

Ethnic nationalism, evolutionary psychology and Genetic Similarity Theory*

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ABSTRACT. Genetic Similarity Theory extends Anthony D. Smith's theory of ethno-symbolism by anchoring ethnic nepotism in the evolutionary psychology of altruism. Altruism toward kin and similar others evolved in order to help replicate shared genes. Since ethnic groups are repositories of shared genes, xenophobia is the 'dark side' of human altruism. A review of the literature demonstrates the pull of genetic similarity in dyads such as marriage partners and friendships, and even large groups, both national and international. The evidence that genes incline people to prefer others who are genetically similar to themselves comes from studies of social assortment, differential heritabilities, the comparison of identical and fraternal twins, blood tests, and family bereavements. DNA sequencing studies confirm some origin myths and disconfirm others; they also show that in comparison to the total genetic variance around the world, random co-ethnics are related to each other on the order of first cousins.

Introduction

Most theories of ethno-political conflict and nationalism focus on cultural, cognitive and economic factors, often with the assumption that modernisation will gradually reduce the effect of local antagonisms and promote the growth of more universalistic societies (Smith 1998). However, purely socio-economic explanations seem inadequate to account for the rapid rise of nationalism in the former Soviet Bloc and too weak to explain the lethality of the conflicts between Tutsis and Hutus in Rwanda, Hindus, Muslims and Sikhs in the Indian subcontinent, and Croats, Serbs, Bosnians and Albanians in the former Yugoslavia, or even the level of animosity between Blacks, Whites

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and Hispanics in the US. Typically, analysts have also failed to consider the ethno-political repercussions of the unprecedented movement of peoples taking place in the world today (van den Berghe 2002).

One of the hallmarks of true science is what Edward O. Wilson (1998) termed the unity of knowledge through the principle of consilience, in which the explanations of phenomena at one level are grounded in those at a lower level. Two prominent examples are the understanding of genetics in terms of biochemistry once the structure of the DNA molecule was worked out and, in turn, of chemistry in terms of atomic physics. Anthony D. Smith's theory of ethno-symbolism unifies knowledge in the consilient manner through its integration of history and psychology, thereby solving the problem that nationalism poses for purely socio-economic theories – the phenomena of mass devotion and the belief that one's own group is favourably unique, even 'chosen' (e.g. Smith 2000 and 2004; Guibernau and Hutchinson 2004; Hutchinson 2000). With its emphasis on a group's pre-existing kinship, religious and belief systems fashioned into a sense of common identity and shared culture, however mythologised, Smith's theory explains what purely socio-economic theories do not, why the 'glorious dead' fought and died for their country. It is more robust than other theories because its research analyses show that myths, memories and especially symbols, foment and maintain a sense of common identity among the people unified in a nation.

The ethno-symbolic perspective further unifies knowledge by highlighting interactions between ethnicity and nationhood. For example, Hutchinson (2000) described the episodic element in the history of countries as when national pride is augmented by events such as sudden new archaeological discoveries. By studying the ethnic character of modern nations over the long term, it is possible to identify recurring causes of national revivals, the role of cultural differences within nations, and the salience of national identities with respect to other allegiances.

The current article presents 'Genetic Similarity Theory' to explain ethnic nepotism and people's need to identify and be with their 'own kind' (Rushton et al. 1984 and 1986; Rushton 1989a, 1995, 2004; Rushton and Bons 2005). Nationalists often claim that their nation has organic continuity and 'ties of blood' that make them 'special' and different from outsiders, a view not fully explained by ethno-symbolism. Although the term 'ethnicity' is recent, the sense of kinship, group solidarity and common culture to which it refers is often as old as the historical record (Hutchinson and Smith 1996). Genetic Similarity Theory extends Smith's theory and the unity of knowledge by providing the next link, the necessary biological mooring.

Patriotism is almost always seen as a virtue and extension of family loyalty and is typically preached using kinship terms. Countries are called the 'motherland' or the 'fatherland'. Ethnic identity builds on real as well as putative similarity. At the core of human nature, people are genetically motivated to prefer others genetically similar to themselves. I will support

this contention with current findings from evolutionary psychology and population genetics.

The evolutionary background

Starting with Charles Darwin's *The Origin of Species* (1859) and *The Descent of Man* (1871), evolutionary explanations of the moral sentiments have been offered for both humans and other animals. Nineteenth century evolutionists such as Herbert Spencer and William Graham Sumner built on the concepts of in-group-amity and out-group-enmity, group competition and group replacement. Tribes, ethnic groups, even nations were seen as extended families (see van der Dennen 1987, for a review). However, evolutionary explanations went out of favour during the 1920s and 1930s with the rise of fascism in Europe, largely because they were seen as providing a justification for racially based politics (Degler 1991). During the 1960s and 1970s, most biologists eschewed theories of group competition in favour of the mathematically 'cleaner' theories of individual adaptation, since the genetic mechanisms necessary for ethnocentrism to evolve remained quantitatively problematic. After several decades of neglect, evolutionary psychology has now regained scientific respectability (e.g. Badcock 2000; Buss 2003; Pinker 2002; Wilson 1998).

In *The Descent of Man* (1871: 489–90), Darwin proposed the radical and far-reaching hypothesis that human morality rested on the same evolutionary basis as did the behaviour of other animals – reproductive success – described as the 'general good':

The term, general good, may be defined as the rearing of the greatest number of individuals in full vigour and health, with all their faculties perfect, under the conditions to which they are subjected. As the social instincts both of man and the lower animals have no doubt been developed by nearly the same steps, it would be advisable, if found practicable, to use the same definition in both cases, and to take as the standard of morality, the general good or welfare of the community, rather than the general happiness; but this definition would perhaps require some limitation on account of political ethics.

Historian Carl Degler (1991) observed that Darwin's equating of human and animal morality with the reproductive success of the community had the effect of biologising ethics. Suddenly, far-flung notions of economics, demographics, politics and philosophy, some of which had been centuries in the making, now revolved around a Darwinian centre, capturing the nineteenth century imagination and inspiring new analyses of the way society worked. The philosophy termed 'Social Darwinism', with its emphasis on the reproductive success of groups as well as of individuals, was taken up at every point along the political spectrum – from laissez-faire capitalism to communist collectivism to National Socialism (again see van der Dennen 1987, for a review).

It was crucial for Darwin to emphasise the moral continuity between humans and other animals because the opponents of human evolution had argued for their discontinuity in both the moral and the intellectual spheres. Darwin departed from utilitarian philosophers such as John Stuart Mill and Jeremy Bentham who believed that human morality was based on making informed choices about the greatest happiness for the greatest number. As Darwin pointedly observed, that basis was rational rather than instinctive. Since human beings alone were said to follow it, Darwin took exception to it.

In *The Descent*, Darwin provided numerous examples of how animal morality led to reproductive success. All animals fight by nature in some circumstances but are altruistic in others. Acts of altruism include parental care, mutual defence, rescue behaviour, co-operative hunting, food sharing and self-sacrificial altruism. Darwin described how leaders of monkey troops act as sentinels and utter cries of danger or safety to their fellows; how even male chimpanzees might rush to the aid of infants that cried out under attack, even though the infants were not their own.

Animal altruism – even to the point of self-sacrifice – has been massively confirmed since Darwin wrote *The Descent* (see E. O. Wilson 1975, for extended discussion). Altruism involves self-sacrifice. Sometimes the altruist dies. For example, when bees defend their hive and sting intruders, the entire stinger is torn from the bee's body. Stinging an intruder is an act of altruistic self-sacrifice. In ants, if nest walls are broken open, soldiers pour out to combat foragers from other nests; at the same time, worker ants repair the broken walls leaving the soldiers outside to die in the process.

Human warfare appears to be rooted in the evolved behaviour of our nearest primate relatives. Male chimpanzees patrol their territories in groups to keep the peace within the group and to repel invaders. Such patrols, of up to twenty bonded males at a time, raid rival groups, kidnap females and annex territory, sometimes fighting pitched battles in the process (Wrangham and Peterson 1996).

Solving the paradox of altruism

In *The Origin*, Darwin (1859) saw that altruism posed a major enigma for his theory of evolution. How could altruism evolve through 'survival of the fittest' if altruism means self-sacrifice? If the most altruistic members of a group sacrifice themselves for others, they will have fewer offspring to pass on the genes that made them altruistic. Altruism should not evolve, but selfishness should. Darwin was unable to resolve the paradox of altruism to his satisfaction because to do so required greater knowledge of how heredity worked than he had available (the word 'genetics' was not coined until 1905). Nonetheless, in *The Descent*, Darwin (1871) intuited the solution when he wrote, 'sympathy is directed solely towards members of the same community,

and therefore towards known, and more or less loved members, but not all the individuals of the same species' (Vol. 1: 163).

In 1964, evolutionary biologist William Hamilton finally provided a generally accepted solution to the problem of altruism based on the concept of *inclusive fitness*, not just individual fitness. It is the genes that survive and are passed on. Some of the individual's most distinctive genes will be found in siblings, nephews, cousins and grandchildren as well as in offspring. Siblings share fifty per cent, nephews and nieces twenty-five per cent, and cousins about twelve and a half per cent of their distinctive genes. So when an altruist sacrifices its life for its kin, it ensures the survival of these common genes. The vehicle has been sacrificed to preserve copies of its precious cargo. From an evolutionary point of view, an individual organism is only a vehicle, part of an elaborate device, which ensures the survival and reproduction of genes with the least possible biochemical alteration.

'Hamilton's Rule' states that across all species, altruism (or, conversely, reduced aggression) is favoured when $rb - c > 0$, where r is the genetic relatedness between two individuals, b is the (genetic) fitness benefit to the beneficiary, and c is the fitness cost to the altruist. Evolutionary biologists have used Hamilton's 'gene's eye' point of view to carry out research on a wide range of social interactions including altruism, aggression, selfishness and spite. The formulation was dubbed 'kin selection theory' by John Maynard Smith (1964) and became widely known through influential books such as *The Selfish Gene* by Richard Dawkins (1976) and *Sociobiology: the New Synthesis* by Edward O. Wilson (1975).

In 1971, Hamilton extended his formulation and hypothesised that altruism would result from *any* degree of genetic relatedness, not just that based on immediate kin. Hamilton equated his genetic relatedness variable r to Sewall Wright's F_{ST} measure of within-group variance (typically $r \sim 2F_{ST}$), and cited an experimental study of semi-isolated groups of mice where even random mating produced an F_{ST} of 0.18. Hamilton concluded that the within-group mice should therefore favour each other over those in the out-group, treating 'the average individual encountered as a relative closer than a grandchild (or half-sib) but more distant than an offspring (or full-sib)'.

In order to favour near kin over distant kin and distant kin over non-relatives, the organism must be able to detect degrees of genetic similarity in others. Hamilton (1964 and 1971) proposed several mechanisms by which detection could occur: (1) location or proximity to self as in the rule 'if it's in the nest, it's yours'; (2) familiarity, which is learning through social interaction; (3) similarity-to-self through imprinting on self, parents or nest mates as in the rule 'look for physical features that are similar to self' – dubbed the 'armpit effect' by Dawkins (1976); and (4) 'recognition alleles' or innate feature detectors that allow detection of genetic similarity in strangers in the absence of any mechanism of learning – dubbed the 'green beard effect' by Dawkins (1976). In this latter, a gene produced two effects: (a) creating a unique trait such as a green beard, and (b) preferring others who also have

that trait. Hamilton and Dawkins both favoured an imprinting mechanism, which Hamilton (1971) suggested would be most effective *if it occurred on the more heritable traits because these best indicate the underlying genotype*.

There is dramatic evidence that many animal species do detect and then act on genetic similarity (Fletcher and Michener 1987; Hauber and Sherman 2001). In a classic study of bees, Greenberg (1979) bred for fourteen degrees of closeness to a guard bee, which blocks the nest to intruders. Only the more genetically similar intruders got through. A classic study of frog tadpoles separated before hatching and reared in isolation found the tadpoles moved to the end of the tank where their siblings had been placed, even though they had never encountered them previously, rather than to the end of the tank with non-siblings (Blaustein and O'Hara 1981). Squirrels produce litters that contain both full-siblings and half-siblings. Even though they have the same mother, share the same womb, and inhabit the same nest, full-siblings fight less often than do half-siblings. Full-siblings also come to each other's aid more often (Hauber and Sherman 2001).

Similarity detection is also required for assortative mating, which occurs in insects, birds, mammals and even plants. Optimal outbreeding in some plants is promoted by acceptance of pollen from source plants that are neither too similar nor too dissimilar molecularly from the host plant's own pollen (see Hauber and Sherman 2001, for review). Even in species that disperse, the offspring typically show strong aversion to mating with close relatives. One study of wild baboons showed that *paternal* kin recognition occurs as frequently as *maternal* kin recognition even though identifying paternal kin is much more difficult in species where the mother mates with more than one male (Alberts 1999).

Although in 1975 Hamilton extrapolated his ideas to human warfare, his formulations have only seldom been taken beyond immediate kin. In *The Selfish Gene*, Dawkins (1976) argued that the mathematics of kin selection soon made coefficients of relatedness, even between kin, vanishingly small. One example he offered was that Queen Elizabeth II, while a direct descendant of William the Conqueror (1066), is unlikely to share a single one of her ancestor's genes. In a 1981 editorial for *Nature*, Dawkins used similar arguments to rebut claims made by Britain's far-right National Front that kin selection theory provided a genetic justification for ethnocentrism. Perhaps feeling a moral obligation to condemn racism, some evolutionists minimised the theoretical possibility of a biological underpinning to ethnic or national favouritism. Hamilton himself (1987: 426) pithily commented, 'in civilized cultures, nepotism has become an embarrassment'.

These qualifications turn out to have been overstated. Through assortative mating and other cultural practices, the selfish gene's capacity to replicate itself in combination with those clusters of other genes with which it works well may be extended for hundreds of generations, not three. Elizabeth II *is* considerably more genetically similar to William the Conqueror than she is to an average person alive today.

Genetic Similarity Theory

In 1984, the current author, along with Robin Russell and Pamela Wells, began to apply the Hamiltonian perspective to human dyads, small groups and even larger national and international entities (Rushton et al. 1984; Rushton 1986, 1989a, 2004; Rushton and Bons 2005). We dubbed our approach ‘Genetic Similarity Theory’ and reasoned that if genes produced effects that allowed bearers to recognise and favour each other, then altruistic behaviour could evolve well beyond ‘kin selection’. By matching across the entire genome, people can maximise their inclusive fitness by marrying others similar to themselves, and like, make friends with and help the most similar of their neighbours, as well as engage in ethnic nepotism. As the English language makes clear, ‘likeness goes with liking’.

Social-assortment studies

Of all the decisions people make that affect their environment, choosing friends and spouses are among the most important. Genetic Similarity Theory was first applied to assortative mating, which kin-selection theory *sensu stricto* does not readily explain since individuals seldom mate with ‘kin’. Yet, the evidence for assortative mating is pervasive in other animals as well as in humans. For humans, both spouses and best friends are most similar on socio-demographic variables such as age, ethnicity and educational level ($r = 0.60$), next most on opinions and attitudes ($r = 0.50$), then on cognitive ability ($r = 0.40$), and least, but still significantly, on personality ($r = 0.20$) and physical traits ($r = 0.20$).

Even marrying across ethnic lines ‘proves the rule’. In Hawaii, men and women who married cross-ethnically were more similar in personality than those marrying within their group, suggesting that couples ‘make up’ for ethnic dissimilarity by choosing spouses more similar to themselves in other respects (Ahern et al. 1981). Evolution has also set an upper limit on ‘like marrying like’ – incest avoidance (van den Berghe 1983). Too close genetic similarity between mates increases the probability of ‘double doses’ of harmful recessive genes. The ideal mate is one who is genetically similar but not a close relative.

Several studies have shown that people prefer genetic similarity in social partners, and assort on the more heritable components of traits, rather than on the most intuitively obvious ones, just as Hamilton (1971) predicted they would if genetic mechanisms were involved. This occurs because more heritable components better reflect the underlying genotype. These studies have used homogeneous sets of anthropometric, cognitive, personality and attitudinal traits measured within the same ethnic group. Examples of varying heritabilities are: for physical attributes, eighty per cent for middle-finger length vs. fifty per cent for upper-arm circumference; for intelligence, eighty per cent for the general factor vs. less than fifty per cent for specific abilities;

for personality items, seventy-six per cent for 'enjoying meeting people' vs. twenty per cent for 'enjoying being unattached'; and for social attitudes, fifty-one per cent for agreement with the 'death penalty' vs. twenty-five per cent for agreement with 'Bible truth'.

In a study of married couples, Russell et al. (1985) found that across thirty-six physical traits, spousal similarity was greater on attributes with higher heritability such as wrist circumference (seventy-one per cent heritable) than it was on attributes with lower heritability such as neck circumference (forty-eight per cent heritable). On fifty-four indices of personality and leisure time pursuits, Rushton and Russell (1985) found that spousal similarity was greater on items such as 'enjoying reading' (forty-one per cent heritable) than on items such as 'having many hobbies' (twenty per cent heritable). On twenty-six cognitive ability tests, Rushton and Nicholson (1988) found that spousal resemblance was greater on more heritable subtests from the Hawaii Family Study of Cognition and the Wechsler Adult Intelligence Scale (WAIS). When spouses assort on more heritable items, they report greater marital satisfaction (Russell and Wells 1991).

In a study of best friends, Rushton (1989b) found that across a wide range of anthropometric and social attitude measures, such as agreement with 'military drill' (forty per cent heritable) and with 'church authority' (twenty-five per cent heritable) the similarity of the friends was more pronounced on the more heritable measures. These results were extended to liking in acquaintances by Tesser (1993) who manipulated people's beliefs about how similar they were to others on attitudes pre-selected as being either high or low in heritability. Tesser found that people liked others more when their similarity had been chosen (by him) on the more heritable items.

The above results cannot be explained by culturalist theories. Genetic Similarity Theory and culturalist theory make opposite predictions about social assortment. Cultural theory predicts that phenotype matching by spouses will be greater on those traits that spouses have become more similar on through the shared experiences that shape attitudes, leisure time activities and waist and bicep size (e.g. through diet and exercise). Genetic Similarity Theory, on the other hand, predicts greater matching on the more heritable traits (e.g. wrist size and middle finger length, not easily changed).

Twin and adoption studies

Several twin and adoption studies show that the preference for genetic similarity is heritable, that is, people are genetically inclined to prefer similar partners. In one of these studies, Rowe and Osgood (1984) analysed data on delinquency from several hundred adolescent monozygotic (MZ) twin pairs, who share one hundred per cent of their genes, and dizygotic (DZ) twin pairs, who share fifty per cent of their genes. They found that adolescents genetically inclined to delinquency were also genetically inclined to seek out similar others as friends. Dovetailing with these results, Daniels and Plomin (1985)

examined friendships in several hundred pairs of siblings from both adoptive and non-adoptive homes, and found that whereas biological siblings (who share genes as well as environments) had friends who resembled each other, adoptive siblings (who share only their environment) had friends who were not at all similar to each other. These results show that shared genes lead to similar friends.

Rushton and Bons (2005) analysed a 130-item questionnaire on personality and social attitudes gathered from several hundred pairs of identical twins, fraternal twins, their spouses and their best friends. They found that: (a) spouses and best friends are about as similar as siblings, a level of similarity not previously recognised; and (b) identical twins choose more similar spouses and best friends to their co-twin than do non-identical twins. The preference for similarity is about thirty per cent heritable. Moreover, once again, matching for similarity was greater on the more heritable items showing that social assortment is based on the underlying genotype. Similarity was greater on items such as preferring 'business to science' (heritability = 0.60) than on liking to 'travel the world alone' (twenty-four per cent heritable).

Blood group studies

Yet another way of testing the hypothesis that humans typically choose mates and friends who are genetically similar is to examine blood antigens. In one study, Rushton (1988) analysed seven polymorphic marker systems at ten blood loci across six chromosomes (ABO, Rhesus [Rh], MNSs, Kell, Duffy [Fy], Kidd [Jk] and HLA) in a study of 1,000 cases of disputed paternity, limited to people of North European appearance (judged by photographs). Couples who produced a child together were fifty-two per cent similar but those that did not were only forty-three per cent similar. Subsequently, Rushton (1989b) used these blood tests with pairs of male best friends of similar background and found the friends were significantly more similar to each other than they were to randomly matched pairs from the same database.

Bereavement studies

Within-family bereavement studies show just how fine-tuned human preferences for genetic similarity can be. One study of 263 child bereavements found that (a) spouses agreed seventy-four per cent of the time on which side of the family a child 'took after' the most, their own or that of their spouse, and (b) the grief intensity reported by mothers, fathers and grandparents was greater for children who resembled their side of the family than it was for children who resembled the other side of the family (Littlefield and Rushton 1986). A study of bereavement in twins found that MZ twins who share one hundred per cent of their genes, compared to DZ twins who share fifty per cent of their genes: (a) work harder for their co-twin; (b) show more physical proximity to

their co-twin; (c) express more affection to their co-twin; and (d) show greater loss when their co-twin dies (Segal 2000).

Other lines of research

Women prefer the bodily scents of men with genes similar to their own more than they do those of men with nearly identical genes or genes totally dissimilar to their own (Jacob et al. 2002). Each woman's choice was based upon the human leukocyte antigen (HLA) gene sequence – the basis for personal odours and olfactory preferences – inherited from her father but not her mother. Another study found that both men and women rated versions of their own face as the most attractive after they had been computer-morphed into faces of the opposite-sex, even though they did not recognise the photos as images of themselves (Penton-Voak et al. 1999). Similarly, people whose faces were morphed with strange faces trusted others most when they looked like themselves (DeBruine 2002). Familiarity was ruled out by using morphs of celebrities; only self-resemblance mattered.

The gravity of groups

The pull of genetic similarity does not stop at family and friends. Group members move into ethnic neighbourhoods and join together in clubs and societies. Since people of the same ethnic group are genetically more similar to each other than to members of other groups, they favour members of their own group over outsiders.

In his groundbreaking book, *The Ethnic Phenomenon*, van den Berghe (1981) applied kin-selection theory to explain why people everywhere are prone to develop ethnocentric attitudes toward those who differ in dress, dialect and other appearance, and how even relatively open and assimilative ethnic groups 'police' their boundaries against invasion by strangers by using 'badges' as markers of group membership. Van den Berghe hypothesised that these 'badges' would typically be cultural, such as scarification, linguistic accent and clothing style rather than physical. He agreed that shared traits of high heritability could provide more reliable indicators than cultural, flexible ones, but he thought these heritability indices would likely only be relevant to modern times when they could be used to discriminate between widely differing groups such as the Boers and Xhosa.

The studies I reviewed above on kin recognition in animals and social assortment in humans shows that the preference for similarity is fine-tuned. It takes place *within* ethnic groups, even *families*, and it occurs on the more *heritable* items from sets of homogeneous traits. As such, the process is considerably more variegated, subtle and *powerful* than van den Berghe (1981) conjectured. (His 1989 position paper went further toward acknowledging the more 'primordial' elements involved.) The reviewed data confirms Hamilton's

(1971) prediction that kin-recognition systems would use the more heritable attributes of others if they were based on mechanisms such as imprinting-on-self (Dawkins's 'armpit effect') and recognition alleles (Dawkins's 'green beard effect'). Detecting degrees of genetic similarity is much more fine-tuned than simply determining whether someone is a Boer or a Xhosa. The question is: How similar to one is the *particular* Boer (or Xhosa)?

In his 2003 book *On Genetic Interests*, Frank Salter, a political ethologist at the Max Planck Institute in Munich, extrapolated genetic similarity theory and the logic of taking all shared genes into account to also explain ethnic nepotism. He showed how Hamilton's (1964, 1971, 1975) coefficient of relatedness (r) equated to the F_{ST} estimates of genetic variance (on average $r \sim 2 F_{ST}$) that had become available (e.g. Cavalli-Sforza et al. 1994). Since F_{ST} provides both a measure of genetic distance *between* populations and of kinship *within* them, it followed that in comparison to the total genetic variance around the world, random members of any one population group are related to each other on the order of $r \sim 0.25$ or $1/4$ or about the same as half-siblings. (A general rule would be: If a fellow ethnic looks like you, then on average, he or she is genetically equivalent to a cousin.)

Salter's analysis of Cavalli-Sforza's F_{ST} data showed that if the world population were *wholly* English then the kinship between any random pair of Englishmen would be zero. But if the world population consisted of both English people and Germans, then two random English people (or Germans) would have a kinship of 0.0044, or that of $1/32$ of a cousin. As genetic distances between populations become larger, the kinship coefficient between random co-ethnics within a population increases. Two English people become the equivalent of $3/8$ cousin by comparison with people from the Near East; $1/2$ cousin by comparison with people from India; half-sibs by comparison with people from China or East Africa; and like full-sibs (or children) compared with people from South Africa. Since people have many more co-ethnics than relatives, the aggregate of genes they share with their fellow ethnics dwarfs those they share with their extended families. Rather than being a mere poor relation of family nepotism, ethnic nepotism is virtually a proxy for it.

In two other books, Salter (2002 and 2004) and his colleagues found that ethnic bonds are central to explaining such diverse phenomena as ethnic mafias, minority middlemen networks, heroic freedom fighters, the welfare state, generous foreign aid and charity in all its more unstinting manifestations. One study examined street beggars in Moscow. Some were ethnic Russians, just like the vast majority of the pedestrians. Others were dressed in the distinctive garb of Moldova, a small former Soviet republic, ethnically and linguistically kin to Romania. Finally, some of the beggars were darker-skinned Roma (Gypsies). The Russian pedestrians preferred to give to their fellow Russians, with their fellow Eastern European Moldavians, second. The Gypsies were viewed so negatively that they had to resort to a wide variety of tactics ranging from singing and dancing, to importuning tightwads, to sending out groups of young children to beg.

In an earlier study, anthropologist Colin J. Irwin (1987) tested formulations of in-group co-operation in inbred populations by calculating coefficients of consanguinity within and between various Eskimo tribes and sub-tribes in the western Hudson's Bay region of Canada. He found that prosocial behaviour such as wife exchange, and anti-social behaviour, such as the genocidal killing of women and children during warfare, followed lines of genetic distance, albeit mediated by ethnic badging such as dialect and appearance.

Even very young children typically show a clear preference for others of their own ethnic heritage (Aboud 1988). In fact, the process of making racial groupings has been shown to result from a natural tendency to classify people into 'kinds'. Children quickly begin to sort people into 'basic kinds' by sex, age, size and occupation. Experiments show that at an early age children clearly expect race to run in families (Hirschfeld 1996). Very early in life, a child knows which race it belongs to, and which ones it doesn't.

The whisper of the genes

The history of the Jewish people provides a well-documented example of how genetic similarity theory intersects with Anthony D. Smith's (2000 and 2004) ethno-symbolic approach. As shown by Batsheva Bonne-Tamir at Tel Aviv University (e.g. 1992; and others, such as Thomas et al. 2002), Jewish groups are genetically similar to each other even though they have been scattered around the world for two millennia. Jews from Iraq and Libya share more genes with Jews from Germany, Poland and Russia than either group shares with the non-Jewish populations among whom they have lived for centuries. Although the Ethiopian Jews turn out not to be 'genetically Jewish', many other far removed Jewish communities share a similar genetic profile despite large geographic distances between the communities and the passage of hundreds of years.

Genetic Similarity Theory predicts that many other seemingly purely cultural divides are, in fact, rooted in the underlying population genetics. Recent DNA sequencing of the ancient Hindu caste system has confirmed that higher castes are more genetically related to Europeans than are lower castes who are genetically more related to other south Asians (Bamshad et al., 2001). Although outlawed in 1960, the caste system continues to be the main feature of Indian society, with powerful political repercussions.

Genetic studies can thus confirm (or disconfirm) people's ideas about their origins. In the case of Jews and the Indian caste system, traditional views have been confirmed. Israel is a new state, yet one which is built on an ancient tradition of ethnicity and nationhood. Much recent analysis of Israeli society, however, has tended to downplay connections between modern Israel and pre-modern Jewish identity, seeing Israel rather as an unambiguously modern phenomenon (cf. Smith 2000). Some Jews have greeted the genetic

'validation' positively because it affirms the organic nature of the Jewish people. However, it is also recognised as a two-edged sword, that could be invoked by claims from certain quarters that a 'Jewish Race is working to dominate the world'.

Hindu nationalists have expressed similar mixtures of feelings. While pleased to confirm 'Aryan' origins, they fear a backlash over elitism and exclusivity. In other cases, genetic evidence refutes origin myths, such as that the Chinese gene-pool goes back a quarter of a million years to Beijing Man, or that Amerindians have always existed on the American continent rather than being only the most ancient of 'immigrants' (Rushton 1995). Genetic distance studies are likely to play an increasing role in debates about ancestral custodial rights over disputed territory.

People can be predicted to adopt ideologies that work in their genetic self-interest. Examples of ideologies that have been shown, on analysis, to increase genetic fitness are religious beliefs that regulate dietary habits, sexual practices, marital customs, infant care and child rearing (Lumsden and Wilson 1981). Amerindian tribes that cooked maize with alkali had higher population densities and more complex social organisations than tribes that did not, partly because alkali releases the most nutritious parts of the cereal, enabling more people to grow to reproductive maturity. The Amerindians did not know the biochemical reasons for the benefits of alkali cooking but their cultural beliefs had evolved for good reason, enabling them to replicate their genes more effectively than would otherwise have been the case.

Political interests are typically presented in terms of high ethical standards, no matter how transparent these appear to opponents. Consider the competing claims of Palestinians and Israelis, or the Afrikaners and the Bantus. Psychological explanation is made especially difficult since the rival groups construct very different histories of the conflict and all parties tend to see themselves as victims whose story has not been told. Because ethnic aspirations are rarely openly justified in terms of naked self-interest, analyses need to go deeper than surface ideology.

Political issues are especially explosive when survival and reproduction are at stake. Consider the growth of Middle Eastern suicide bombers. Polls conducted among Palestinian adults from the Gaza Strip and the West Bank show that about seventy-five per cent support suicidal attacks, whereas only about twelve per cent are opposed (Margalit 2003). Many families state that they are proud of their kin who become martyrs.

Most analyses of the motives of suicide bombings emphasise unique aspects such as the Palestinian or Iraqi political situation, the teachings of radical Islam, or a popular culture saturated with the glorification of martyrs. These political factors play an indispensable role but from an evolutionary perspective aspiring to universality, people have evolved a 'cognitive module' for altruistic self-sacrifice that benefits *their* gene pool. In an ultimate rather than proximate sense, suicide bombing can be viewed as a strategy to increase inclusive fitness.

What reasons do suicide bombers themselves give for their action? Many invoke the rhetoric of Islam while others appeal to political and economic grievances. Mahmoud Ahmed Marmash, a twenty-one-year-old bachelor from Tulkarm who blew himself up near Tel Aviv in May 2001 said in a videocassette recorded before he went on his mission (cited in Margalit, 2003):

I want to avenge the blood of the Palestinians, especially the blood of the women, of the elderly, and of the children, and in particular the blood of the baby girl Iman Hejjo, whose death shook me to the core.

Many other national groups have produced suicide warriors. The term 'zealot' originates in a Jewish sect that existed for about 70 years in the first century CE. According to the classical historian Flavius Josephus (1981), an extreme revolutionary faction among them assassinated Romans and Jewish collaborators with daggers; this likely reduced their chances of staying alive. A group of about 1,000 Zealots, including women and children, chose to commit suicide at the fortress of Masada rather than surrender to the Romans. Masada today is one of the Jewish people's greatest symbols. Israeli soldiers take an oath there: 'Masada shall not fall again'.

Soldier armies – the Japanese kamikaze, or the Iranian basaji – have carried out suicide attacks against enemy combatants. Winston Churchill contemplated the use of suicide bombers against the Germans if they invaded Britain (see Cornwell 2003). Some of the Tamil Tigers of Sri Lanka, who are Hindus, have killed themselves in attacks on politicians and army installations, and they have done so with utter disregard for the lives of civilians who happened to be around.

Genes, of course, typically only 'whisper' their wishes rather than shout. They keep cultures on a long rather than a short leash (to use Lumsden and Wilson's 1981 metaphor). This allows for pragmatism and flexibility in the strategies that groups adopt to serve their aspirations. For example, Zubaida (2004) noted that the ideological weapons Arabs have employed to further their cause against political dominance by the Ottoman Turks (who were fellow Muslims), the Western Great Powers, the United States and now Israel have alternated between Islam and nationalism, with all the continuities and contradictions in between.

Zubaida (2004) also noted that Turkish, Egyptian and Iranian Islamisms (and sometimes anti-Islamisms) have often been national, and often nationalistic. Across the Muslim world, Arabs have often seen themselves as the mainstay of Islam, and Islam as the national culture of the Arabs. Nationalism became unpopular when it failed to satisfy Arab aspirations and is now often seen as an import from the West to 'divide and conquer'. Although fundamentalism is typically seen as subversive by Arab regimes, ethnic nationalists often celebrate it as a demonstration of revolutionary power. The Shi'ite Revolution in the non-Arabic but Islamic Republic of Iran, for example, served as an example not only for Islamists, but also for many nationalists and leftists in the Arab world.

The political pull of ethnic identity and genetic similarity also explains voting behaviour. The re-election victory of George W. Bush in the 2004 US presidential election was largely attributed to White votes and to the higher value placed by these voters on 'values' than on the economy. A closer look at the demographics reveals that 'values' may be, at least in part, a proxy for ethnic identity and genetic similarity. The majority of White Americans voted based on which candidate – and candidate's family – they believed most appeared to look, speak and act like them (Brownstein and Rainey 2004).

Another timely example is the growth of Christian fundamentalism in the United States. Analyses show that it represents a reaction to what is perceived as the moral breakdown of society (Marty and Appleby 1994). Because of trends in the mass media and education system, many religious people believe they now live in a hostile culture where their core values are under siege. The issue on which they are most politically active is opposition to abortion. One hypothesis to be investigated is that if estimates of genetic similarity could be obtained, fundamentalists would prove close to each other and to the basic Anglo-Saxon gene pool. If so, it would be informative to know what percentage of the estimated fifty million women who have had legal abortions in the United States since 1973 were predominantly of that ethnic background.

Conclusion

Genetic similarity, of course, is only one of many possible influences operating on political alliances. Causation is complex and there is no value in reducing relationships between ethnic groups to a single factor. Fellow ethnics will not always stick together, nor is conflict inevitable between groups any more than it is between genetically distinct individuals. In addition to reproductive success, individuals also work for motives such as economic success. However, as van den Berghe (1981) pointed out, from an evolutionary perspective, the ultimate measure of human success is not production but reproduction. Behavioural outcomes are always mediated by multiple causes. Nonetheless, genetic similarity can be expected to play a clear role in the social behaviour of small groups and even of large ones, both national and international.

The hypothesis presented here is that because fellow ethnics carry copies of the same genes, ethnic consciousness is rooted in the biology of altruism and mutual reciprocity. Thus ethnic nationalism, xenophobia and genocide can become the 'dark side' of altruism. Moreover, shared genes can govern the degree to which an ideology is adopted (e.g. Rushton 1986 and 1989a). Some genes will replicate better in some cultures than in others. Religious, political and class conflicts become heated because they affect genetic fitness. Karl Marx did not take his analysis far enough: ideology may be the servant of economic interest, but genes influence both. Since individuals have a greater concentration of genetic interest (inclusive fitness) in their own ethnic group than they do in other ethnic groups, they can be expected to adopt ideas that

promote their group over others. Political ethologist Frank Salter (2003) refers to ideologies as 'fitness portfolios', and psychologist Kevin MacDonald (2001) has described co-ethnics as engaging in 'group evolutionary strategies'.

It is because genetic interests are a powerful force in human affairs that ethnic insults so easily lead to violence. Although social scientists and historians have been quick to condemn the extent to which political leaders or would-be leaders have been able to manipulate ethnic identity, the questions they never ask, let alone attempt to answer are, 'Why is it always so easy?' and 'Why can a relatively uneducated political outsider set off a riot simply by uttering a few well-delivered ethnic epithets?'

Many caveats must be noted to the theoretical approach described here. Thus, Salter (2003) concluded that although (a) ethnic bonds can be adaptive because they unite people in defence of shared interests, and (b) down-sizing ethnicity through multiculturalism might change the competitive advantage of particular groups for dominance but is unlikely to eliminate ethnic identity from our nature as social beings, nonetheless (c) there are many examples of how maladapted modern humans are for defending their ethnic interests due to the competing demands of family and immediate kin and the sheer complexity of modern societies including the impacts of cultural factors (see his Chapter 6).

It would be incorrect to over-generalise findings on genetic similarity and reify primordialism or resurrect ideas of organic nationalism. Rather, the potential is provided for an even more nuanced ethno-symbolic approach to the forces operating both within and between countries, many of which can otherwise seem irrational. Although the modern idea of citizenship has replaced the bond of ethnicity ('people who look and talk like us') with that of values ('people who think and behave like us'), the politics of ethnic identity are increasingly replacing the politics of class as the major threat to the stability of nations.

Patriotic feeling is much more than a delusion constructed by elites for their own purpose. The ethno-symbolic approach anchors the psychology of social identity in national identities and in previously existing ethnicities and their 'sacred' traditions and customs (e.g. Smith 2000 and 2004). Ethnic communities have been present in every period and have played an important role in all societies on every continent. The sense of common ethnicity remains a major focus of identification for individuals today. Genetic Similarity Theory helps to explain why.

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