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Jean-Léo Léonard, Vittorio Dell'Aquila

To cite this version:

Jean-Léo Léonard, Vittorio Dell'Aquila. Mazatec (Popolocan, Eastern Otomanguean) as a Multiplex Sociolinguistic " Small World ". Languages of Smaller Populations : Risks and Possibilities, Mar 2012, Tallin, Estonia. hal-01137372

HAL Id: hal-01137372

https://hal.science/hal-01137372v1

Submitted on 31 Mar 2015

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Russophone pupils. This involves a serious risk to the sustainability of the Komi language because some schools choose to teach Komi under the programme, arguing that children are sufficiently proficient in Komi and that this way they can have extra time for other subjects. Even parents sometimes ask to reduce the number of Komi lessons, saying that children are overloaded with schoolwork and that it would be more practical to increase the number of English or French lessons.

Learning Komi as an official language means, however, that many Komi children learn their mother tongue as a foreign language. This will lead to a situation where pupils only learn simple phrases. And if Komi is not the language used in their family, children will take it as one of many school subjects. It is very likely that passing on the language will be interrupted.

The Komi language should be taught as a mother tongue – there are more lessons per week and the programme includes reading books and writing essays. It is important to **appeal to the parents of Komi children not to reject Komi in favour of other subjects,** and to educate them on the topic. **The ethno-cultural education** of Komi families is paramount to the survival of the Komi language. It seems that people's organisations can do a lot in this field. Such resource-intensive work can only be done with the state's help and at state level by adopting relevant political decisions and ensuring the completion of long-term projects.

Mazatec (Popolocan) as a Multiplex Socio-Linguistic "Small World"

Jean Léo Léonard (IUF & UMR 7018)
Vittorio dell'Aquila (CELE & Uni Vaasa)

1. Introduction

The Popolocan languages are part of a vast linguistic stock spread all over Mesoamerica, from Central-Northern Mexico to the South of the State of Oaxaca, México – called the Otomanguean linguistic stock (see Kaufman, 2006 and Rensch 1976, for a reconstruction of the phylum). Before the so called "Conquest" (which actually amounted to a form of genocide, so ruthless and violent was the military invasion from Spain at the end of the 15th century and beginning of the 16th century), Otomanguean languages were spoken in the Mexican state of Northern Chiapas (*Chiapanec*), and a long way south of the Mesoamerican isthmus, as far as Nicaragua, where Mangue was still in use. The Popolocan languages (Popoloca proper, Chocho or Ngigua, Ixcatec and Mazatec) are part of the Eastern Otomangean network of sub-phyla within the Otomanguean stock (see Fig. 2.1 below). The Mazatecan area (red colour) makes up a hammer-shaped area (see Fig. 2.1.), north of the Mixtecan and Chinantecan areas, quite far from other kindred languages such as Popoloca proper, in the north-west. The maps on Figs. 1 and 2.1 show the areas of traditional settlements since the "Conquest", and the population density of speakers by municipality, according to the Mexican 2000 census.

Figure 1. Traditional settlements of indigenous language speakers in Mexico, 2000 census

Figure 2.1. Distribution of Otomanguean languages, Josserand (1983)

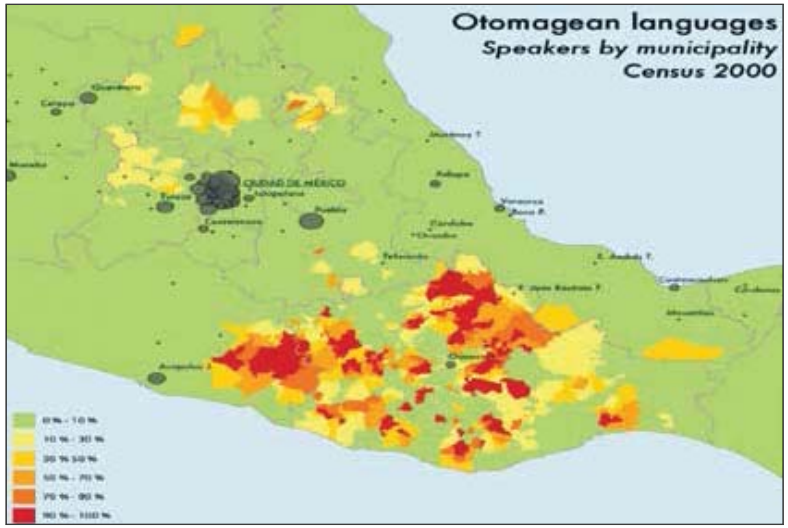

Figure 2.2. Otomanguean languages in Mexico, 2000 census: density of native speaker populations by municipality

These maps show how conspicuously the settlement areas are shrinking at the present time, in terms of demographic density: most indigenous languages of Mexico are now scattered and atomized within their colonial areas of settlement – with the exception of the extension of the pre-Columbian areas, which in many cases are wider and more densely populated. Comparing both maps, one has the impression of a former ocean converted into an archipelago – a metaphor fully confirmed by historical facts. A more detailed map would show how the "Popolocan archipelago" appears today as an atomized language bundle, scattered between several Mexican states (Oaxaca, Puebla): Mazatec would show up as a spot resembling a big ant on the right, whereas in the South-West, Ixcatec and Chocho would loom as tiny fragments.

Figure 3. Mazatec and other languages in contact in the Papaloapan basin, with data for the item n° 467 from Kirk's cognate sets (1966), as a sample of the ALMaz

The cluster of scattered spots in the North-West stands for varieties of Popoloca (Northern, Eastern, etc.). The number of speakers ranges from 4 (Ixcatec) to 250 000 (Mazatec), whereas Chocho has a few hundred speakers left, and Popoloca no more than 8000. Ixcatec is therefore considered to be a language doomed to extinction within the next decades. Chocho will disappear next, before Popoloca. Mazatec is classified as a "vulnerable" language according to UNESCO criteria, and will probably still persist during this century, but may reach the next century in very different shape than at present, while many varieties will probably become extinct. Dialect variation in Mazatec is much larger than between Estonian dialects, as verb inflection patterns depend on preverbs, whose variation happens to be strongly embedded in the social and geographic networks of local vernaculars and regional *koinès* (such as Huautla, Jalapa de Díaz, San Pedro Ixcatlán, San Miguel Soyaltepec).

Mazatec is famous for being one of the most complex languages in the world, as far as phonological and inflectional patterns are concerned. Major contributions to the study of Mazatec sound patterns, tonology, morphology and syntax were made by such distinguished scholars as Kenneth Pike (1948), Eunice Pike (1956, 1967) as well as the association of both (Pike & Pike, 1947), George Cowan (1965), Paul Livingston Kirk (1966, 1996), Carole Jamieson (1982), Brian Bull (1984), Gudschinsky (1958, 1959a, b & c), Schram (1979a &b), Schram & Jones (1979), the Summer Institute of Linguistics: (S.I.L.), and more recently, by Daniel Silverman (1997) and Silverman et al. (1995), Chris Golston & Wolfgang Kehrein (Golston & Kehrein, 2004), Peter Ladefoged (Kirk & Ladefoged, 1993), etc.

A fairly elegant spelling has recently gained a stronghold in the whole area on the basis of the former SIL typographic conventions used for the Bible translation (Duke, s.d.; Regino, 1993). This outstanding attempt at codifying the language had a strong impact on bilingual education, which became official in 2003 – though it tends to remain more an intention than an actual practice, as we shall see soon. In the following argumentation, we'll take it for granted that the Mazatec language area defines what we shall call an Open Small World (OSW). A Small World would be a monad (i.e. a monolithic, irreducible entity), whereas an Open Small World is a world of its own, though open to tropisms, integration with the

outside world and neighbouring worlds, and has fuzzy boundaries. This piece of critical work is only part of a wider inquiry and survey of where and when people speak, write or read Mazatec as native speakers.

The next stages of this survey will take into account migrant communities and individuals in Puebla Mazatec settlements (up to now, never surveyed), including Tehuacán (the "Barrio Mazateco"), the Federal District (Mexico City) and other locations, such as the new settlements of Lowland villages in Veracruz formed after the building of the Miguel Alemán Dam. The Dam construction led to the actual deportation of part of the population of farmers involved in the *microfundio* system (Benítez, 1993, McMahon David, 1971), which had to give way to modern extensive agrarian systems such as sugar cane plantations and herding in the Lowland plains, and coffee plantations in the Highlands, into the eighties (Boege, 1988). For the time being, we shall cling to the information provided by the ALMaz project (*Atlas Lingüistico Mazateco* i.e. *A Linguistic Atlas of Mazatec*, in progress) about how Mazatec is handled in everyday life, and for insights into socioeconomic and sociocultural patterns. The plight of bilingual education will stand as a mirror of the changes happening in the atomized and multilayered space and time where and when Popolocan languages are still spoken and fighting for survival in a globalizing world.

2. Mazatec as an Open Small World (OSW)

We'll now turn to Mazatec as a case study for the plight of Popolocan in the decade of 2010, as a linguistic stock in which three languages out of four are doomed to decline in this century. Mazatec is all the more interesting to observe in detail, as it apparently has more chance to resist assimilation in the long term, thanks to its demographic weight (about 220 000 speakers, i.e. nearly a quarter of a million), and to emerging language engineering for literature and education through modern spelling conventions. Mazatec, however, in spite of these assets, is still a very vulnerable language. Our attention was first called to this state of affairs when we were gathering data for the ALMaz (*A Linguistic Atlas of Mazatec*) in Huautla and San Jeronimo Tecoatl in 2010. Our pessimistic impression has since been confirmed by facts we could observe during fieldwork elicitation in 2011. In a few words, poverty strongly impacts the whole

Mazatec area. The collapse of the more recent agrarian systems of coffee crops and cooperatives, the lingering consequences of the Miguel Alemán Dam in the 1950s, and a constant drive to migration to urban centres such as Tuxtepec, Tehuacan, Oaxaca, Puebla, México DF, or the USA, make the situation of the Mazatec language paradoxical. On the one hand, everyone in the area is proud to speak such an impressively expressive and undoubtedly aesthetic language, extremely well preserved from contact with Spanish in its lexicon and grammar (purism, with its inhibitive correlates to speak and improve the functionality of his/her language, as is seen in the Nahuatl area, seems alien to Mazatec speakers, as far as we could observe). On the other hand, everyone is fleeing from the area, as economic depression gets more bitter every day, and more and more parents address their children exclusively in Spanish. By and by, the illusion of Mazatec sociolinguistic continuity is vanishing in the face of raw facts, and many young parents nowadays even realize that they cannot pass on the language to their children for the simple reason they were never given the opportunity to speak it with their own parents, aged 40 or 50…

Some remain optimistic and do not seem upset, while others enter into a kind of panic, realizing how the inner world of Mazatec society has been changing over the last 20 years. "Language Nests" or *Nidos de Lengua* are being created, and school masters are desperately trying to keep pace with new teaching materials published by the SEP (Segretaria de Educación Pública: *Public Education Board*), or to fulfil the requirements of the law issued in 2003. They also realize, though, how little they know about Mazatec grammar and spelling, and how their teaching practice badly needs adaptation to the so-called "bilingual and intercultural education".

The Mazatec area stands in the very centre of the Papaloapam Basin (see Figure 4). It enjoys a smooth transition between the plain (i.e. the Jalapa de Diaz) and the mountains to the west of the Miguel Alemán Dam. This strategic position, from the ecological standpoint, unfortunately turned out to be fatal to the Mazatec Lowland, which was partly drowned by the Miguel Alemán Dam in the mid-fifties, as we already mentioned.

Figure 4. The Papaloapam Basin
Source : Thomas W. Killion & Javier Urcid, 2001:3-25

The Rio Tonto, a powerful river connected to the Papaloapam mainstream, was to be controlled for the benefit of the beverage (beer) and hydroelectric industries. Sugar cane also demands much water for crops. Patterns of cross-regional integration which had quietly evolved since Olmec times (Killion & Urcid, 2001) were disrupted under the positivist pressure of "progress", in one of the few regions where native peasants (Mazatec and Chinantec mostly) worked their own *microfundio*. Maps in Figures 4.1 to 4.3 identify the Mazatec municipalities from Baja to Alta Mazateca (Lowlands and Highlands), providing an explicit view of the landscape: to the east, a plain half-drowned by the dam (the Lowlands), to the west, a high Sierra complex divided in the south by a Canyon – the Cuicatlán Canyon – with the Mazatec small town of Chiquihuitlán, famous for Jamieson's grammar and dictionary, published by the SIL in the late eighties and mid-nineties (Jamieson, 1988, 1996).

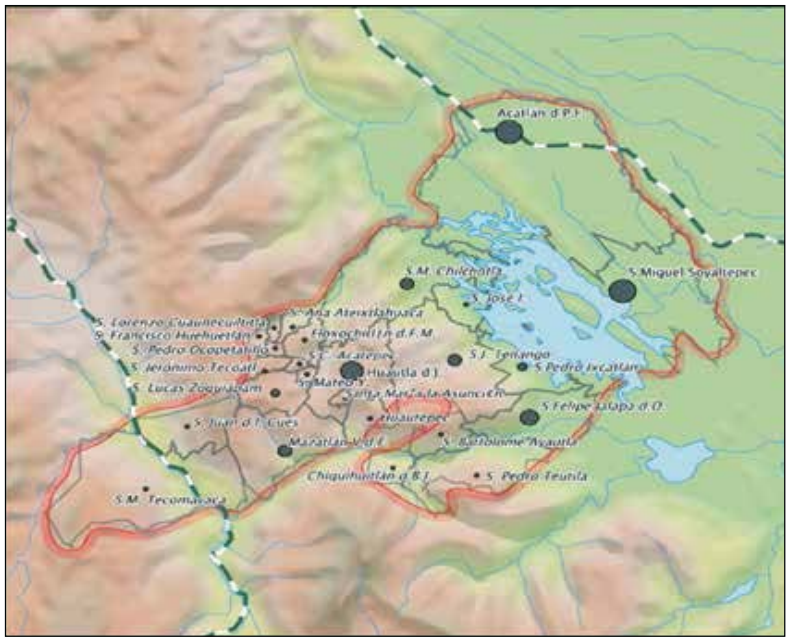

Fig. 4.1 provides an orographic and hydrographic map of the Mazateca area. Fig. 4.2 show the distribution of *Municipios* over the Mazatec area – the shape of the spots on Maps 4.1 and 4.2 hint at the demographic size of each town –, whereas Fig. 4.3 points out the *municipios* visited for the ALMaz since 2010 (in this map, only localities already surveyed by Paul Livingston Kirk are mentioned, showing how the ALMaz network is intended to be much larger than in previous dialectological studies, such as Kirk 1966, Gudschinsky 1958, 1959a).

Figure 4.1. An orographic and hydrographic map of the Mazateca area

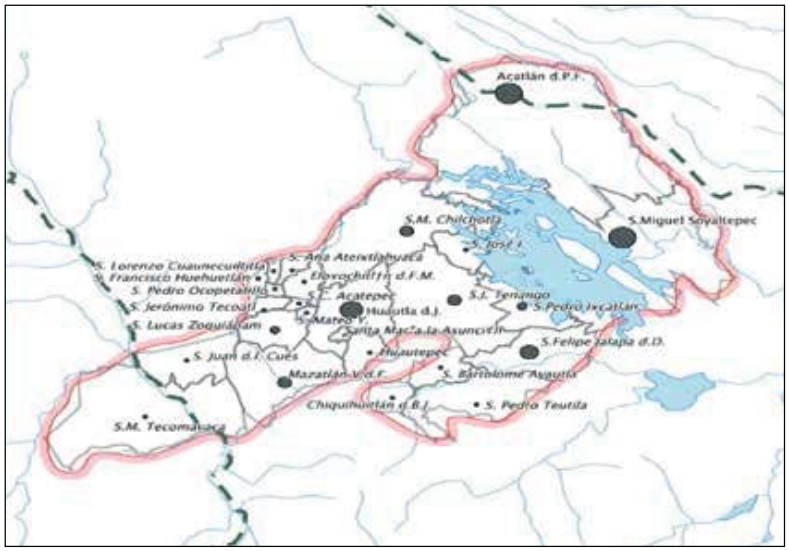

Figure 4.2. Map of municipalities, Mazateca area

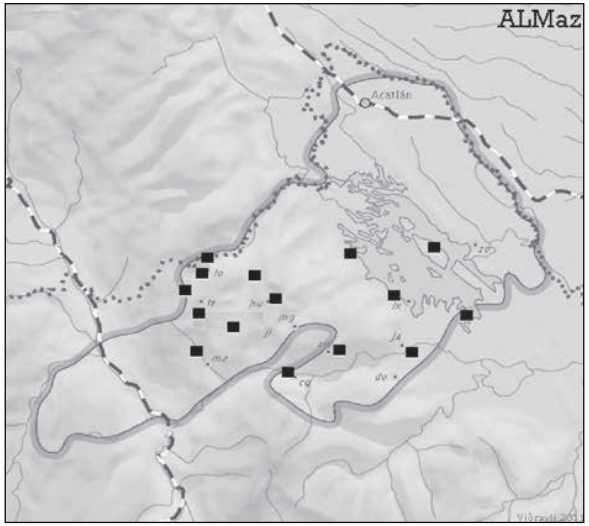

Figure 4.3. Localities surveyed in 2010–12 by the ALMaz staff doing fieldwork (Jean Léo Léonard, Antonia Colazo-Simon, Fabio Pettirino)

Components of the Mazatec OSW

At this point, let us make clear how these spots on the map cluster into significant sub-areas. Behind the dam stands San Miguel Soyaltepec, a very important centre from ancient times, which was probably connected through the plains to the coastal zone of the Papaloapam Basin. The size of the spots in Figs. 4.1 and 4.2 giving a hint at demographic weight, and we can state that it is still the biggest urban centre in the Mazatec lands. The town of Acatlán, at the north of Soyaltepec, is more Spanish speaking than Soyaltepec. Inhabitants of the archipelago inside the artificial lake – within the huge pool created by the dam – use the same speech variety as in San Miguel Soyaltepec, as do the new settlements, such as Nuevo Pescadito de Abajo Segundo, in the South. A dialect network probably as intricate as that of the North-West Highlands (around San Jerónimo Tecoatl) probably existed before the flooding of the *microfundio* agrarian society of the Lowlands. Most of these dialects merged into mixed dialects, apparently under the strong influence of the Soyaltepec *koinè* (we use this term as "local speech standard", i.e. pointing at an oral, more than at a written *koinè*, though today a Soyaltepec written *koinè* does exist, strongly supported by local poets and school teachers). We'll call this first segment of the Mazatec world "SM LL" (San Miguel Soyaltepec LowLands). This label entails therefore a strong urban centre, with a strong intercourse and mingling of local dialects, in a region whose agrarian structure was , to put it straightforwardly, drowned by a pharaonic dam project sixty years ago. The consequences of this dramatic redistribution of agrarian resources and property, and of the displacement of over 22,000 peasants, are still to be seen. Linguistically, this event partially enhanced acculturation and assimilation to Spanish under the influence of urban centres such as SM Soyaltepec, but above all, Temascal, Acatlán, and Tuxtepec.

The second area, from the Lowlands to the Highlands, covers the Western shores of Lake Miguel Alemán, as a stripe, from S. M. Chilchotla and San José Independencia to San Pedro Ixcatlán, in a continuous plain on which stands the important urban centre of Jalapa de Diaz. This Lowland region contains a whole range of small urban centres, dominated by sugar-cane agriculture and herding (the agrarian couple *caña y ganado*). Though we should consider Jalapa de Diaz as a sub-area of its own, because of its size and its links with other regions, such as the Highlands

(Huautla) and the so- called *Cañada* or Canyon (Chiquihuitlán and beyond), we may lump both sub-areas together as the Western Plain.

The Highlands qualify as the third main area, after the subdivisions of the Lowlands into the SM LL and the Western Plain. In turn, it divides into two sub-areas: central, with *huautla*, and the Western Highlands – a dense network of small urban centres such as San Lucas, San Jerónimo Tecoatl, San Lorenzo, San Francisco Huhuetlán, San Pedro.

We'll call the fourth complex "the Cañada Connection", where the most conspicuous urban centre is Mazatlán de Flores, on the periphery of the Canyon, and Chiquihuitlán. This is a region of intense language contacts: from Chiquihuitlán downhill through the Canyon, Cuicateco, a Mixtecan language is spoken. Today, the zone seems to have fallen into the hands of the *Narcos*, and taking the road to Chiquihuitlán is no longer as easy a trip from Jalapa de Diaz as the ALMaz staff experienced in February 2011. The dialect of spots such as Santa Maria Tecomavaca, on the Western plateau, has still not been documented, though it is not so far from neighbouring centres such as Mazatlán or Teotitlán del Camino. It forms a sub-area on its own in the Canyon region, because of the low rate of Mazatec speakers, as compared to the central area of the Mazatec world, and because of its location on the plateau, with a tropism outward towards the Mazatec area (Teotitlán, Tehuacán, etc.).

3. Facts and figures from an Open Small World: the Mazatec OSW

3. 1. Vitality zones

Areas and sub-areas could even be defined by the sole criterion of the concentration of speakers, as in Fig. 5: H = High concentration of Mazatec speakers (over 75 %), mh = mid-high value, i.e. 50% of the population speaking Mazatec, ml = mid-low density of speakers, i.e. 25%, L = low density, i.e. 0-25%, in territories considered to be traditionally Mazatec. At first glance we can see that the core of the Mazatec OSW still uses the language intensively (H index), whereas the periphery does not (L on the Eastern shore of the dam and in the Canyon). Two pockets have medium scores: *ml* at San Juan de los Cúes and *mh* at Chiquihuitlán – though the ALMaz team, visiting San Juan de los Cúes in May 2012, could not find any speakers in urban surroundings, and was told that only a fringe of

Mazatec households comprised of newcomers from Mazatlán resided in rural areas at the borders of both municipalities.

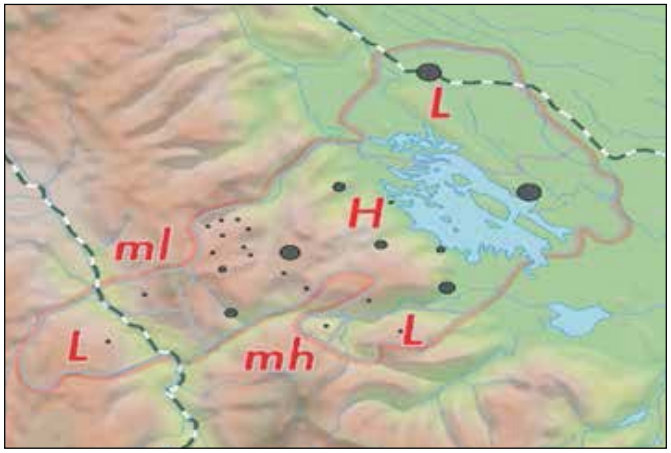

Figure 5. Levels of use of Mazatec as mother tongue:
High, Low, mid-high, mid-low (data from the 1999 and 2000 Census)

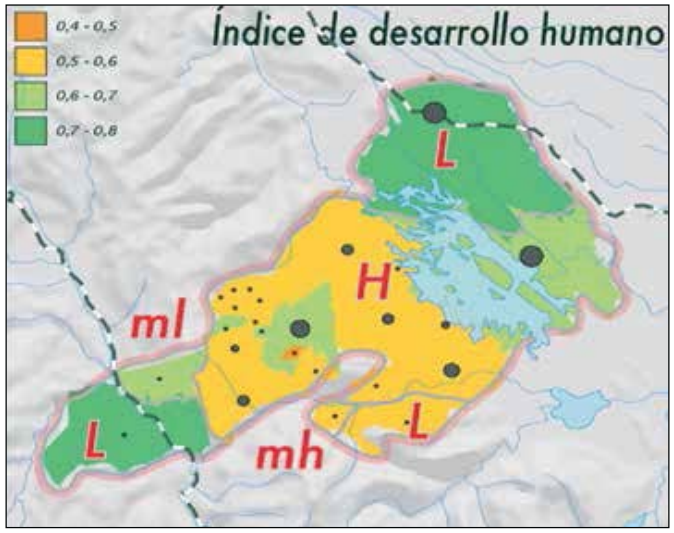

Figure 6. Rate of human development in the Mazatec area
(data from the 1999 and 2000 Census)

In Fig. 6 we see first an illustration of the following principle: the more Mazatec is spoken in an area, the poorer the area is. The rate of human development, a major variable in socioeconomic statistics, correlates both low standard of living and the vitality of Mazatec. Areas with an L index on the map, such as the peripheries of Acatlán and Santa Maria Tecomavaca, which stand alongside a railroad (thus, on an axial logistic line, as railroads in Mexico only carry goods, and not people), make up a "wider circle" of acculturation, where Mazatec has no longer – or never had – a strong position in local society.

Secondly, and to be expected, we see that important urban centres such as Acatlán, San Miguel Soyaltepec and Huautla have a better standard of living than rural areas. Positive welfare of the people around the dam (over the immersed peasant lands, the former *microfundio* region) is concentrated on the Eastern shore and to such new settlements as Nuevo Pescadito de Abajo Segundo. But it does not reach the Plain and the western shore of the artificial lake. This hints at the impact of government subsidies and infrastructures – mostly as a compensation for the drowning of the former peasant society (McMahon David, 1971).

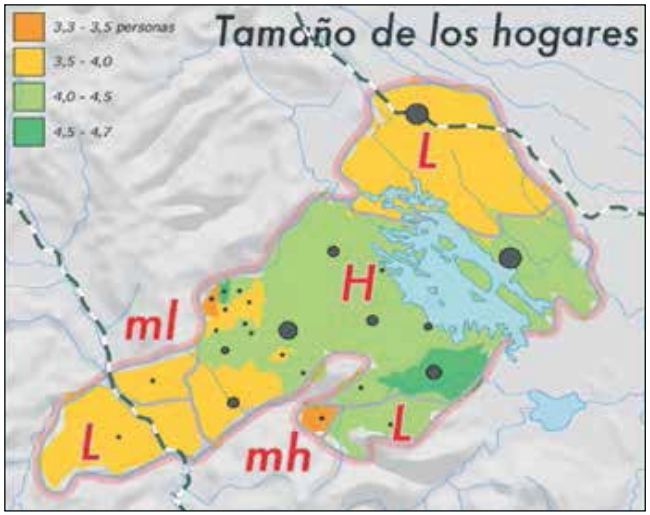

Figure 7. Size of households in the Mazatec area (data from the 1999 and 2000 Census)

Fig. 7, however, (Size of households in the Mazatec area) provides more details: Jalapa homes seem more crowded than those in other urban centres, except in San Lorenzo. But this might be due to the attraction of this important town located in the Plain, not far from the big mestizo city of Tuxtepec. In both spots (San Lorenzo and Jalapa), apparent overcrowding might not really be a telling clue about poverty: it might hint at swift development or growth. Otherwise, areas of crowding in homes correlate with a low standard of living, as seen before.

3. 2. Demographic patterns: generational layers in the Mazatec OSW

Fig. 8 shows the distribution of young populations, from 15 to 29 years of age. This is the most active and productive part of the population, and the most educated. These figures confirm the demographic and economic growth of Jalapa de Diaz and of the eastern shore of the Miguel Alemán Dam. It clearly points to trends towards demographic depression of the younger generation in the Northwestern Highlands (Tecoatl, Santa Ana, Huehuetlán) and, in contrast, growth of a few central towns near Huautla, such as San Lucas and Huautepec.

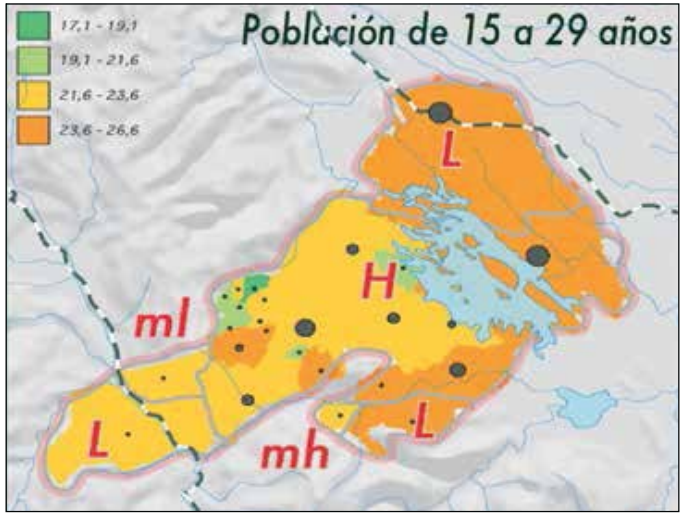

Figure 8. Density of young people in the Mazatec area
(data from the 1999 and 2000 Census)

Fig. 9 hints at a very diverse population group: a middle age population, who may be residents clinging to their homes since childhood, but who may also be returning residents who emigrated in their youth, and settled back home later in their lives, after a few years or decades of economic exile. We know that this is exactly the case in the North-western Highlands cluster we just mentioned, as we see in Fig. 9.

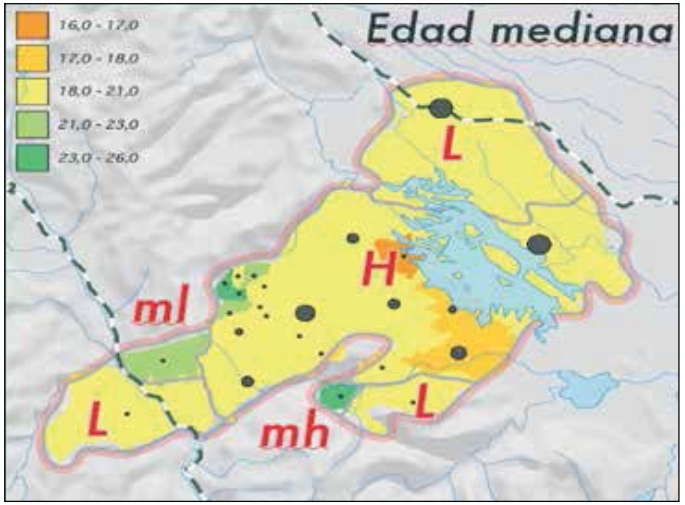

Figure 9. Density of middle-aged people in the Mazatec area (data from the 1999 and 2000 Census)

The same trend would explain the density of senior workers in Chiquihuitlán, back from migration elsewhere. Fig. 10, which shows the rate of retired senior residents, confirms previous patterns: on the one hand, they correlate with middle- age/senior density in two sub-areas (the NW Alta and Chiquihuitlán). On the other hand, the map shows that this population is far scarcer in the Lowlands than in the rest of the Mazatec world, especially in Jalapa and Soyaltepec (the South Eastern and Western Plain). Only in the Central Highlands, around Huautla, does the figure get more balanced. Of course, this does not mean that retired people tend to flee towns like Soyaltepec or Jalapa, but that they number less, comparatively, than younger generations.

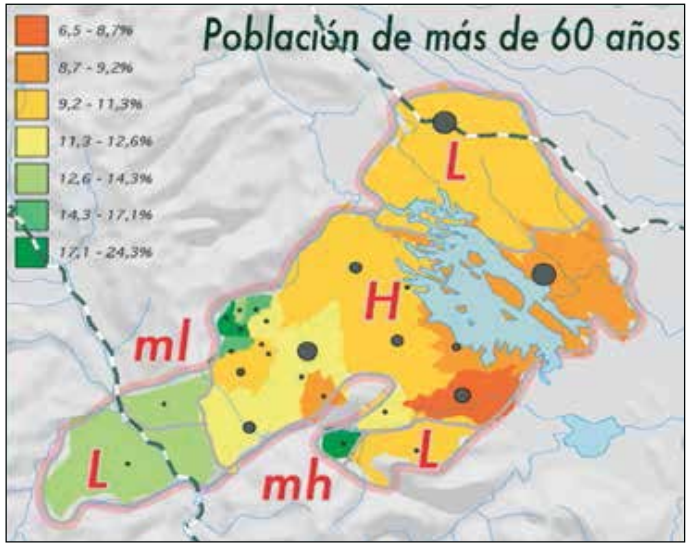

Figure 10. Density of seniors in the Mazatec area (data from the 1999 and 2000 Census)

This trend can therefore be interpreted as a confirmation of patterns already observed in previous maps: these two Lowland centres are economically and demographically more dynamic and active than other centers anywhere else in the Mazatec world. An interesting asymmetry appears between east and west in relation to the mean value (in yellow): less elders, proportionally, in the East (San José Tenango, Santa Maria Chilchotla) *versus* more elders in the West (San Juan de los Cúes and Santa Maria Tecomavaca[2]). This allows revisiting our previous statement about the patterns of these two villages at the end of the Canyon: their relative higher standard of living seems more precarious and ambiguous than that in the Eastern Lowlands. As a matter of fact, rural retired populations in Mexico

[2] The sociolinguistic situation of this buffer zone should be surveyed in detail, as it seems that fieldwork has never been carried out in those municipalities, except a recent ALMaz attempt, which led nowhere. Whole communities of Mazatec speakers settled over 120 years ago in the Southern part of the state of Puebla are not included in the official limits of the Mazatec speaking region, whereas San Juan de los Cúes and Santa Maria Tecomavaca, where very few speakers are to be seen nowadays, are included into the official map. Ethnolinguistic mapping often displays this kind of paradoxes.

range among the poorest and economically most vulnerable groups. They often depend on younger familiars (their children and grandchildren) for support, with an unavoidable negative impact on the standard of living of these offspring. A comparison of the demographic layers sketched in Fig. 8 to 10 confirms the dynamism of Jalapa and the aging of the Western Canyon.

3. 3. *Patterns of Material Anthropology in the Mazatec OSW*

Figure 11 belongs to the "classics" of Mexican statistics on indigenous populations: the distribution density of homes still relying on traditional heating practices, such as firewood and coal, instead of gas. Indeed, the fact of having *tortillas* prepared with gas or wood is by no means insignificant.

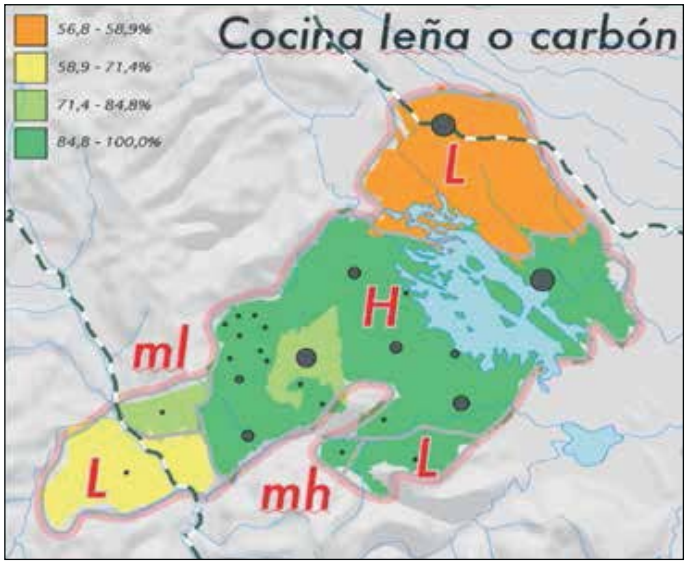

Figure 11. Use of wood or gas for cooking (source: *idem*)

Gas is used in towns and in middle-class homes, whereas cooking with wood or coal is typical of poor, rural homes. *Comedores* and restaurants use gas, but regular homes, especially in the peasant world, use firewood,

in a kitchen without a chimney, which stands as a separate room in the dwelling complex. This map highly correlates with previous statements and our typology of the sub-regions: a vast central or core area, with the highest density of linguistic vitality, uses the traditional heating method, whereas the Eastern and Western peripheries use gas devices, as in towns – for example Huautla, as a conspicuous town, does show a lower figure for wood-fuelling than the rest of the core area. But these figures also hint at an interesting nuance: as SM Soyaltepec, on the Eastern bank of the dam, and Jalapa de Diaz, on the Southern Plain, cluster with smaller towns of the core area, we can guess that their growth and development do not entail getting rid of the former way of life – neither at any true emancipation from general conditions of poverty. They are more active, with a higher young population, rather than actually well off. Once more, the vitality of the indigenous language correlates with poverty.

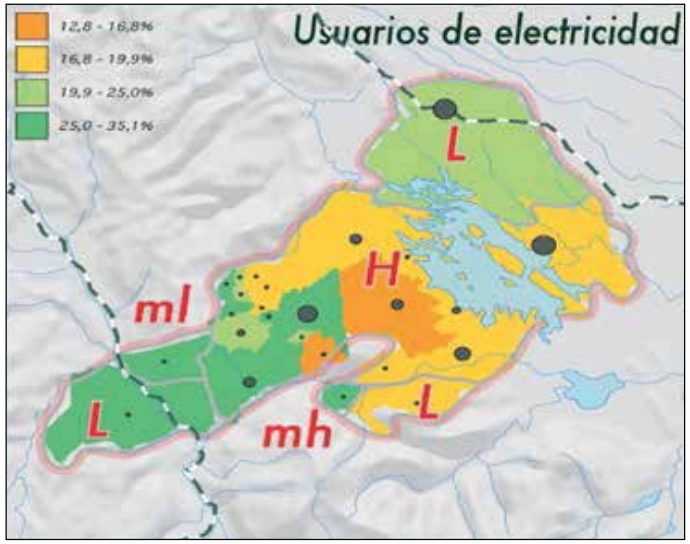

Figure 12. Households using electricity (source: *idem*)

Fig. 12 allows making even finer-grained statements about relative standards of living: what proportion of the population can actually afford electricity? The low figures may seem odd to Europeans. It does not, however,

mean that the rest of the population lives without – they may find a way to channel it to their homes without paying the bill, by wiring energy into the house from the street, but most people work hard to pay their bills, and can afford only low voltage.

Nevertheless, the map in Fig. 12 points to two extreme situations: Huautepec and San José Tenango, which could be called the satellites or economic subordinates of the Highland city of Huautla. Moreover, the low figures for Jalapa and Soyaltepec confirm our previous assertion: these centres may be demographically dynamic and economically rather attractive, nevertheless, they are not well off.

3. 4. The plight of literacy in the Mazatec OSW

These trends are confirmed by the data in Fig. 13, showing literacy rates in the Mazatec world. Santa Maria la Asunción, near Huautla, has the lowest figure (41,5-49,2 %). Coming next, with low rates of literacy are three sub-areas we already noticed: the Huautla neighbourhood and the North-western Highlands cluster.

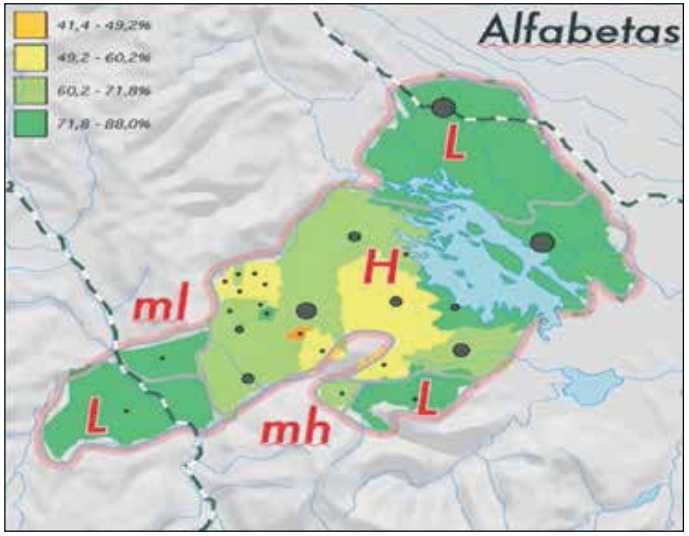

Figure 13. Literacy in the Mazatec area (source: *idem*)

The core area as a whole displays low or relatively low figures, whereas the Eastern Lowland complex (Acatlán and Soyaltepec) and the Western Canyon do not. The Western Plain appears to be the most contrasted sub-region, and Jalapa does not conform to previous expectations: its rate is lower than its southern, rural neighbour San Pedro Teotila, and matches Chiquihuitlán or the core area, around Huautla – but does not confirm any spectacular improvement in the Jalapa economy. Indeed, a higher literacy rate correlates with a lower vitality of Mazatec – another negative factor liable to strengthen assimilation in the future. But as the situation is worse in clusters of small towns at the periphery of big centres, where Mazatec is more and more integrated into the curriculum at school, one can hope some percolation of new forms of bilingual literacy (Mazatec & Spanish) will take place in more depressed areas in the future.

The problem is, however, that bilingual education has hardly taken a strong hold in schools, unable to overcome hindrances such as lack of human and didactic resources, and a total lack of effective training in the formal use of Mazatec among the so called "bilingual teachers". We experienced this situation from the inside, as the ALMaz project aims not only at making a linguistic atlas of Mazatec, but also at developing tools and methods for bilingual education in the Mazatec world. Though bilingual school masters may be efficient as Spanish teachers, teaching in Spanish, their formal knowledge of Mazatec as their mother tongue is, however extremely low. Unable to give any explanation to their pupils about how to spell words and articulate formal discourse on geography, history or natural sciences, they overwhelmingly chose to teach in Spanish.

We can therefore read the map in Fig. 13 from a very different point of view, suggesting that the yellow (and red) zones on the map should be interpreted as nuclei of both relative illiteracy and greater vitality of Mazatec. This strongly holds when one takes into account, for instance, the fact that in the urban centres of Huautla and San Jerónimo Tecoatl at the present time, Mazatec is losing ground, especially in younger generations, whereas it is still intensively spoken in the yellow and red zones on the map. Figures 8 and 13 make possible a comparison between literacy and demographic dynamism.

Both maps correlate sufficiently to suggest that bilingual education would be a good solution, as depressed areas for literacy have a dense

population of youngsters. This is especially true for Huautepec, for instance. The bilingual education model might be a solution indeed. The Eastern Lowland zone, though, suggests another model: a high rate of literacy in an area of low vitality of the native tongue, resulting in monolingualism and language shift at the expense of Mazatec. Experience shows us, though, that this model gives poorer results in terms of potential for individual development and the strengthening of a society able to evaluate alternative scenarios for local development and wider integration. Mazatec has been an asset ever since the 1950s for civil society to enhance socioeconomic and political criticism, to restrain government abuse and to strengthen local democracy and decision-making.

Figure 14 shows that the government has understood the relevance of the former model of education, investing intensively in bilingual schooling, in particular in the Western Plain, in Soyaltepec and in Huautla – three strategic areas for the development of bilingual education in the Mazatec world. It seems that, as usual, the government has been betting on percolation: insert much money inside the bottleneck of big and mid-size urban centres, with the ingenuous hope that resources will eventually percolate to the rural vicinity and smaller centres.

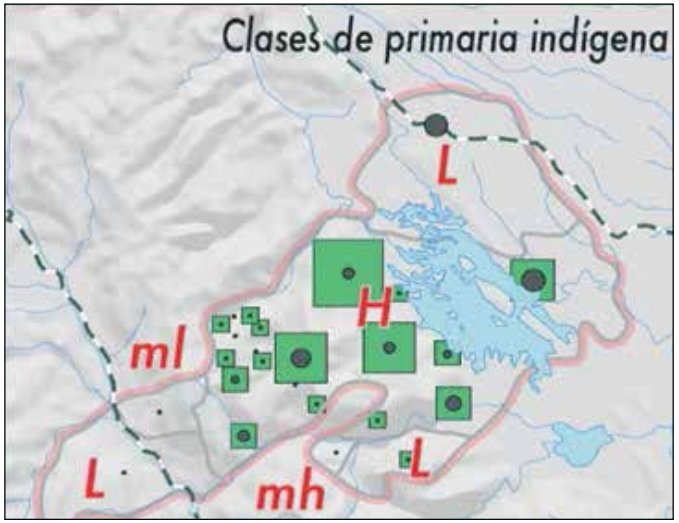

Figure 14. "Bilingual primary schools" in the Mazatec area (source: *idem*)

The under-investment in such regions as the Canyon and the North-western Highlands, and the lack of attention for the Acatlán region, however, shows that resources are indeed very limited, and the general policy toes the line of "save women and children first", while the ship is sinking. Figure 15 confirms this policy: the density of teachers attending the local population is much higher in the core area of the Mazatec world than in the peripheries – basically tenfold, comparing San José Tenango to Acatlán. We cannot accuse the Oaxacan government of not investing in teachers and facilities in the most strategic zone, or making a remarkable effort to improve the situation.

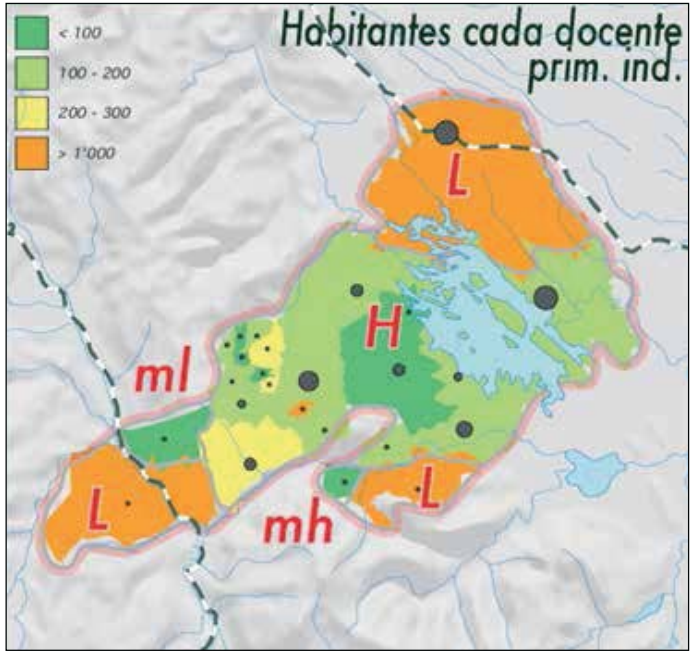

Figure 15. Rate of bilingual school teachers per inhabitant in the Mazatec area (source: *idem*)

Knowing how much wider the range of needs and prerequisites is to make this policy work, we can say that this endeavour will probably have a weak effect on the situation as a whole. As a matter of fact, a bilingual normal school or a pedagogical university would be needed, and the best place to locate it might be Jalapa de Diaz, because of its accessibility and demographic dynamism. Let's remember that a previous attempt was made during the year 2000 to build a university in Huautla, but the project failed, after an investment of huge amounts of money in a zone which was later on declared unfit for construction. We claim that, although one could hardly help thinking that the most adequate place for such an academic institution would be Huautla in the first place, the very heart of the Mazatec world, from an anthropological viewpoint, the same data from the census we handled in this paper was already available. A sociolinguistic reading of this information should rather have led to the same conclusion that was obvious to us: the most suitable place to build a university or a teacher training centre should have been Jalapa, instead of Huautla.

The lack of teachers in Mazatlán can probably be explained by political reasons, as this municipality pioneered a rebellion in the eighties, enhancing the role of autonomous education. But this can by no means be considered to be a legitimate reason for government not to invest more in this very important centre of the Canyon fringe. The same kind of reasoning might also explain the lack of teachers in San Antonio Eloxotitlan, in the Northwestern Highland sub-region: this centre is well known for its political criticism and restlessness. Schooling facilities exist in San Antonio, where there is a B.I.C. (*Bachillerato Integrado Comunitario*) and a primary school for the very poor – we were training school teachers for both institutions in 2011. We can say that this place does deserve to receive more resources: the staff of the few schools that exist are doing their best, and some of them are extremely proficient and hard-working teachers. But good will and skills are not enough to answer the tremendous need for better schooling opportunities. Most children and teachers speak Mazatec, but few of them, especially in the primary school; have any idea of how to use it at school, especially as a teaching language. Unfortunately, in Mexico, the so called "bilingual schools" are most often, *de facto*, monolingual schools, out of the lack of efficient practice and doctrine of what bilingual education should be and what it could do for the development

of society. We should bear this statement in mind, when looking at Figs. 14 and 15, which confirm the same trends, comparing pupils in bilingual schools with the ratio of teachers for the local population. The former figure makes even more obvious where the focus lays in basic bilingual education (*primaria indígena*), in primary schools: in the Western Plain, especially in the vertical stripe that runs across the municipalities of Santa Maria Chilchotla and San José Tenango, including San José Independencia. Jalapa comes second in the race. Though, on the basis of our own practice in bilingual school teachers' training, we cannot help being pessimistic: a one week summer school for a dozen bilingual teachers held in Jalapa de Diaz, in August 2010, revealed that no teacher was able to analyze conjugation forms of Mazatec, and all pedagogical materials which were written during the session were full of spelling mistakes. Teachers turned out to barely have any practice in how to take tone patterns into account when writing their mother tongue, and the SEP school books in Mazatec were laying on the floor, eaten by mice.

4. Conclusion

We endeavoured to approach the sociolinguistic situation of Mazatec, an Eastern Popolocan language, which stands as a multiplex sociolinguistic "Small World" or microcosm: a Leibnizian monad in itself. Our approach, though, was by no means monadic, as we always took into account the outer coordinates of this world (especially the network of major urban centres for migration, in Oaxaca, Puebla, the D.F. or abroad) and we took care to suggest two types of interpretation – quantitative and qualitative. We positively argued every time we could that figures should not be taken for granted. They tell more through the network of discrepancies and contradictions they uncover than by the mere statements or enumeration of variables and figures they present. The fact that the main writer of this paper (Jean Léo Léonard, coordinator of the ALMaz project) has been involved in workshops with school masters and the elicitation of dialectological data within the framework of the ALMaz adds much to the diagnosis and prognosis. Fieldwork anchors social science in more than mere facts and figures: it provides "counterfacts" and "counterfigures". It has a powerful causticity of criticism based on observations and the revisiting of illusions. We do not claim that the Mazatec situation is desperate, as

far as the future of the language and its twelve or twenty five dialects are concerned. We do claim, though, that Mazatec is actually to a certain extent an endangered language in the long term, and that one of the efficient ways to reverse this trend might have to do with investing more in knowledge and formal practice of the language among teachers and youngsters – not only at school.

A strong commitment to democracy, sociocultural and political pluralism, and a different policy for local economic development should also prevail, in a region where the system of complementarities between the Highlands and the Lowlands have been dramatically broken into pieces, by the building of the Miguel Alemán Dam. The fact that two municipalities at the crossroads in this former system of agrarian complementarities – San José Tenango, and Santa Maria Chilchotla – look so depressed today is by no means casual: geography still bleeds where the knife cut deep inside the thread of the Mazatec world. In other words, where the Mazatec and Chinantec civil society and the *microfundio* network of the Lowlands were drowned and scattered, many times in history, and more recently, as a result of the Miguel Alemán Dam, what was once broken never was fixed.

One can still try to convince himself or herself that language endangering has to do with fate, and is an unavoidable consequence of "progress" and globalization. The facts will always stand here to witness, however, for anyone sensitive to social criticism or aware of contradictions and discrepancies between ideology, illusions and lies, that language-endangering and vulnerability are the result of conflicting socioeconomic and political interests. As a matter of fact, language endangerment is one of the most obvious scenarios evidencing conflicting powers and power shift. In short, language shift results dramatically *from* or *into* power shift. The question is not only what linguists lose when a language disappears, but who won in the struggle, what did he/she win and with what consequences for the future of mankind? Languages are not living beings, nor are they only highly unique elaborate semiotic systems: they are tools for handling material and symbolic power. Shall we wait for most languages to disappear to finally realize that the king is naked, and that instead of a plurality of alternative worlds and individual and collective options, we are reduced to herds of globalized and submissive citizens?

Moreover, we want to point out that linguists have a responsibility in the plight of most endangered languages: for over five decades they have shown very small concern for languages that are now considered to be endangered or vulnerable, according to UNESCO criteria. The focus has been on the engineering and promotion of a set of international languages, such as English, Spanish, French, Russian, etc., while most of the descriptive work was handed to a proselyte organisation, the Summer Institute of Linguistics, whose overt goal was not to foster language planning or management on behalf of indigenous communities, but rather to translate religious corpora and to strengthen acculturation, according to the integrationist doctrine. How could linguists not realize that they were creating a void of power, when mankind and linguistic communities such as Popolocan speakers, or others, were facing a power shift? As far as Mazatec or Popoloca are concerned, the S.I.L. has done outstanding descriptive work. We owe most of what we know about these languages to linguists from the S.I.L., who were, however, missionaries, and who took part in the positivist plans of the INI and Mexican government (McMahon, 1971). It should be time for non-proselytizing linguists to at last take over the task, for the sake of the future of linguistics as well. It's time to do our job, and the speakers badly need us. Not only should our work be as good as the S.I.L.'s, but it should also be critical, cooperative, efficient and accurate. Facing the immense gap between former proselyte descriptive linguistics and what non-proselyte, regular scholars have been doing in the field, one is forcefully reminded of Ivan Illitch's lessons on counter-productivity: while we were so keen on commenting on cleft constructions or binding in English or Spanish, as though the fate of linguistics should depend upon the advancement of formal grammar, how aware have we been of our role not only as scholars, but also as critical citizens in a global world, where power shifts widely dispossess mankind of its resources, free will and good will?

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