme. Lively et al. show that words are identified less accurately if they come from "dense neighbourhoods" than if they are from "sparse neighbourhoods" (1994: 275).

The link between very small inventories and this particular Polynesian migration then has to do, I suggest, with the involvement of societal factors in the processes of linguistic change which were involved in producing such inventories. Initial small community size (the number of people who could arrive on a relatively small number of relatively small boats) would have led, in

1. There is some anecdotal evidence for this – tourists complain of not being able to remember and distinguish one Honolulu street-name from another.

remote Polynesia, to very tight social networks. Crucially, however, in a stable community with few external contacts this would have produced large amounts of communally shared information. A large fund of communally shared knowledge would have made for a situation in which communication with a relatively low level of phonological redundancy would have been relatively tolerable; and a community consisting entirely of native speakers exposed to the language from infancy would have had no problem with memory load. This would have permitted the development of small phoneme inventories – though of course it would not have compelled such a development.

I conclude that it's clear that, if small inventories can be associated with EITHER high adult contact, as in pidgins, OR with isolation, small community size, and shared information; and if large inventories can be associated EITHER with additive borrowing in high-contact Sprachbund-type areas, OR with spontaneous complexification – a proliferation of articulation types – in low-contact situations as with !Xu; then no significant predictive explanatory generalisations based on population size or any other social factor can be made, nor will any insightful statistical correlations with phoneme inventory size be found. The best we can do is to say that larger communities are more likely to have medium-sized inventories; and that small communities are more likely to have EITHER very large OR very small inventories.

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Correspondence address: c/o Language and Communication Studies, University of East Anglia, Norwich NR4 7TJ, United Kingdom; e-mail: peter.trudgill@unifr.ch

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