The demographic memory of 20th century Mongolian history

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The "living memory" of historical events is directly determined by the demographic characteristics of a population. If a country faces rapid population increase, the influx of considerable new births impacts directly the perpetuation of its "living memory" since a growing majority of the population would be born after an historical event. Similarly, the witnesses of an event[1] will decease faster when the mean duration of life is short. Under the assumption linking population regeneration and memory loss, the speed of population regeneration determines the pace of memory loss of historical events. The memory loss is governed by the length of life and fertility[2]. The lower the mortality, all other things being equal, the slower a population regenerates; and the higher the fertility, the faster a population renews. Therefore, memory loss is faster with high population growth, and slower with high life expectancy. From this sole demographic point of view, some historical milestones might lose their significance and importance when the witnesses of an event decease and/or when their proportion in population declines with the entrance of new society members (new birth cohorts).

Privileging such an analytical perspective stresses the importance of demography in the understanding of the social and cultural regeneration of all societies. The renewal and perpetuation of any society have hence strong demographic foundations which influence many social and cultural aspects above and beyond the sole natural population's replacement through new births. This perspective invites to think demographically about non-demographic issues (Ryder 1965).

In this short paper, the sensitivity of the memory/memory loss to demographic parameters will first be assessed in order to understand how demographic characteristics influence the memory of historical events. Then, after this introductive theoretical part, we will see how Mongolian demographic characteristics contribute to the speed of its historical memory loss. The idea is to consider the temporal evolution of the numbers of witnesses of several historical events. The inspiration for this paper, its theoretical part and the terminology used are taken from a recent, simple, but brilliant paper presented by the French demographer Jacques Vüron at the 7th conference of the Demography Network of the Agence Universitaire de la Francophonie (Academic Agency of French-speaking countries).

Key words: *historical event, memory, population's replacement, demographic characteristics, social and cultural aspects*

1 The witnesses of an event are the persons alive when the event occurred.

2 In purpose, migration is not addressed here. By subtracting individuals who might have been witnesses of an historical event, emigration contributes to the memory loss. Immigration, by adding new individuals to a population, could play a contradictory role. If the immigrants come from a culturally proximate area, they might have lived the same historical events and reinforce so the memory. On the contrary, if they come from very distinct regions, the memory loss would likely increase.

1. Sensitivity of the memory to demographic parameters (mortality and fertility)

Definition of the memory and the memory loss functions

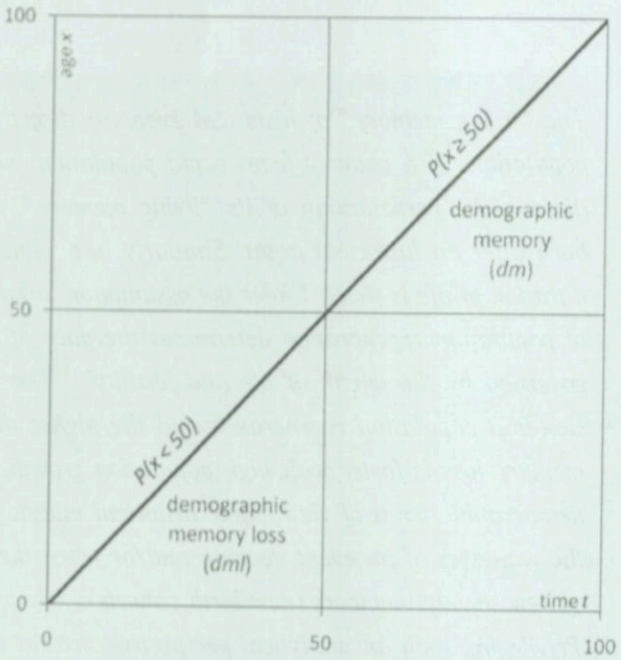
Figure 1 presents very schematically on Lexis's diagram the demographic memory and the demographic memory loss. The thick line represents the proportion of persons in a given population having lived the event 50 years after its occurrence. It plots the experience of a total birth cohort through time (*x*-axis) versus age (*y*-axis). At time 0, all the individuals in the population have lived the event. Then, the memory of this event fades as the demographic importance of the population who has lived the event decreases due to mortality and population regeneration. After *t* years, the demographic memory of an event is equal to the proportion in the population of the persons alive at time 0 and who survived through time *t*. Hence, at time t = 50, the demographic memory (*dm*) of an event will be measured by the proportion of the persons aged 50 and over in the total population (P_{tot}):

$$dm = \frac{P(x \geq 50)}{P_{tot}} \cdot 100 \qquad (1)$$

And the demographic memory loss (*dml*) is obtained by simply taking the complement of (1):

$$dml = \frac{P(x < 50)}{P_{tot}} \cdot 100 \qquad (2)$$

Figure 1: Lexis's diagram of demographic memory (dm) and demographic memory loss (dml) 50 years after the occurrence of a historical event at time t = 0.

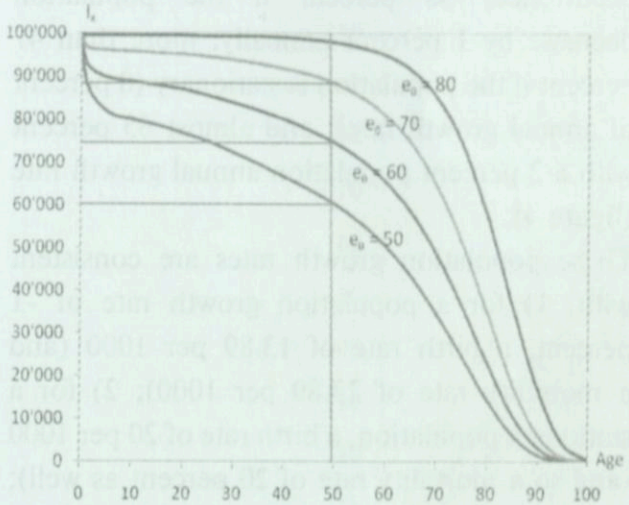


Mortality and demographic memory

Mortality is one of the two determinants (examined here) of the demographic memory of historical events. The level of mortality affects firstly the number of people having lived an event. For example, due to increasing life expectancy, the witnesses of Napoleon's disastrous invasion of Russia in 1812 century have deceased more rapidly than the ones of September eleventh's attacks in 2001.

In order to understand the effect of mortality on demographic memory, one can consider the case of a stationary population (a population closed to migration with unchanging age structure and mortality in which the annual number of births is equal to the number of deaths, producing a zero growth rate). The survival curve is hence equal to the population age structure. Figure 2 presents the survival curves for four different levels of mortality (life expectancy (e_0) of 50, 60, 70 and 80 years) taken from the Coale and Demeny life tables system (1983) (model West, female population).

Figure 2: Survival curves for different mortality levels (Coale & Demeny female West model).



The temporal evolution of the population who witnessed the event, or the evolution of the population born after the event gives a measure of the demographic memory. At time 0 (when the event occurred) the entire population lives the event. One year later, the witnesses are the individuals who have survived through age 1. As, in the case of a stationary population, the survival curve is equal to the population age structure, the persons who have lived the event are represented by the integral of the survival curve from age 1. Their relative importance in the total population is given by dividing this integral by the total integral:

$$\frac{\int_1^\omega s(x)dx}{\int_0^\omega s(x)dx} = \frac{T(1)}{T(0)}$$

The Coale and Demeny life tables give for each age x the value noted T(x) of the person-years lived at age x and over by an original cohort of 100'000. Therefore $T(0)$ represents the total of the person-years lived from birth to death. So, substituting in (3), we have:

$$\frac{\int_1^\omega s(x)dx}{\int_0^\omega s(x)dx} = \frac{T(1)}{T(0)} = \frac{4'907'721}{5'000'000} = 0.9815$$

With a West female life expectancy of 50 years and a $l(0)$ radix of 100'000, we have:

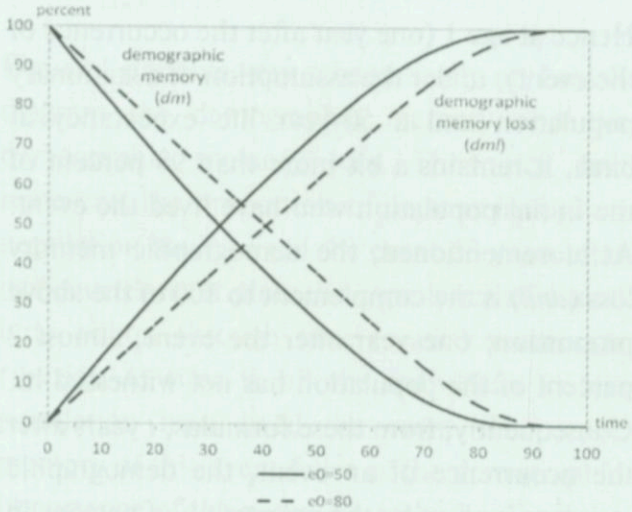
$$\frac{\int_1^\omega s(x)dx}{\int_0^\omega s(x)dx} = \frac{T(t)}{T(0)}$$

Hence at age 1 (one year after the occurrence of the event), under the assumption of a stationary population and a 50-year life expectancy at birth, it remains a bit more than 98 percent of the initial population who have lived the event. As aforementioned, the demographic memory loss (*dml*) is the complement to 100 of the above proportion; one year after the event, almost 2 percent of the population has not witnessed it. Consequently, from these formulas, t years after the occurrence of an event, the demographic memory is given by the proportion of persons in the total population who have lived this event and can be computed as:

$$\frac{\int_1^\omega s(x)dx}{\int_0^\omega s(x)dx} = \frac{T(t)}{T(0)}$$

The evolution of the demographic memory and memory loss are plotted on figure 3. With a life expectancy at birth of 50 years, it appears that, 30-35 years after the occurrence of an event, half of the population has not witnessed it. 60 years after the occurrence, only 15 percent of witnesses remain.

Figure 3: Evolution of the proportion of persons having witnessed an event and surviving t-years later and proportion of the persons born after the event (Coale & Demeny West female model, e_0 = 50 and 80).



If life expectancy increases and reaches 80 years (as in Western countries nowadays), the proportion of persons who has lived the event decreases at a reduced pace; the demographic memory loss is thus slower (figure 3). Hence, 50 years after the event, it remains 26 percent of witnesses when e_0 is 50 years, but 38 percent of witnesses remain if e_0 reaches 80 years. Or, in other words, 32 years after the event, it remains 50 percent of witnesses when e_0 reaches 50 years, but it takes 40 years to reach the same proportion with an e_0 of 80 years.

Fertility, mortality and demographic memory

Let's consider now the second other component of demographic dynamic – fertility – and its relation to demographic memory.

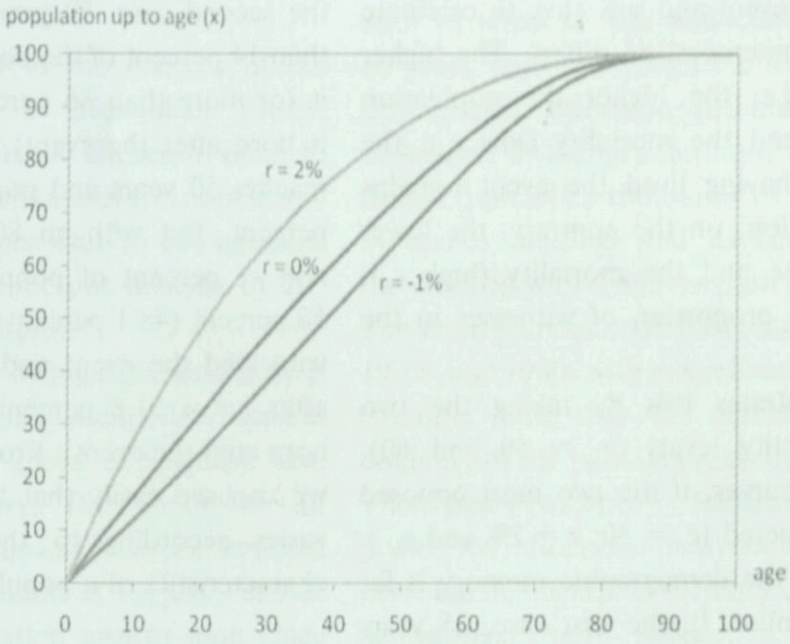
At a given mortality level, in a population experiencing high population growth rate, demographic memory loss is higher than in a stationary population, because the fertility rate is noticeably higher than mortality rate.

Hence, with a life expectancy of 50 years, the proportion born after the event – which is the measure adopted here for the demographic memory loss – reaches, 30 years after its occurrence, 38 percent if the population decrease by 1 percent annually; more than 47 percent if the population is stationary (0 percent of annual growth rate); and almost 65 percent with a 2 percent population annual growth rate (figure 4).

These population growth rates are consistent with, 1) for a population growth rate of -1 percent, a birth rate of 13.89 per 1000 (and a mortality rate of 23.89 per 1000); 2) for a stationary population, a birth rate of 20 per 1000 (and so a mortality rate of 20 percent as well); and 3) for a 2 percent population growth rate, a birth rate of 36.10 per 1000 (and a mortality rate of 16.10 per 1000).[1]

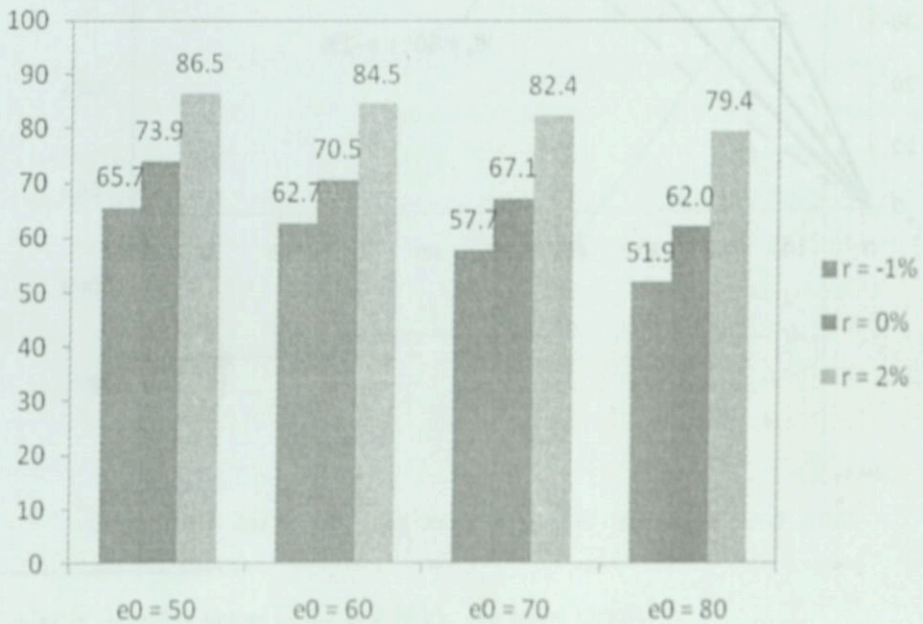
1 According to Coale and Demeny West female models.

Figure 4: Proportion of the population born after the event according to different population growth rates (Coale & Demeny West model, female $e_0 = 50$).



Until now, we have examined the effect of both mortality and fertility, but separately. The combination of these two parameters gives however a more reliable and dynamic understanding of the demographic memory's process. The joint effect of fertility (or population growth rate) and mortality is here treated through the example of the fiftieth celebration of an event. Figure 5 plots the combined effect of mortality and fertility on the demographic memory loss. The proportion of the population born after the occurrence of an event and still alive during the fiftieth celebration of the event is represented according to four levels of life expectancy at birth (e_0) and three population growth rates. The demographic memory of the event, 50 years after its occurrence, is simply given by taking the complement of the values shown on Figure 5.

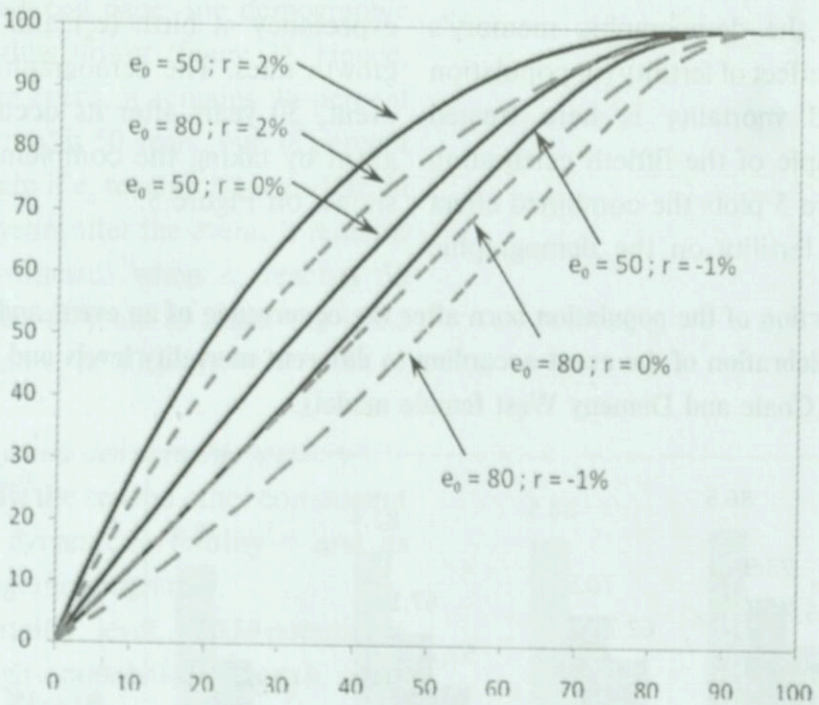
Figure 5: Proportion of the population born after the occurrence of an event and still alive at the 50th celebration of the event according to different mortality levels and population growth rates (Coale and Demeny West female model).



It is clear that according to the mortality and fertility patterns, the proportion of the people born after the event and still alive to celebrate its fiftieth commemoration differs. The higher the fertility (i.e. the higher the population growth rate) and the mortality (low e_0), the lesser people having lived the event remains in the population; on the contrary, the lower the growth rate and the mortality (high e_0), the higher the proportion of witnesses in the population.

Figure 6 illustrates this by taking the two extreme mortality levels (e_0 = 50 and 80). Among these curves, if the two most opposed ones are considered (e_0 = 50; r = 2% and e_0 = 80; r = -1%), the demographic memory is far from being similar. In the first case, 25 years after the event, 57 percent of the population is born after it, against less than 23 percent in the second case. 50 years after the event, less than 14 percent of the population has witnessed it (or more than 86 percent of the population is born after the event), when life expectancy reaches 50 years and population growth rate 2 percent. But with an 80-year life expectancy and -1 percent of population growth, almost 50 percent (48.1 percent) of the population has witnessed the event and is still alive 50 years after it (or 51.8 percent of the population is born after the event). From these two scenarios, we can see easily that the memory of events varies according to the basic demographic characteristics of a population.

Figure 6: Proportion of the population born after the occurrence of an event according to two mortality levels (e_0 = 50 and 80) and different population growth rates (Coale and Demeny West female model).



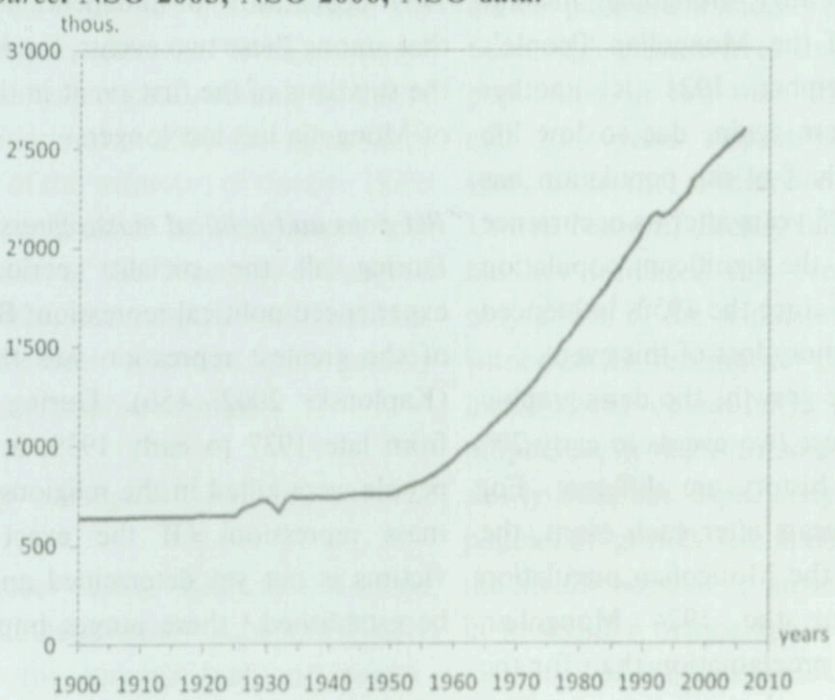
2. Demographic memory of 20th century Mongolian history

The paper now turns to the analysis of the demographic memory of Mongolian history. Several historical events are chosen in order to assess the temporal evolution of the numbers of witnesses of these events. Due to demographic data availability, we limit this analysis to 20th century Mongolian history.

During the 20th century Mongolian population is characterized by different phases of development which influenced the speed of memory loss. Over the last century, the population of Mongolia has almost quadrupled and counted over 2.3 million inhabitants at the 2000 census (figure 7). This population growth took place during two distinct phases. During the first phase, from the beginning until the middle of the 20th century, the population underwent very low growth. It almost stagnated. During this period, the low country's economic and social development, the epidemiological context, but also the political and religious repressions of the 1930s contributed to this very low increase.

Since the mid-20th century, Mongolian population experienced important changes both in terms of size and composition. Over 50 years, passing through the first stage of the demographic transition (decline of mortality with stable unchanged fertility),[2] the population tripled from 845.5 thousands in 1956 to 2373.5 thousands in 2000 and its age composition transformed with a rejuvenation of its structure. The main increase took place during the 1960s, 1970s, and 1980s with mean annual growth rates attaining more than 2.5 percent, implying a doubling of the population in around 25 years. These past demographic features of Mongolian population influence directly the issue of concern here: the demographic memory or memory loss of historical events. Indeed, in regard of both past fertility and mortality trends, the speed of memory loss has been changing. With the high population growth rates between the 1960s and 1980s, many new cohorts have been inflating the population, implying a faster memory loss during these years.

Figure 7: Mongolian population's evolution in 20th century (thousand inhabitants).
Source: **NSO 2003; NSO 2006; NSO data.**



2 The gains in mortality began in the late 1940s, see Riley (2005)

The declaration of independence of Mongolia in 1911 and the proclamation of the Mongolian People's Republic in 1924.

With the fall of the Qing dynasty in 1911, Mongolia declares independence. Because life expectancy in Mongolia was short until the first part of the 20th century, the memory of the independence is short. In 1950 (39 years after), already 67 percent of the population is born after this event. Later, with the high population growth rates, the proportion of new birth cohorts minimized the "living memory" of Mongolian independence. Less than 70 years after, the "living memory" of the independence's declaration reached less than 5 percent of Mongolian population (table 1).

Table 1: Demographic memory loss of the independence's declaration of Mongolia in 1911 and the proclamation of the Mongolian People's Republic in 1924.

Year of census	Demographic memory loss (*dml*) of the declaration of independence of Mongolia in 1911		Demographic memory loss (*dml*) of the proclamation of the Mongolian People's Republic in 1924	
	Percent of population born after the event	Time elapsed from the occurrence of the event (in years)	Percent of population born after the event	Time elapsed from the occurrence of the event (in years)
1944	-	33	39.5	20
1950[b]	66.7	39	49.1	26
1956	74.3	45	58.0	32
1963	83.7	52	70.9	39
1969	89.4	58	79.4	45
1979	96.3	68	90.0	55
1989	99.1	78	96.0	65
2000	99.9	89	99.0	76

Note: [a] Since the 1944 census data are not presented by single year of age, but by unusual broad age groups (0-5, 6-7, 8-18, 19-20, 21-40, 41-45, and 46 and over), the computation of the proportion of the population born after the 1911 independence is not possible; [b] No census was conducted in 1950; the numbers are taken from civil registration system (Gantumur 1977).

Sources: Gantumur 1977; NSO 2003.

In the early 20th century Mongolian history, the proclamation of the Mongolian People's Republic in November 1924 is another important event. Here again, due to low life expectancy, almost half of the population has not lived this event 25 years after its occurrence (table 1). Moreover, the significant population increase taking place since the 1950s influenced the speed of the memory loss of this event.

Due to demographic growth, the demographic memory losses of these two events in early 20th century Mongolian history are different. For a same number of years after each event, the "living memory" in the Mongolian population decreased faster for the 1924 Mongolian People's Republic's proclamation than for the 1911 declaration of independence. It means that among these two events, the importance of the survivors of the first event in the population of Mongolia has last longer.

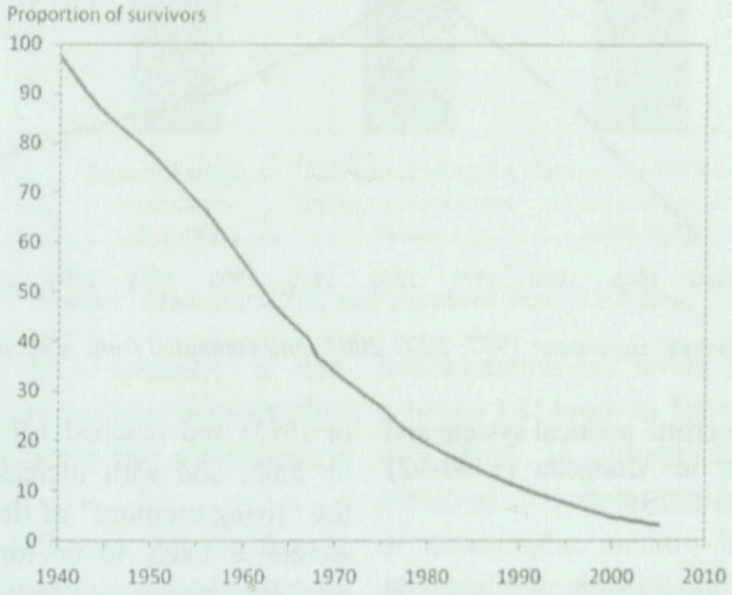
Religious and political mass repressions

During all the socialist period, Mongolia experienced political repression. But the period of the greatest repression was the late 1930s (Kaplonski 2002: 156). During 18 months, from late 1937 to early 1939, at least 22'000 people were killed in the religious and political mass repressions. If the exact number of victims is not yet determined and remains to be established,[1] these purges impacted greatly

1 Various estimations are given, ranging from 20'000 to more than 100'000 people killed during these years.

However, this traumatic and painful period in 20th century Mongolian history has been quite fast forgotten if one considers its demographic memory (figure 8). Indeed, since the late 1940s, investments previously made in health sector contributed massively to improve mean length of life. As in most countries experiencing health transition, the higher gains against death occurred first at young ages. Higher proportions of living children impacted directly Mongolia population growth by adding more numerous young people. As fertility declined only during the 1970s, Mongolian population grew massively between the 1950s and 1970s.

Figure 8: "Living memory" of the religious and political mass repression (1937-39). Sources: Gantumur 1977; NSO 2003; NSO data.

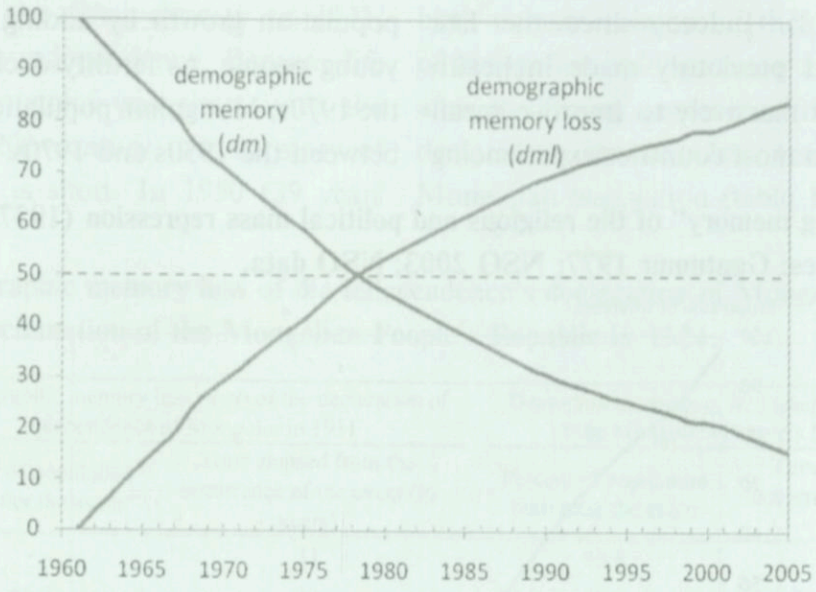


The "living memory" of the 1937-1939 religious and political repressions has been swept by the demographic increase. 22 years after, already half of the population has not witnessed the repressions; 30 years after, the "living memory" of these repressions is constituted only by a third of the population; and in 2000 (60 years after), only 5 percent of the witnesses of the late 1930s repressions are still alive. In comparison with the proclamation of the Mongolian People's Republic in 1924, the religious and political repressions have been forgotten more rapidly (in terms of demographic memory).

Recognition of Mongolia by international community

The 27th October 1961, Mongolia became member of the United Nations, being so officially recognized by the international community. Again, the memory of this date faded however very fast due to the demographic increase of the 1960s and 1970s (figure 9). Between 1963 and 1969 (census years), and between 1969 and 1979 (census years), the population grew at an annual pace of 2.8 and 2.9 percent respectively. Such high growth rates implied a doubling of population in less than 25 years (24.8 years and 23.9 years respectively). Therefore, 17 years after the entrance of Mongolia in the United Nations, already half of the population has not witnessed this event; 40 years after, only a fifth of the population of Mongolia has witnessed the recognition of its country by the international community. In the future, the proportion of the witnesses will decrease more slowly since life expectancy is on the rise and population growth rate is declining. Because of the highest population growth rates ever known in Mongolian demographic history, the "living memory" of the accession of Mongolia to the United Nations has faded at the highest pace.

Figure 9: Demographic memory of the accession of Mongolia as a member of the United Nations in 1961.



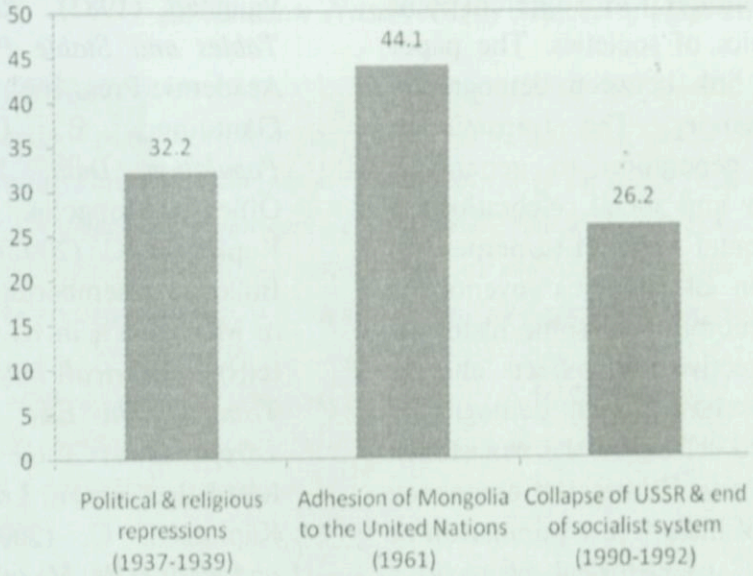
Sources: Gantumur 1977; NSO 2003; and computed from NSO data.

The transition to democratic political system and open-market economy in Mongolia (1990-92) and the collapse of the USSR

Under the aspiration for freedom of citizens in many countries of Eastern Europe, the socialist centralized political and economic systems crackled down at the end of the 1980s. On November 9, 1989, the Berlin wall fell, paving the way for the collapse of the USSR in 1991. Such democratic movements took place in Mongolia as well. Launched at the 19th Party Congress of the *Mongolia Ardyn Huv'sgalt Nam* (Mongolian People's Revolutionary Party) in 1986, Mongolia experiences also political openness (*il tod* – Mongolian glasnost) and restructuration (*öörchlön baiguulalt* – Mongolian perestroika) (Kaplonski 2003: 4). These movements culminated in a peaceful democratic revolution in 1990. The ratification of a new constitution in 1992 can be viewed as an ending process to the transition from a communist state to a multi-party capitalist democracy. In 2007, 15 years after the change of system, how many people have not witnessed this tremendous transition?

Because fertility dropped in the early 1990s (from 4.5 children per woman in 1990 to 2.5 in 1993) and reached 1.9 children per woman in 2005, and with increasing life expectancy, the "living memory" of the end of the socialist system is likely to be longer than any other previous events of 20th century Mongolian history. Indeed, apart from its economic, social, and cultural far reaching consequences, the recent Mongolian demographic characteristics are more favourable to the "living memory" of the 1990-1992 transition. Figure 10 plots for a same 15-year time interval after the event the demographic memory loss (the proportion of people born after the event) of the political and religious repressions of the late 1930s, the adhesion of Mongolia to the United Nations in 1961, and the end of the socialist system in 1990-92. Because of favourable demographic characteristics (reduced demographic increase, higher life expectancy), the "living memory" of the last event will last longer. 15 years after the event, 26 per cent of the population is born after the end of socialism; against 44 per cent for the same time interval in the case of the adhesion of Mongolia to the United Nations in 1961. Clearly, the pace of the demographic increase and the mean length of life play strongly on the "living memory" of any historical event.

Figure 10: Different speed of demographic memory loss: Proportion of people born during the 15-year interval after the event.

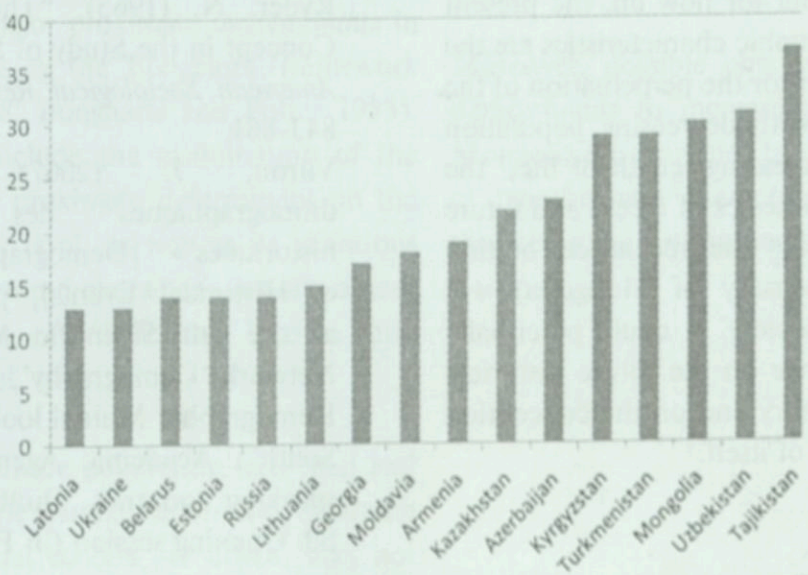


Sources: Gantumur 1977; and computed from NSO data.

Before concluding, let's consider a last example of how different national demographic characteristics can influence the remembrance of an historical event.

In 1991, the USSR collapsed. All the former Soviet countries underwent this shock. But as their population growth rates were different, the importance of the population born after the collapse of the USSR varies highly in 2005 (figure 11). Due to divergent past mortality and fertility trends and levels, the "living memory" is hence 2.85 lower in Tajikistan than in Latonia or Ukraine. In comparison with former Soviet countries, Mongolia presents rather high level of demographic memory loss in 2005, with 30 per cent of its population born after 1991. This means that the memory of this event – the collapse of the USSR – is forgotten faster in Tajikistan, Uzbekistan, or Mongolia, than in Latonia or Ukraine.

Figure 11: Proportion of the population born after the collapse of the USSR in the former Soviet countries and Mongolia in 2005.



Sources: For the former Soviet countries: Vũron 2007; for Mongolia, computed from NSO data.

Conclusion

The approach adopted in this paper has offered the opportunity to consider from a different point of view the dynamics of societies. The paper has addressed the link between demography and historical memory. The transmission of memory from generation to generation through oral history and social celebrations is certainly a fundamental medium to perpetuate the commemoration of historical events, as well as the commemoration of some historical events is highly selective and reflects choices of society, but, as we have shown, demography acts as a background setting to the persistence of memory and history. Hence, the pregnancy and consciousness of history in a population or the "living memory" of historical events in a population depend partly on its demographic characteristics. The joint pattern of mortality and fertility directly influences the number of surviving persons in a population who have lived an event. The lower the mortality and fertility, the higher the "living memory". On contrary, the higher the mortality and fertility, the faster a population renews, and the lower the "living memory". Doing so, we have envisaged non-demographic issues through the lenses of demography.

For Mongolia, its past demographic development has strongly influenced the share of the witnesses of historical events in the population. The very high population growth rates during the 1960s through the 1980s have swept the "living memory". But for now on, the present and coming demographic characteristics are the most favourable ever for the perpetuation of the "living memory". With decreasing population growth rate and increasing length of life,[3] the proportion of the witnesses of recent and future historical events (like the recent celebration of the 800th anniversary of Mongolia) will last longer in the society. It could potentially have greater influence on the future historical memory of the country and on the conception Mongolia will have of itself.

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3 According to NSO data, annual population growth rate and life expectancy at birth reached 1.3 per cent and 65.85 years in 2006.