The decay of Western civilization: Double relaxed Darwinian Selection

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A B S T R A C T

This article briefly describes Lynn's view on what makes modern populations rise and fall. It then provides a demographic analysis of what happens to modern sub-fertile high-IQ Western populations when Internal Relaxation of Darwinian Selection (IRDS) combines with External Relaxation (ERDS, in the form of super-fertile low-IQ non-Western immigration) into Double Relaxation of Darwinian Selection (DRDS). The genotypic IQ decline will ruin the economic and social infrastructure needed for quality education, welfare, democracy and civilization. DRDS is currently unopposed politically, so existing fertility differentials may eventually lead to Western submission or civil resistance.

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1. Introduction

Science and civilization owe much to Richard Lynn for his decade-long attempts to identify major factors behind the rise and fall of modern populations. In *Race differences in intelligence: An evolutionary analysis* (2006) Lynn mapped geographic variations in intelligence, and explained related race differences by Cold Winters theory, according to which people from Africa migrated up North, and met still more harsh climatic challenges, so they had to develop new ways of preserving food, heat-efficient cloth and sheltering, complex traps, and later agricultural, industrial and urban ways of life. As they migrated further North, they became increasingly exposed to unforgiving Darwinian Selection for superior intelligence, health, and character.

In two other books, *IQ and the Wealth of Nations* (2002) and *IQ & global inequality* (2006) Lynn and Vanhanen proved the existence of a geographic gradient for intelligence by establishing average IQ estimates for all countries in the world with populations larger than 40,000, and showed that they rank themselves according to a North–South gradient correlating 0.82 with Gross National Product (GNP).

1.1. In Dysgenics: Genetic deterioration in modern populations (1996)

Lynn re-introduced the classic eugenic idea that modern societies erode if Darwinian Selection is relaxed. Western civilization began to decay when the once predominant preindustrial Darwinian natural selection process broke down in modern societies during the nineteenth and twentieth century. The implication is that modern populations deteriorate genetically in health, intelligence, and character to a point where their civilization is no longer sustainable. Lynn regrets that the forewarnings of the early eugenic whistleblowers were forgotten. He deserves much credit for bringing up again their important agenda in spite of a hostile academic and political climate.

1.2. In a sequel book eugenics: A reassessment

Lynn (2000) first reiterated the early objectives of classical eugenics, and then outlined a *New Eugenics* program, based more on recent advances in human biotechnology than on classical principles.

Lynn raises the most serious and morally challenging problem facing advanced populations: The noble, ethically motivated, preservation of the weak inevitably leads to self-destruction through a progressive reduction in the quality of the genetic material for superior intelligence, health, fertility and personality – traits essential for the rise and sustainability of advanced civilizations.

2. The anatomy of Western decay

The genetic decay may take one of two routes or work in tandem. I suggest the following terminology for this: An Internal Relaxation (or Reversal) of Darwinian Selection (IRDS), and an

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External Relaxation (or Reversal) of Darwinian Selection (ERDS). This study estimates the effects of both in terms of Double Relaxation (or reversal) of Darwinian Selection (DRDS).

2.1. IRDS

Natural selection previously worked through the elimination of the old and via social-class differentials in the number of children surviving to adulthood. The greater reproductive fitness of the upper and middle classes indicates the presence of positive natural selection for intelligence, as does negative selection in the lower classes with higher mortality, more infanticides and abortions, undernourishment associated lower fertility, bad health and higher mortality rate among illegitimate children, and strong social controls preventing marriage for the unfit, thereby typically reducing their procreation.

Lynn (1996, p. 18 ff) noted that natural selection due to high mortality broke down around year 1800, whereas low fertility of the less fit changed around 1850, thanks to improved hygiene and disease reduction. This reduced mortality in general – but more so for the poor. This first demographic transition was more or less complete towards the middle of the twentieth century. IRDS is reflected primarily in the low fertility among the intelligent and by a population profile biased towards the old. IRDS currently characterizes Europe and most other modern societies. The reason why the professional and middle classes reduced their fertility more than the working class is still debated, but more efficient use of contraception by the educated classes and rising educational aspiration of modern women might play a role. IRDS also works when selective pressures against elimination of harmful mutant genes are lifted. Lynn (1996, p. 31) averaged the results of several early studies, and found that intelligence had declined two points per generation.

A decline in genotypic intelligence can be estimated from phenotypic intelligence by multiplying the heritability for intelligence with the phenotypic decline. Using the calculated average heritability for intelligence of 0.82, Lynn (1996, p. 36) found that the adjusted genotypic decline of British IQs was 1.64 points per generation between 1920 and 1940, and 0.66 points per generation for the second half of the 20th century. Averaging declines over several studies covering a 90 year period, Lynn noted a phenotypic decline of 6.2, or 0.069 IQ point per year.

Denmark (DK) has a homogenous population of 5+ million citizens with negligible immigration for more than a thousand years, which makes it appear technically more like a tribe than a nation (Rasmussen, 2008). Today, the population is alarmingly sub-fertile and ageing, and excellent social and health care systems increasingly preserve the weak and old. Applying Lynn's British estimate, Danish phenotypic and genotypic IQ have declined 0.069×161 years and 0.056×161 years, or 11.11 and 9.11 IQ points, respectively, since 1850 due to IRDSD.

2.2. ERDS

IRDS recently combined with ERDS into *Double Relaxation (or Reversal) of Darwinian Selection* (DRDS) when super-fertile non-Western low-IQ immigrants began to replace ethnic Danes. The present study evaluates what this means for population dynamics and phenotypic pre-immigration IQ.

3. Method and analysis

StatistikBanken (SB: http://www.statistik-banken.dk/) publishes yearly statistics for: (1) Total DK Population, (2) Number of foreign citizens/citizens of foreign origin distributed by citizenship,

including children born abroad, (3) Number of naturalizations of the year including the children born before the naturalization. Children born to foreign citizens/citizens of foreign origin in DK are counted as Danish citizens and so are the children born to naturalized citizens after naturalization. SB also has a category for so-called immigrants and their descendants. It, finally, publishes total common birth and total common mortality rates each year.

The place-of-birth type of classification makes it increasingly more difficult to tell apart ethnic Danes from Danish citizens of foreign origin, and to reliably identify citizens and their children by Country-of-Origin (COO). This artificially raises the estimate of ethnic Danish fertility and lowers that for citizens of foreign origin, thus preventing an objective analysis of the effect of ERDS, which demands accurate information on citizens by COO.

The present study uses the official counts from SB, but in a way that partly circumvents the ethnic mix-up problem. A download January 1st 1979 gave the number of citizens and people of foreign origin with an address in DK and registered in the Central Person Register. Changes in status for 1979 were then checked January 1st 1980 and again each January 1st the following years until January 1st. 2010 with respect to (1) number of foreign citizens the year, (2) *estimated* number of children born to all foreign citizens in DK, (3) number of naturalized individuals, and (4) *estimated* number of children born to all naturalized individuals the year (based on the total birth rates provided by United Nations (UN: http://un.org/esa/) for each of 235 COO), and to the total common mortality rates for DK. The difference between the total population counts and the partly estimated number of citizens of foreign origin is the *estimated* residual number of ethnic Danes.

On January 1st 1980, the birth rates for the 235 COOs and the total common mortality rate in DK constituted the "interest rates" of increases for the status in January 1st 1979. Foreign citizens and naturalized citizens 1979 were then added. This was repeated the following year (1981) based on status per January 1st 1980, and for each ensuing year.

The analysis thus retro-corrected the official population counts 1979–2010 for each of the 235 COOs in a year-by-year fashion, by balancing the ratios of official UN birth rates (b) against the total common mortality rate for DK (d) for the year immediately before, and adding increases in the number of citizens of foreign origin (i_{fo}) and naturalized people (i_{np}) in accordance with the annuity model:

$$\text{Status count } 1979 \times (1 + (b - d)/1.000) + i_{fo} + i_{np}$$

The retro-estimated numbers for 1979–2010 were then used for projections of population growth 2011 to 2072, based on the following assumptions: (1) An average of ethnic Danish net emigration of 2.700 per year for the period of 1997–2007, (2) The UN-recommended birth rates for all developed countries of 9.6, reduced by 1/10 of a point from 2032 and again every seventh year forward (even though we had estimated it to be 9.3 at January 1st 2010 by a weighted average based on the UN-recommended foreign birth rates, (3) The SB registration of population count and the total common birth- and mortality rates in DK (where the total mortality rate was the arithmetic average of the rates 2007–2009), (4) The net number of new immigrants per year for each the 235 COOs (where the average was calculated from the numbers for the latest seven years).

When the annuity approach was used for projection, the last two parts of the formula ($i_{fo} + i_{np}$) were substituted by the number of net immigration per year, that is, 17.037.

National average IQs were taken from Lynn and Vanhanen (2006), weighted separately for each country each year according to its proportional numerical presence in DK, and then the retro-estimated IQs were categorized into 5 IQ bands. A large

meta-analysis of IQ scores of immigrants to the Netherlands is also available (te Nijenhuis, de Jong, Evers, & van der Flier, 2004).

4. Results

4.1. Measures 1979–2010

The upper curve in Fig. 1 shows the yearly summed average number of live children born per 1.000 per year for citizens of foreign origin 1979 to 2010, weighted by their relative representation among immigrants and their descendants.

The middle curve reflects the official uncorrected ethnically mixed count of total birth rates in DK. The bottom curve is the summed averages of retro-estimated number of live children born per 1.000 residual-estimated (by weighted averages) ethnic Danes. The ethnic Danish birth rate was 9.31 in 2009, and the ethnically mixed curve declined from 1995 onwards, reaching 11.4 in 2009. From about 1990, the shares of individual births by foreign origin have had a still leveraged weight of the former ethnic curve to a higher total common curve. The ethnic Danish birth rate reached a local minimum of 9.68 in 1983 and an even lower rate of 9.31

in 2009. Several alternative birth rate model simulations suggested that even the official UN-recommended birth rates used here do not reflect true rates.

Fig. 2 maps year-by-year changes in national average IQs when categorized into 5 IQ bands and weighted in accordance with their proportional numerical representation 1979–2010.

Mostly non-Western immigrants with average IQs above 105 (predominantly East Asians), and those with IQs between 86 and 89 (mostly Latin American, Caribbean, Central Asian and Southeast Asians) were few in 1979, and their relative proportions did not increase much up unto 2010. Neither did the mainly sub-Saharan representations with IQs below 70, nor the Middle Eastern, North African, and several Latin American and Caribbean representations with IQs between 80 and 85. In contrast, the group with IQs between 90 and 104 rose fourfold in number. This group includes immigrants with IQs 90–94 (mainly from the Balkans via Turkey to Central Asia or European inhabited Latin American Countries, plus immigrants with IQs between 95 and 99 (from European or European offshoot countries, except Israel), plus immigrants with IQs 100–104 (all, except Taiwan and Singapore, from countries situated in temperate or cold climatic zones). The less gifted share of immigration to DK with IQs below 90 was thus modest 1979–2010,
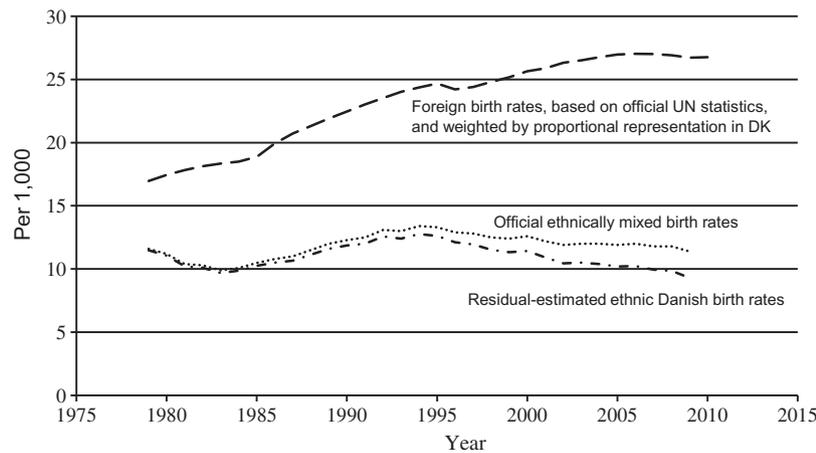

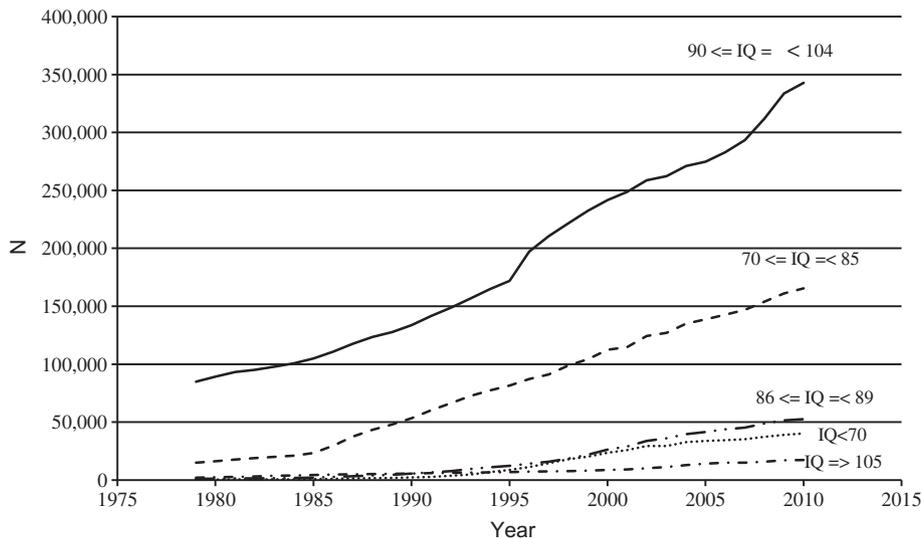Fig. 1. Average birth rates for the period 1979–2009.

Fig. 2. Retro-estimated number of immigrants and their descendants 1979–2010, categorized into 5 IQ band.

compared to the relatively gifted share of immigrants with IQs above 90. The classification of immigrant IQs by area of origin was modeled after Vanhanen (2009).

As the total number of immigrants with IQs lower than 90 did not increase much, there was little reason to expect that the Western IQ differences in birth rates would affect overall Danish IQ. Fig. 3 confirms this.

The phenotypic decline amounts to just 0.9 IQ point.

4.2. Projections 2011–2072

Table 1 outlines selected key numbers to facilitate understanding of the ensuing projections.

Section 1 forewarns major changes in future population growth due to ERDS. Whereas 72% of the growth in 2010 was due to new immigration, by 2072 more than three quarter of further growth will be driven by the higher fertility of non-Western immigrants. The next section shows that retro-estimated birth rates were inversely related to IQ in 1979 and 2009, as immigrants with lower IQs are 2–4 times more fertile than high IQ immigrants, and this inverse relationship is assumed to generalize over time. Section 3 shows that retro-estimated birth rates for citizens with IQs similar or higher to that of ethnic Danish IQ (= 98) are only about half that of citizens with lower IQs. Section 4 shows that estimated and projected birth rates increase when going from ethnic Danes, over Western immigrants, to all foreign citizens, to non-Western citizens. The higher birth rate of Non-Westerns can be expected to more than triple by 2072. Section 5 suggests that foreign citizens can be expected to account for 67.4 of all birth in DK in 2072, close to 22 times their rate of births in 1979. Section 6 suggests that the proportional representation of immigrants increases about 20 times between 1979 and 2072. The final section suggests that residual ethnic Danes recede from almost total birth dominance (97% in 1979), to account for only 32.6% of all live births in 2072, when citizens of non-Western origin answers for more than 60% of all births. This sixfold increase is driven by higher fertility rates, as immigration was set to constant in the projection.

Fig. 4 reflects retro-estimated and projected changes in the proportional percentage share of total population fertility.

Very high IQ immigrants (=>105) and low-IQ immigrants (86–89) maintain less than 10% of their share of foreign births, whereas the sub-Saharan share (IQ < 70) increases slightly. The share of births by the predominantly Western group (90 and 104) dropped threefold 1979–2010 from a relatively high level in

Table 1

Projected population growth, proportional birth rates by IQ band, similarity to DK IQ, and ethnic origin. Finally, total percentages of births by Western/non-Western origin.

	1979	2009/ 2010	2072
Population growth due to immigration or number of births (Percent)			
Immigration	72.0	23.0	
Births	28.0	77.0	
Birth rates by IQ Band			
IQ < 70	40.4	39.0	40.0
70–85	28.4	32.8	40.8
86–89	22.0	22.6	23.8
90–104	11.7	12.7	12.3
IQ > 105	9.6	13.2	14.7
Birth rates by similarity to DK IQ (= 98)			
>	9.6	10.1	10.6
EQ	12.0	11.3	11.0
<	21.0	24.9	32.8
Birth rates by Ethnic origin			
Danish[a]	9.3	9.3	9.3
Western[b]	9.9	9.9	9.9
All foreign	14.3	20.6	28.2
Non-Western	23.7	27.6	34.8
Total percent births/year by foreign origin	3.1	21.4	67.4
Total percent of population of foreign origin	2.0	10.9	40.6
Percentage of births/Year			
Danish	96.9	78.6	32.6
Western	1.5	4.1	6.3
Non-Western	1.6	17.2	61.1

[a] UN recommends a birth rate of 9.6 for all developed nations. Given this, data from SB led to 9.3 for residual ethnic Danes in 2009.
[b] When Europe to Ural and Kaukasus, Israel, New Zealand, and Australia are included in the group of Western origin, the weighted average is 9.9.

1979, leading to projection of a further twofold drop to about 15% by 2072. The low IQ (70–85) immigrant share increased during the 1980s, with an initial burst in the 1990s, and is projected to grow steadily to close to 60% of the share of all births by 2072. The smoothness of curves after 2011 reflects that net immigration per year was kept constant (based on past immigration from the 235 COOs).

The fertility differentials in Fig. 4 largely explain the estimated and expected population growth seen in Fig. 5. Growth of groups with IQs above 105 and between 86 and 89 thus remains modest. The slight acceleration for citizens with IQs below 70 means a moderate linear increase in number. Accelerating fertility for citi-
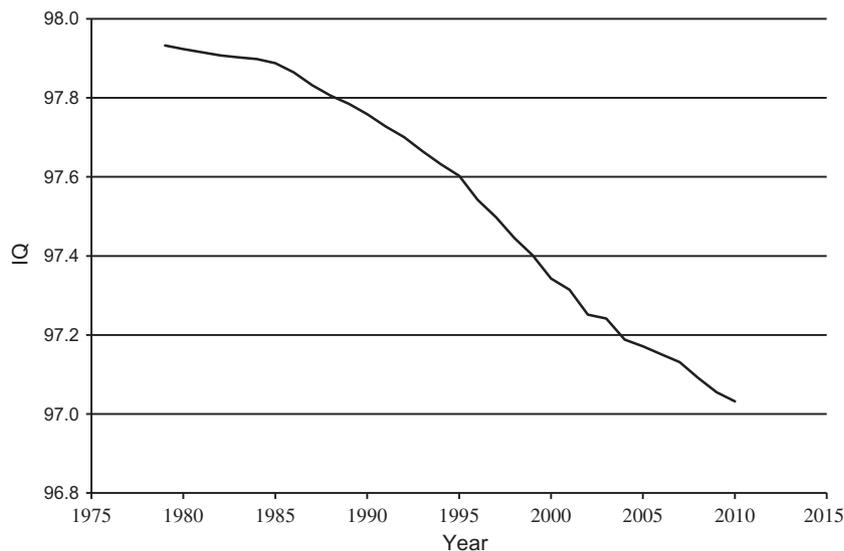

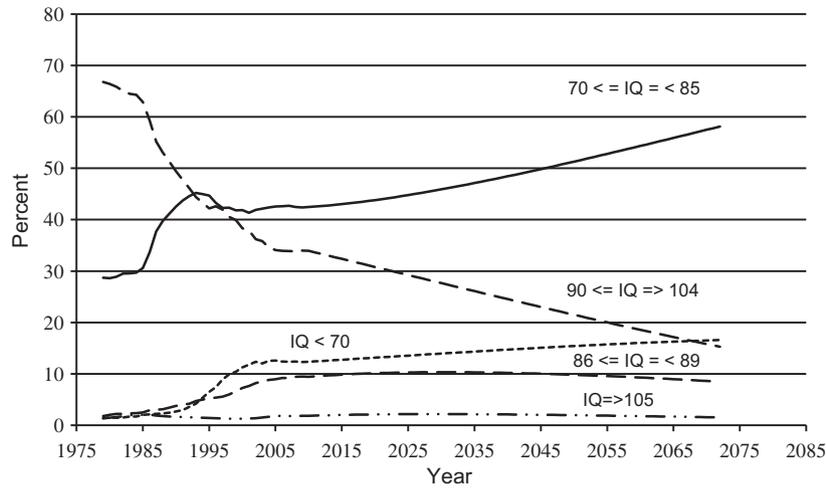**Fig. 3.** Overall average DK IQ decline 1979–2010.

Fig. 4. Retro-corrected (1979–2009) and projected (2010–2072) IQ group shares of foreign births by IQ band.
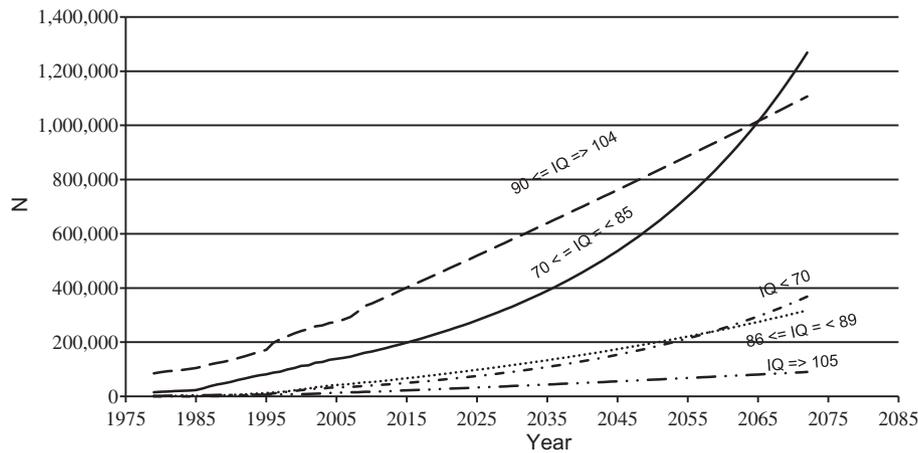

Fig. 5. Estimated (1979–2010) and projected (2011–2072) number of citizens, categorized by 5 IQ bands.

zens with IQ 70–85 converts into a rapidly rising share, whereas the considerable drop in proportions of births by citizens with IQ 90–104 implies that they will eventually be outnumbered by citizens with IQ 70–85.

Fig. 6 summarizes the retro-estimated and projected percentage proportional representation of (1) Ethnic Danes, (2) All foreign citizens, (3) Non-Western citizens, and (5) Western citizens, respectively.

By 2072 the total population in DK may consist of 60% ethnic Danes and 40% people of foreign origin. Thirty percent of the latter will be of non-Western origin. Further projection suggests that ethnic Danes become a minority around 2085. The upper curve in Fig. 7 reflects the decline in total average Danish IQ as a function of declining immigrant IQ.

The decline was briefly interrupted around 1983, reflecting changes in official immigration policy, and again in the 2000s when a burst of relatively high IQ immigration from Eastern Europe at first raised total immigrant IQ. However, the effect was short-lived because Eastern Europeans are about as sub-fertile as most other Western immigrants. The gradual decline in average immigrant IQ drives down the upper curve for overall Danish phenotypic IQ from 98 in 1979 to IQ 93 in 2072, or 5.1 points.

4.3. The Western decay model

Assuming largely similar demographic transitions all over Europe, we may now begin to quantify the associated long-term common phenotypic IQ declines, convert them to genotypic declines, and thus estimate the overall genetic damage done to Western civilization as IRDS combines with ERDS into DRDS (see Table 2).

Multiplying Lynn's summed average estimate for phenotypic British IQ decline over 90 years due to IRDS (i.e. 0.069 per year) with 223 years (1850–1978, 1979–2010, 2011–2072), we obtain a total phenotypic decline of 15.39 IQ points and a genotypic damage of 15.39×0.82 or 12.62 IQ points from IRDS alone. Phenotypic decline due to ERDS adds further 6 IQ points (0.9 + 5.1), or a 4.92 points drop in genotypic IQ (6×0.82) or. Together phenotypic or genotypic DRDS declined 21.39 or 17.54 IQ points, respectively.

5. Discussion

The study illustrated nine points of interest.
First, official Danish birth statistics is demographically misleading. It suggests that immigrant birth rates are low and declining since 1995, whereas retro-correction shows it to be on the rise since 1980 and more than double the ethnic Danish birth rate in
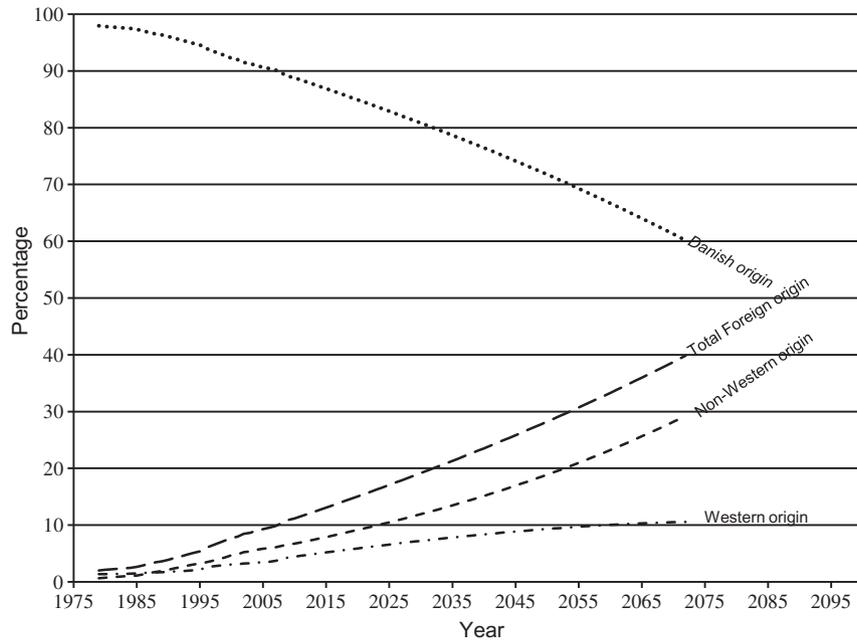
Fig. 6. Retro-estimated (1979–2010) and projected (2011–2072) share of total Danish population by ethnic origin 1979–2072.
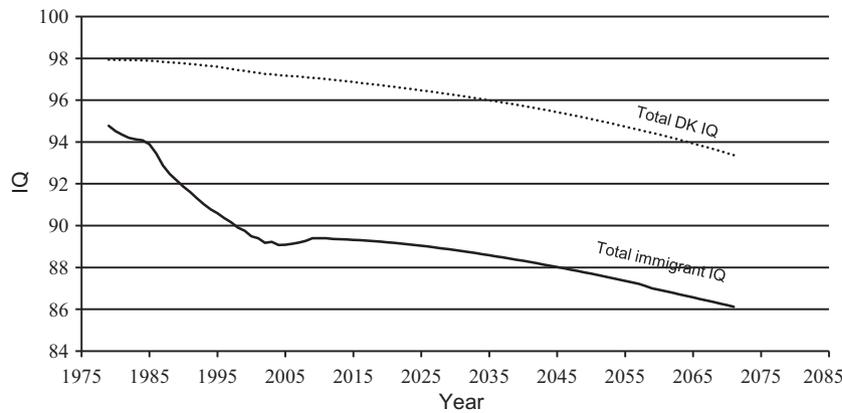

Fig. 7. Retro-estimated (1979–2010) and projected (2011–2072) average phenotypic IQ declines for the total population and for the total group of citizens of foreign origin.

Table 2
The model for decaying Western civilization.

IQ loss due to	1850–1978	1979–2010	2011–2072	Total phenotypic Decline	Total genotypic Decay
IRDS[a]	8.90	2.21	4.28	15.39	12.62
ERDS		0.90	5.10	6.00	4.92
DRDS (Total)	8.90	3.11	9.38	21.39	17.54

[a] Decays due to increasing mutation rates and consanguinity are disregarded here.

2009. Moreover, instead of rising, Danish birth rates declined since 1995 and reached a new low of 9.31 in 2009. The message is clear: The Danish tribe is threatened by IRDS, and the excellent social and health care systems worsen this by preserving still more weak, poor and old. Other modern countries also present demographically misleading statistics.

Second, fertility differentials exerted little impact on average national IQs 1979–2010. The share of immigrants with IQs between 90 and 104, mostly of Western origin, grew faster than that of other groups.

Third, overall phenotypic DK IQ declined by only 0.9 IQ point between 1979 and 2010. However, Teasdale and Owen (2008) found that half a century of IQ increases were in 1997 replaced in by a drop, dragging overall DK IQ down by 1.5 points over a few years. The reverse Lynn–Flynn effect has also been observed in Norway (Sundet, Barlaug, & Torjussen, 2004), but continue elsewhere in- and outside Europe. Still worse, the large birth differentials (Table 1) will over time drive the future population expansion, and low-IQ immigrants (IQs < 90) consistently display higher birth rates than better endowed immigrants (IQ > 90). Average population IQ is sure to decline.

Fourth, ethnic Danes can be expected to recede from representing 97% of the population in 1979 to 33 percent in 2072, whereas the non-Western representation rises from 12 percent in 1979 to 60+ percent in 2072. The actual transition is probably larger, because the UN Western–non-Western fertility rates surely under-predict. Still worse, long-term fertility based ERDS processes are largely irreversible, even in the politically highly

unlikely case of total stop for non-Western immigration. Gifted immigrant women may lower their fertility when engaged in higher education, but their relatively low number will not affect the overall picture.

Fifth, projection of group shares of foreign births by IQ bands suggests that the numerical share of the IQ 90–104 group drops to below 20%, quite like the high IQ group (105+), the group with IQs below 70, and the group with IQs between 86 and 89. In contrast, the IQ 70–85 group rapidly increases its share to 50+% around 2050. This means that low IQ children from sub-Saharan, Middle Eastern, North African, Latin American and Caribbean countries come to dominate the classrooms in Danish primary schools around 2050.

Sixth, in terms of total population growth, mainly non-Western citizens with IQ 70–85 can be expected to numerically surpass the mainly Western group with IQs 90–104 at about 2065.

Seventh, citizens of foreign origin will numerically outnumber ethnic Danes around 2085.

Eight, the escalation of the mainly non-Western share of low IQ populations translates into a ca. 9 points decline in average immigrant IQ.

Ninth, overall DK IQ accordingly declines from 98 in 1979 to 93 in 2072.

The results suggest that entirely unanticipated major changes are in store for the Danish tribe, described as demographic transitions by Coleman (2010). The first is the reduction in mortality and fertility in Europe and North America in the 19th century and the early and middle decades of the 20th century (here called IRDS). The second is the breakdown of the traditional family and changes in lifetime cohabitation without marriage, increased frequency of divorce, and of single parenthood (here changes in infrastructure due to IRDS). The third is the consequences of mass immigration of non-European peoples into Western Europe during the second half of the 20th century (ERDS).

Why were early dysgenic warnings neglected and the messengers demonized? Because too many leading scientists, politicians and intellectuals (Nyborg, 2003; in press) ignored Darwinian principles and started a historically hitherto unheard of voluntary, humanistic, democratic and financed replacement policy, whereby dwindling genetically weakened (Lynn, Harvey, & Nyborg, 2009) sub-fertile Western European populations will rapidly be replaced by more fertile low-IQ non-European immigrants. They allowed IRDS to combine with ERDS into DRDS, as they embarked on IRDS from 1850 and they let ERDS accelerate during second half of the 20th century, and finally allowed DRDS to persist into the 21th century. The result is that Western European peoples become minorities in their own ancestral homelands before the end of the 21th century, and other modern societies undergo similar demographic transitions (see also Coleman, 2006, 2010).

The generality and pervasiveness of these dynamic phenomena makes it tempting to let the simple DRDS decay model explain the downfall also of previous civilizations. The infrastructure of all civilized societies depends on respectable mean IQs and replacement fertility, and genotypic damage to them leads into an anti-Darwinian death spiral that dooms democracy, civilization and, in modern times, welfare.

Genotypic damage is reflected in changes in vital parameters. Vanhanen (2009) thus observed that "... the quality of democracy rises systematically from the lowest to the highest level of national IQ ..." (p. 169). Almost all of the 48 countries studied with IQs above 90 were democracies in 2006, whereas for countries with IQs below 90, less than 20 percent had always been democratic. Societal values are also vulnerable. Meisenberg (2004) demonstrated that IQ is a powerful predictor of modern, non-traditional values, and Deary, Batty, and Gale (2008) found that bright ten year olds tend to develop into enlightened adults. The flip side is that less bright youngsters do not, and they come to dominate classrooms in the West around 2050. National wealth is also sensitive to genotypic damage. Meisenberg (2010) found reciprocal effects between IQ and GDP ($\beta = 0.33$ and $\beta = 0.11$, respectively), but the effect of intelligence was stronger. A drop of 5 IQ points predicts a 35% decline of Danish GDP (Meisenberg, personal communication December 2010).

The damage implies that even if fertile low-IQ non-Western immigrants are the ultimate winners in the third DRDS demographic transition, they will conquer a lesser country. Danish average IQ will, for example, then have approached 90, or perhaps even be close to the projected mean immigrant of IQ 86. An intellectual corrosion this size will have undermined the economic and educational infra-structure of DK, and ultimately made its democracy unsustainable. Another factor is the increased frequency of partly heritable antidemocratic attitudes, authoritarian culture, and dogmatic religious preferences, traits often seen in low-IQ countries (e.g. Lynn et al., 2009; Nyborg, 2009; Vanhanen, 2009).

All this would seriously challenge the characteristic social coherence and solidarity of the Danish tribe. Tragically, the third demographic transition may also simultaneously damage the countries of origin, due to brain drain. In short, DRDS may increasingly doom modern countries, harm developing countries, and has nothing to do with racism or nationalism.

6. Limitations

Projections are only as good as their premises. Coleman (2010) thus dryly remarks: "In population projections, the only certainty is that the exact projected outcome will not become reality". He adds "Unless the assumptions here are hopelessly wrong, however, major change is in the offing" (p. 473). His projections for UK and other European countries are as gloomy as the one for DK.

Not all of foreign origin could be identified in the official SB register. The true number might be a fourth to a third higher.

The official legal mixing of ethnicities with different fertilities leads to demographically confusing results, and the true number of children born to foreign citizen and naturalized could not be counted directly. It had to be estimated. The fertility estimates were based on individual birth rates for each of the 235 COOs given in the United Nations official birth statistics, and balanced against common yearly total Danish birth- and mortality rates. However, two alternative national fertility estimates produced largely similar outcomes. Nevertheless, the UN birth rates used appear unrealistically low for DK for several reasons. First, immigrants giving birth in DK have a younger age profile and therefore higher birth rates, as immigrants are young and younger than those procreating in their COOs (where the estimate depends on the local age distribution). Second, the birth rate of immigrants, (which depends on the age distribution of the country to which they immigrate), will be higher by constant fertility, as it numerically represents relatively more young and younger immigrants giving birth than would be the case in the COOs, from where the fertility measures were taken. Third, the use of a common total mortality for DK results in an overestimation of the mortality of the immigrants, because most immigrant age distributions are skewed towards young and younger age groups.

Such limitations mean that the depressing perspectives presented in the present study are to be found on the conservative side of reality. Then again, fertility rates depend on partly unforeseeable cultural, educational, and other events, and politically administered restrictions, however unlikely, may also fundamentally alter migration patterns – and thereby the basis for projection.

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