A GERIATRIC FOUNTAIN OF YOUTH IN THE CAUCASUS OR SPURIOUS CENSUS DATA: SPOONING THROUGH THE YOGURT MYTH

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Abstract: In today’s era of globalization and marginalization we are sometimes struck by the seeming paradox of examples of exceptional development in still marginalized regions, or “counter-geographies”. One such example is the purported clustering of centenarians (those who have surpassed 100 years) in the Caucasus region of the former Soviet States. This paper explores purported centenarian clustering in this area and questions the plausibility of the pattern. Also, the idea of extraordinary longevity being tied a place is explored through the larger concepts of health geography and therapeutic places.

Key words: centenarians, therapeutic places, health geography, longevity, lifespan limits.

Introduction

Centenarians are a preeminent symbol of longevity (Ozaki et al 2007) and they tend to cluster in rural areas (Jauhiainen 2009; Blackstock et al 2006). Research has examined super-longevity to attempt to explain the relative role of environmental and innate processes (Ozaki et al 2007). Some research has revealed that inheritable traits predict longevity (Wilkinson et al 1998; Robine et al 2005; Fraceschi et al 2000; Perls et al 2000; Perls et al 2002). However, centenarians, whether for environmental or inherent reasons, are also more likely to avoid diseases that cause mortality earlier in life (Perls
Cultural mores, healthcare systems, diet, exercise, and genetic factors have all been associated with super longevity (Suzuki et al 2004; Ozaki et al 2007; Wilkinson et al 1998; Robine et al 2005). Other factors potentially related to longevity include rich and meaningful social relationships and a positive life outlook (Suzuki et al 2004).

The former Soviet States, and particularly the Caucasus region, has long claimed to be home to an astonishing number of centenarians (Myers 1964; Anderson et al 1989). National censuses have reported with much publicity the existence of “super centenarians” living beyond 150 years of age (Garson 1991). Are Russia and the Caucasian republics the ideal havens against the unassailable forces of aging? Or is this phenomena merely a myth whose superannuation has been prolonged by dubious data and commercial and nationalist interests? While reports of statistical irregularities in Soviet Russia serving the state interests are common, less research has explored specifically the geography of the Caucasus region as a potential explanation or political opportunity to justify longevity as a natural result of “healthy landscapes”.

**Healthy Landscapes**

The belief that a large number of centenarians, or super-centenarians, are clustered in the Caucasus is imbedded in notions of health geographies and therapeutic landscapes. Basic to this belief is that this place is connected with longevity. Whatever the determined cause of that longevity, whether real or imagined, the idea that a place imbues healthy characteristics is quintessentially geographical. For the purposes of this paper we will place this particular manifestation of longevity and place into the context of the geography of health, through two perspectives. The first is a manifestation of the long-standing construction of rural places as conducive to healing, or as being healthier than urban places. The second is as an example of a therapeutic place, an idea that emerged as part of the transformation in medical geography and the geography of health. The literature concerning both of these ideas will be briefly reviewed and discussed in relation to this particular manifestation.
The Rural-Urban Health Myths

Rural areas like the Caucasus as healing or healthy places is an idea that remains a powerful one, at least in developed countries (Gesler 1992, 736; Philo, Parr, and Burns 2003, 277; Watkins and Jacoby 2007, 851-2). Rural spaces are idealized as healthy ‘havens’, while urban places are deemed unhealthy ‘ghettos’ (Philo, Parr, and Burns 2003, 277). Rural people believe that they are healthier due to “living in a healthier cleaner environment, surrounded by open fields and away from the environmental problems of the city such as noise, pollution and over crowding” (Watkins and Jacoby 2007, 857). Visiting natural places may increase positive perception of people’s own health (Maas et al 2009), and possibly their actual health (de Vries et al 2003).

The Caucasus region is indeed rural and as such contains an abundance of these natural places, as well as other potential contributing factors such as fresh mountain air, and particular local foods like kefir, a yogurt-like milk product. While the connection between perception of health, or more broadly, the mind and health can certainly not be discounted in the face of statistically rigorous placebo effects, the actual health benefits of rural places may be derived solely through perception.

Numerous studies have found that rural places and rural populations are less healthy than their urban counterparts, largely due to limited access to services and poverty (Gould 1998; Pampalon, Martinez, and Hamel 2006; Philo, Parr, and Burns 2003; Watkins and Jacoby 2007). These studies include findings in Britain, Canada, the United States, and Sub-Saharan Africa. In addition to this dichotomous agreement across heterogeneous locations, almost all of these authors discussed an accompanying rural association with health in their region of study. Some of the potential causes of this persistent myth were covered in the previous paragraph, but some authors have assigned this idea to more than positive associations with the rural; it is also created through negative health associations with rural’s opposite: the urban.

Urban places when contrasted with rural places are viewed as unhealthy, crime-ridden, and filled with strangers who range from anonymous to openly hostile. This is certainly not an environment conducive to living past 100! However, as has been demonstrated numerous times, urban areas are by standard indicators healthier
environments, or at least contain healthier, longer-lived people. Knowing that, what is the cause of this seemingly false rural-urban dichotomy? Some authors have described the notion of an ‘urban penalty’, which arose in Europe, Russia, and other developing countries after the Industrial Revolution in the 19\textsuperscript{th} and beginning of the 20\textsuperscript{th} century (Harpham and Molyneux 2001; Gould 1998). At that time and in those places, cities were in fact much unhealthier than the countryside, manifested through higher mortality rates, especially among infants. These authors attribute this to overcrowding and poor sanitary conditions, resulting in high rates of death from communicable diseases such as cholera. As industrial countries developed economically and cleaned up their cities, they underwent an ‘epidemiological transition’, where disease deaths shifted from “a predominance of communicable disease to a predominance of non-communicable disease” (Harpham and Molyneux 2001, 115). It appears that this urban penalty is now being recreated in developing nations, due to a mix of old factors and new, such as HIV/AIDS.

Is the construction of the Caucasus as a healthful place merely a manifestation of the larger ideal of rural as healthy? Further, is this idea itself an outmoded continuation of truths that existed in Russia two centuries ago? Or does being surrounded by natural spaces actually affect one’s health, either directly or through mental reinforcement? While the answer to these questions may be unknowable, we would like to suggest one more contributor to the persistence of the countryside as a healthful place; the power of nostalgia. Russia, along with the remainder of the world, is increasingly urban. Outside of a perhaps incipient new ‘urban penalty’ arising from this migration, the persistence of this rural association with health could also be part of a collective longing for ways of life that are rapidly being extinguished.

\textit{Therapeutic Places}

The second way in which this idea of the Caucasus as a home to exceptionally long-lived people touches on the geographic literature is through the notion of therapeutic places. These are “settings or situations that encompass physical, psychological and social environments that are associated with healing” (Gastaldo, Andrews, and Khanlou 2004, 158, summarizing Gesler 1992). This was first explored by Wilbert Gesler in his
1992 paper “Therapeutic landscapes: medical issues in light of the new cultural geography”. This idea was the beginning of a transition or expansion of medical geography, depending on one’s viewpoint, that occurred in the 1990s (Kearns and Moon 2002, 607). Previously, medical geography had been largely concerned with epidemiology and diseases, and was a quantitative science (Rosenberg 1998). The new medical geography, or the geography of health and/or healing, attempted to “shift the subdiscipline from a concern with disease and disease services towards a focus on health and wellness” (Kearns and Moon 2002, 608). Following cultural geography traditions, geographies of health and healing attempted to take a more holistic view of the ways that place can tie into health. It also emphasized the importance of a place itself being a factor in health, not just as a medium through which epidemics move (Kearns and Moon 2002, 608).

Our current exploration of the Caucasus as a region of exceptional longevity relates to the concept of therapeutic landscapes at a specific point in its theoretical development. Fiona Smyth in her 2005 article, "Medical geography: therapeutic places, spaces and networks", reviews the literature on therapeutic places and identifies three general categories of published work that have arisen consecutively: specific therapeutic places, more generalized therapeutic spaces such as hospitals and health care settings, and finally therapeutic networks such as kinship groups (489-490). The current study fits best into the first or initial category, the exploration of ‘‘extraordinary’ places of healing and well-being …within which the ‘natural’ characteristics of the landscape … were associated with improving and maintaining health” (489). This is obviously related to the previously explored rural-urban health characterizations, but the key difference here is the importance of the specific place, such as its landscape or its waters, as well as the extraordinary nature of the location.

The remaining portion of this paper will examine the evidence of the Caucasus as a site of extraordinary longevity. It may be that there are compelling reasons that this particular rural place is more therapeutic than others, or perhaps it is merely a reflection of wider beliefs about place and health.
Longevity in the Caucasus

The Caucasus region has changed its meaning over the centuries, but is generally defined as the area surrounding the Caucasus Mountains. Its northern border stretches into Russia, and its southern edge extends into Armenia and Azerbaijan (Map 1). The Russian empire first began making military forays into this region in the mid-17th century. After extended conflict, much of it became part of the Russian empire in 1864 (Barrett 1995). Pushkin’s famous narrative poem “The Captive of the Caucasus” in 1821 inspired a wave of Russian fiction about the area (Hokanson 1994). These portrayed the region as exotic and possessing an incredible natural beauty (Scotto 1992). The area has remained a “powerful theme in Russian popular culture” ever since (Barrett 1998, 75).

The Caucasus, especially the coast of the Black Sea (present-day southern Russia and Georgia), had by the end of the 19th century become a Russian tourism destination because of its healthful climate and mineral waters. It was the location of numerous
sanatoriums, mineral spas, and health resorts (Burns 1998, Lywood 2009, Radvanyi and Muduyev 2007). During this period, mineral water and Kefir from the Caucasus were introduced as products in Russia and became popular enough to be available “on every street corner” (Barrett 1995, 75). It is evident that in Russian culture the Caucasus has long been associated with the natural, the rural, and health. This may help explain the acceptance and persistence of the idea of Caucasian super-centenarians.

The reports of super-normal occurrences of longevity in this region have not passed unnoticed by researchers. In a study on old age in Soviet-era Georgia, Lesnoff-Caravaglia (1987) found that the life expectancy of Georgian residents is significantly higher than elsewhere due to a relatively temperate climate, genetic proclivity to long life likely associated with a high prevalence of type O blood carriers, socio-economic and psycho-social factors such as a high level of social and psychological “well-being”, and socio-hygienic factors like a healthy diet, a favorable balance of work and rest and high physical activity (83-105). Other authors have attributed longevity in this region to unusual adaptive capacity to extreme climate (Tatarinova et al 2008). These explanations are both post factum, with the researchers theorizing in an attempt to explain an (apparently) existing phenomenon. This may explain one author attributing this longevity to temperate climate while the other credits extreme climate. It also raises the question, especially from Tatarinova’s article which focuses on climate, why these commonly existing conditions have not produced similar results elsewhere.

One of the potential contributors to longevity is diet, which has some particular ramifications for this region. The Caucasus is the purported origin of kefir, an ancient fermented milk dish similar to a more liquid yogurt. In one version of the myth kefir was directly given to the Caucasus people by Muhammad himself as a reward for their devotion (Chandan 2006, 330). Many claims concerning the healthy effects of this food have been made, including general benefits such as increased health and longevity, as well as its effective treatment for specific stomach and intestinal disorders (Chandan 2006). More recently these claims have been expanded to include its pro and anti-biotic capabilities, and anti-oxidant effects (Farnworth 2003). These claims have been subject to academic scrutiny; Farnsworth in 2003 summarized these and in brief found little support for its effects as a pro-biotic, but did note positive anti-tumor, anti-bacterial, and
anti-fungal effects, as well as associations with lower cholesterol (97-102). In addition, other studies have found some evidence that yogurt is an anti-oxidant and anti-mutagen (Liu et al 2005).

Kefir is a major part of the diet in Central and Eastern Europe and is listed as one of the regulated commodities in Russia (Farnworth 2003, 86). Like so many other traditional foods, it has undergone some serious changes in its production methods. No longer made by home-fermenting goat’s milk in a leather sack suspended from a doorway, it has been industrialized and production for Russia alone in 1999 was estimated at 600,000 tons (Just-food.com 2001). Despite this change in character, companies continue to use its origins and mythology in relations to health and longevity in order to push sales.

The marketing strategies of two separate companies use these concepts and are an example of the ideas about longevity and health that we have discussed in this paper. Otchakovskey, one of the four main kefir producers in Russia, uses as a slogan for all five of its kefir product lines “[Eat our products] and live one hundred years or more!” This is obvious effort to tie their version of this traditional Caucasus dish with longevity. Differently, the international dairy product company Danone, which is attempting to expand into the kefir market in this region, used this slogan to make its entry into the Russian market in 2000: “The taste you remember from your childhood!” This slogan uses childhood memories, or in a larger sense nostalgia, to sell its kefir. We previously discussed how the notions about rural places and nostalgia may be a part the construction of the Caucasus as a place of longevity. International corporations, seemingly always willing to turn sentiment to profit, have neatly exploited both of these ideas in order to sell their particular brand of yogurt-drink. We by no means wish to challenge the efficacy of Danone’s products, but there is an accumulation of data questioning the endless happy lifespan that these companies are selling.

**Natural Limits to Longevity**

In general, humans’ maximum age seems to be limited to around 120 years (Walford, 1983, Ruiz Torres and Beier 2005). Various studies have explored these
theoretical limits to life expectancy: Manton (1991) found that through case-fatality reduction, risk-factor intervention, and slowing of the aging rate, an upper-limit life expectancy of 95 to 100 years (with a ten year standard deviation) may be achieved. Adherence to a Mediterranean diet, taking mid-day naps, and avoiding smoking have also been associated with super-longevity (Tourlouki et al 2009). In addition, caloric restriction (Walford and Weindruch, 1988), and growth-process modulating factors (Ruiz-Tores and Beier 2005) have been theorized to extend lifespan. It therefore seems possible that some people from the region in question are living over 100 years on a regular basis (although the claims of 150 seem mythical) however, the numbers in which they have occurred continue to raise questions.

**Arguments against Extraordinary Longevity**

The reported evidence of longevity has been contested primarily on the basis of dubious data quality. Garson (1991) questions whether the Caucasus region is really an exception to the relatively fixed actual and theoretical longevity limits. The probability of dying between ages 60 and 65 (5qx) according to the 1897 Soviet census at 60 was approximately .16 for males and females, corresponding to fairly high Coale-Demeny West model life table levels of 15% for males and 11% for females. Yet at age 95 the probability of death within five years is 46% for males and 48% for females in the Soviet census. The West model displays values of 84% and 68% for the same age range, and incredible difference.1 At age 95, there are almost 77 times more males as expected in level 9 and 154 times more than expected in level 7, while the proportion of male centenarians in the census is 2,874 times greater than in a stable level 7 population (269).

Myers study (1964) of 1958-1959 Soviet life tables reports similarly apocryphal five-year life expectancies for those at advanced ages. Myers believes that “it does not seem possible” that the survival rate of a 90 year old Soviet woman is 41% when the

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1 Since the most favorable level of life expectancy in the Coale-Demeny West model is 25, levels above these numbers are extrapolated.
corresponding rate is only 23% for the 1950-51 Norwegian\textsuperscript{2} life tables, suggesting that it is very likely that the Soviet mortality rates at the older ages are understated.

Similarly, Anderson and Silver (1989) claim that “it strains credulity that mortality conditions of persons aged 55 and over in rural Tajikistan in 1958-9 were better than those of Swedish urban and rural populations combined in 1950-60.” (262) In a comparison of death rates in the Soviet Union in 1958-9 and 1984-5, Anderson finds that the rates become much higher, going from “absurdly good” to “more plausible”(248) almost certainly as a result of “reduction in error of the statistics.” (253)

Further indication of unreliable data bloating centenarian life expectancies comes from the 1897 Soviet death registration data in which the ratio of expected proportion of deaths to reported deaths for males increases by age and is 252:1 for age 100. This implausible number is even more dubious given the under-registration for deaths above age 50 lies between 17 and 24 percent for males and 11 to 18 percent for females, a pattern which would skew mortality on the conservative side.

According to Garson’s study of Soviet censuses, life expectancy decreased from 1897 to 1970. Yet it is widely accepted in the Soviet Union that life expectancy has more than doubled between 1897 and 1970 (272). The gap between life expectancies of the census based life table and the West model increases after age 80 in both the 1897 and 1970 censuses but the difference narrows in 1970 as compared to 1897 (274). This is consistent with age overstatement. Furthermore, the age-specific life expectancies for both sexes increase at each age interval between ages 100 and 115 in the 1959 and 1970 censuses and are lower at every age in 1970 than in 1959 (276). Garson contends that clearly this is not a credible trend (276).

Age-heaping is the clumping of age values on certain numbers, usually those ending in zeros and fives, is a good indicator for faulty or estimated data. The age-heaping ratio of reported 70 year olds to those aged 69 and 71 in Garson’s examination of the 1897 Soviet census was 7.16% for females and 10.22% for males. Coale and Kisker

\textsuperscript{2}Like Sweden, Norway has traditionally had one of the highest life expectancies and most complete and accurate census data in the world. Vital statistics are particularly well maintained as citizens of Norway are required to carry vital statistic information cards that are updated whenever a vital event occurs.
(1986) have posited that a high degree of age-heaping is invariably associated with a large proportion aged 95 and over and a great excess of persons reported at age 70 indicates that when ages are badly misreported, the number of persons at very advanced ages is highly exaggerated. Such age-heaping is exemplified in the 1950 US census which reported more black centenarians than white ones even though the black population made up less than 10% of the entire US population (369). Similarly, Anderson’s et al (1989) corroborates the age heaping theory in Central Azerbaijan and Tajikistan. Nearly half of all persons aged 63-92 in the 1959 census reported their age as a multiple of 5.

Conclusion: A Caucasus Fountain of Youth - Myth or Reality?

Perhaps the publicity and revenue generated by the Caucasus’ purported legion of centenarians would encourage old timers to favor prevarication over diminution of a myth that has brought attention to an otherwise depressed and internationally anonymous area. This could take the form of promotional capital garnered through advertisement campaigns associating products with hearty life spans. But why the age exaggeration started in the first place remains unknown. Certainly age-overstatement is known to occur among populations of less educated people - due to both the census workers' and demographers' failure to account for the phenomena and to a greater tendency for subjects to misunderstand census questions and to genuinely be ignorant of their real age. But this does not explain the proportionately greater incidence of overstatement in the former Soviet Union relative to other areas of comparable education levels.

Many consider Manton’s 100 year life expectancy limit to be a liberal estimate and Walford’s potential 120 year cutoff as visionary - certainly not ages expected to be achieved by populations in areas of such low living standards. The age distribution statistics of the supposed Soviet centenarians relative to the touchstone of western models of superior statistical fidelity with populations living under preferable health conditions is a cogent argument for dirty data. This argument is further corroborated by the apocryphal increase in mortality in the Soviet Union both at highly advanced ages relative to younger ages and over the past century as medical, nutritional and general quality of life
improvements have increased life expectancies for the elderly world-wide. Only improved data fidelity could seem to credibly yield such results.

How can it be that the oldest “authenticated centenarian” in the world was an French woman, Jeanne Calment who died at age 122 in 1997 (http://www.demogr.mpg.de/books/odense/6/09.htm), yet in the 1959 and 1970 Soviet censuses, the life expectancies for males and females actually increased from one age interval to the next between ages 100 and 115 (276). During the cold war period, the efforts of industries such as yogurt companies to promote their product and Soviet journalists to promote their racial superiority encouraged age exaggeration. We also argued that the idea of a rural place such as the Caucasus being healthy or therapeutic is common one, despite numerous rigorous studies to the contrary. Yet no contemporary pharmaceutical nor fresh mountain air can explain the statistical irregularities - and neither can the Russian tourism and yogurt lobby. Perhaps said lobbies were as effective recruiters of centenarian convert as jingoistic Soviet scribes’ celebration of national eugenics.
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