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Cultural Lenses and Biological Filters on What Makes a Hungarian in the Present and In the Distant Past

Emőke J. E. Szathmáry

Abstract: The definition of a memoir is "an account of the personal experiences of an author." This paper provides the reflections of a physical (biological) anthropologist specializing in the genetics of the Indigenous peoples of North America who was born in Hungary, raised in Canada, and served twelve years as president and vice chancellor of the University of Manitoba. This professional background may question the relevance of these reflections to Hungarian studies. However, issues raised by János Kenyeres, the keynote speaker of the 2019 American Hungarian Educators Association conference, in his examination of Hungarian identity manifest in Hungarian literature—specifically, regarding "essentialist thinking"—are related to fundamental issues about the nature of human diversity with which physical (biological) anthropologists have been grappling since the eighteenth century. In an era in which commercial genetic genealogical services promise to identify ancestors and ethnicity, and genetic studies of living peoples as well as archaeogenomic studies of skeletal remains seek to identify relationships, current perspectives on what does—or does not—constitute "the essence of an individual and the groups to which one belongs" are worth considering. Facts, wherever they occur, are subject to interpretation. It is the cultural interpretation that we give to genetic identity that imbues that concept with meaning. emoke.szathmary@umanitoba.ca

Keywords*: Memoir, anthropology and race, 1939 Hungary, genetic data and cultural interpretation*

Biography: Emőke J. E. Szathmáry, CM, OM, BA (Hon), PhD, FRSC, is President Emeritus of the University of Manitoba in Winnipeg, Manitoba, Canada, where she was president and vice chancellor (1996–2008). Earlier, she was provost and vice president (academic) at McMaster University, and dean of the Faculty of Social Science at Western University. Szathmáry's research focused on the causes of type-2 diabetes in Indigenous North Americans, the genetic relationships within and between North American and Siberian peoples, and the microevolution of subarctic populations. Her fieldwork involved Ottawa, Ojibwa, and Tlicho populations in Ontario and the Northwest Territories, respectively. She has published over ninety scientific studies and reviews and coedited four books. Her disciplinary service includes terms as editor in chief of the *Yearbook of Physical Anthropology* (1987–1991) and the *American Journal of Physical Anthropology* (1995–2001). Szathmáry has received seven honorary doctorates and is a Member of the Order of Canada and of the Order of Manitoba. In 2021 she was awarded the Officer's Cross of the Hungarian Order of Merit.

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Good Morning![1]

Allow me to begin by thanking Dr. Klara Papp, president of the American Hungarian Educators Association (AHEA), for inviting me. I was honored by the invitation but also challenged because my research has focused on matters outside Hungarian cultural studies. On the one hand, it was reassuring to learn that my perspectives as an educator and scientist would be welcome on any number of topics relevant to higher education, be they personal or professional. On the other hand, though my career can provide examples of "lessons learned" about academic life and academic administration, I wanted to link some of my research interests to Hungarian studies, regardless that they seemed not to fit.

What to do? I did as likely many of you have done when thinking about the suitability of a topic to a program theme: I went through past programs of AHEA's annual conferences for topics that relate to my background knowledge. I did not have to search for long. I found Professor János Kenyeres's (2019) keynote address *Mi a Magyar?* translated by him as, "What is the Hungarian?". His theme is germane to my personal and professional interests, which focus on biological anthropology and human genetics rather than on literature. I shall, therefore provide some "lessons learned" through my experience as an academic administrator, and will provide clues on the formation of my personal and professional identities. I will continue from there by focusing on my discipline and the role many of its members had "in the creation and perpetuation of both the race concept and racist ideologies" (AABA 2019: 3). Several centuries were spent in searching for immutable traits—the so-called "essence" of an individual, any or all of which were claimed to show the group to which one belongs. The fact is that new findings lead to rethinking positions once believed to be true, and new research tools applied to primary source materials can change understanding of issues once thought settled.

Reflections on the Basics of Academic Administration: Look, Listen, Learn

The utility of being seventy-nine years old is that, I can examine at least seven decades of my life to discern the factors that motivated me to take one path rather than another to live the one life I have been given. I can say with 100 percent certainty that I did not set out to be the president of a Canadian medical-doctoral university, one that I first heard about in my fourth year undergraduate class at the University of Toronto. I know that 1968 was more than a half century ago, but I still recall the moment when my human genetics professor arrived in class, asking us if we had read the *Globe & Mail* that winter morning. The *Globe & Mail* claims to be Canada's national paper. Like most of my classmates, I had heard about it but had not actually read it. The front-page story that day was that scientists at the University of Manitoba had developed a method to prevent Rh disease of the newborn (*erythroblastosis foetalis*)—which at that time was responsible for 10 percent of the perinatal deaths in Canada (Bowman et al. 1977). The disease is a classic example of a genetically induced maternal-foetal incompatibility that occurs when a woman with an Rh (-) blood type is carrying an Rh (+) foetus. That a genetically caused disorder had become preventable was breathtaking news in those days. It would have been preposterous

[1] This paper is an edited version of the author's keynote address to the 2022 conference of the American Hungarian Educators Association, whose president at the time was Klára Papp.

for me to imagine then that I would become the president of any university, let alone an institution of such caliber. Indeed it was daunting then even to contemplate going to graduate school or to medical school, for it was incumbent on me to find the funds to pay for my education. Single-parent families, immigrant families of the post–World War II era, or the "Displaced Persons" era, did not have the required resources, no matter however great a priority they put on their children's obtaining higher education.

So how did I get to be an academic, much less an academic administrator? There are and there have been university presidents whose careers were initially built outside the academy. Nevertheless, most sources agree that having a significant scholarly or scientific research record remains the "royal road" to a university presidency (Bornstein 2003: 26). The professoriate certainly believes that beyond any other justification, such a record confers legitimacy on a president. However, boards of governors tend to believe that legitimacy is more linked to leadership and administrative skills, among them competent handling of the many different responsibilities of the president—from financial management, fundraising, and enabling student success to good relationships with the board and the external community (Bornstein 2003). Conflicts can arise when professors are unaware of the complex and varied tasks of a president, and boards are unfamiliar with deeply held academic values that not only are reflected in institutional policies and practices but which also can lead faculty to question a president's right to lead. Fortunately both groups tend to agree that the best fit of a president to his or her institution occurs when he or she leads and manages according to the university's culture.

By the time I was appointed president of the University of Manitoba, I had demonstrated competence in areas that boards appreciate through my appointments as provost and vice president (academic) at McMaster University, and before that, dean of Social Science at the University of Western Ontario, and still earlier, as chairman[2] of the Department of Anthropology at McMaster University—the institution that, in my view, shaped me as an academic. I began there as an untenured assistant professor in 1975, and left fourteen years later for Western. Though I came to Manitoba twenty-six years ago, I still maintain an engagement with McMaster: I am in my third and final term as an elected member of its board of governors.

Each step in the administrative career path I have outlined was a learning opportunity for me. My term as chairman of a department led me to recognize personality attributes that previously I did not know I had. For example, I was willing to stand for administrative office to achieve goals that were collectively beneficial for me, my colleagues and our students. When I became dean, a sociologist told me that one cannot be a leader without followers, but the professors at Western were as unknown to me as I was to them. I decided that the best way to get to know people was to spend time with them, on their own turf. Many professors in Social Science gravitated to the faculty lounge at lunchtime, bringing their bagged lunches from home, forming two-three person groups and a much larger interdepartmental cluster to talk over issues of the day. The latter group sat in a circle—like arctic musk ox forming a defensive ring —and making my first entry into that circle was uncomfortable. Nevertheless, I told myself anthropologists should know how to handle being uncomfortable in unknown societies, and this enclave was no different. I soon

[2] In 1985, at McMaster University the administrative head of an academic department was called "chairman."

came to cherish my colleagues in that daily luncheon circle, and what I learned about their values, and they about mine, were as important as my understanding budgetary constraints and the administrative structures through which authority, accountability, and responsibility flow in a university. By the time I returned to McMaster as provost, I had concluded that academic values shape professoriates, and the city in which a university is embedded shapes that university's culture. If a dean can understand the culture, that dean will understand central administration better. If an academic officer can articulate in her actions the professoriate's values and "walk the talk," that person will have followers. These convictions, arising from my anthropological "participant observation" among my colleagues at Western, have stood the test of time. I relied on them to get to know the community I joined in Winnipeg and the province of Manitoba, as well as within the university itself. That knowledge informed my actions over the twelve years I was president.

Did my Hungarian identity hinder or advance my progress along my path in academic administration? I began this summary by noting that I did not set out to be a university president. However, before I embarked on the path that culminated in that office, I was an ordinary academic who had gone through the milestones of earning tenure and successive promotions to the rank of professor. Academics know that they are not immune from biases exhibited in the broader world around them. For example, many studies show that articles authored by women are less likely to be published or cited than papers written by men (Larivière et al. 2013; Ross et al. 2022). It is for this reason that some disciplinary journals use initials only for authors' given names. One of my submissions did receive a rejection from a medical journal, but I have never believed the rejection was caused by my gender. The reason for that is not my willful blindness to the evidence multiple studies have noted—but personal experience that says that, with a name like mine, there is low likelihood that an Anglophone reviewer would know that I was female. I was once interviewed for a study on the career experiences of women presidents, and though I agreed that some attitudes expressed toward me were negative, I doubted that they were all manifestations of sexism. Rather, I believed that the real difficulties I encountered arose because I am an immigrant. The point I am making with these observations is that our perceptions of others' behavior towards us is influenced by our cultural biases. In the first case I noted, I believed that my Hungarian name protected me from gender bias, hence the rejection of my paper was likely because of flaws I had made in its presentation, not the editor's putative sexism. In the second example, given that my names are neither English nor French, I regarded my immigrant status more likely to kindle negative bias than would my sex. In that instance my Hungarianness was not protective. What matters in these stories is not if either of my perceptions is correct. What matters is that I viewed each situation through a Hungarian lens. The Hungarian component of my dual, Hungarian Canadian identity appears to have greater primacy on how I perceive actions toward my person than does the Canadian component.

Identity Formation: Home, Negative Judgment, and Cognitive Awakening

The influence of my Hungarian identity has manifested itself in other ways as well. For the record, I was born in Ungvár (today Uzhhorod, in western Ukraine), left Hungary when I was eleven months old, and arrived in Canada six years later, after a half dozen years' sojourn in displaced peoples' camps in Germany. My parents had studied to be educators; their stories captured my interest and I believe that that interest ultimately influenced my choice of a profession. As my mother washed dishes and I dried them, she talked about interesting people in

history, religion, biology, and politics. She could as easily recount the story of Joan of Arc and the reasons she had been put to death as she could retell the debates generated by Darwin's theory of human evolution—and always, she questioned what was true in the books she had read before the war, among the arguments people wrote about such things. She made discerning truth, differentiating fact from fiction, an exciting endeavor; she said that it was legitimate to ask questions, and cultivated my appetite to get her answers to my questions doing the next evening's dishes! My father's narratives, told around holiday campfires, included tales of seven ancient Magyar tribes migrating westward from the Eurasian steppes. The tribes crossed the Carpathian Mountains over 1,100 years ago to take possession of the foothills and great plains of the Carpathian Basin. I heard from my parents that my mother tongue's closest connection is to languages spoken in Siberia by the reindeer-herding Khanty (Ostyák) and the hunting-fishing Mansi (Vogul) peoples, and that Hungarian is much more distantly linked to Finnish and Estonian (Harms 2022). None of this history and linguistic information was relevant to anything I learned in the primary and secondary grades in Canada, and my teachers were not always pleased by my questioning the veracity of what was printed in our textbooks. But my parents' stories bent my childhood twig of interest and shaped the tree into which my adult learning inclined.

My curiosity about human origins and ancient linkages led me to my first course in anthropology, where my instructor once summarized a long lecture by saying that humans are born with several innate needs, which include not only the need for food, water, and shelter but also psychological and social needs, among them needs for affiliation and for learning. However, different societies have satisfied these needs differently. These ideas were compelling at a personal level, because they conferred legitimacy on my family's Hungarian ways of doing things, which differed from those of the Anglophone and Francophone Canadian families surrounding us. More importantly, at the cognitive level they implied that because human beings share the same biology as members of the same species, "cultural differences cannot make one group of human beings intrinsically (i.e., biologically) inferior to another, whatever advantages one culture has attained compared to another" (Szathmáry 2000: 150). Cultures can impose barriers to achievement on specific segments of the population, and simultaneously, cultures can facilitate the achievements of specific segments of society (e.g., by permitting access based on gender, class, caste, or any other mode of social stratification (Bakshaei and Henderson 2016). Through social rules regulating marriage, descent, and inheritance, cultures have channeled gene transmission for thousands of years, yet the children of each generation are born everywhere with the same intrinsic needs. Our fundamental biology has remained the same, regardless of cultural differences.

By studying anthropology in North America rather than in Europe or Asia (Östör et al. 2022) I encountered the formal study of humanity through four lenses—humanity's prehistoric past (archaeology), the languages we speak (linguistics), the cultures into which we are born and raised (socio-cultural anthropology), where and how the human species came to be (physical [biological] anthropology), and how its members have adapted biologically and culturally to differing environments as they spread throughout the world. These four subdisciplinary approaches are essential to exploring the history of the human species, and they remain relevant to investigating population origins. In my fourth undergraduate year my curiosity focused on an area that was little known then—the genetics of the Indigenous peoples of North America. As I

was thinking about graduate study, human diversity began to be explored seriously with the tools of population genetics. The greatest general appeal of genetic research was that the traits expressed in blood and its constituent parts (e.g., blood group antigens, serum proteins, red cell enzymes, immunoglobulins) were not subject to modification during maturation, as were skeletal traits. For example, regardless of the fact that genes set the limits of attainable adult bone dimensions, nutritional deprivation or severe disease in childhood can prevent those bones from attaining the size potential encoded in the genes (Stinson 2012). Genetic data therefore not only increased our understanding of genetically based human diversity but they also have greater potential than do skeletal data to answer questions about the process of evolution. Anthropological geneticists sought not just to describe, but also to determine what produced the similarities and differences in gene frequencies among populations that they found. Were they the products of demographic differences among groups? Were they environmentally induced? Were they brought about by microevolutionary forces (mutation, gene flow, genetic drift, natural selection) or did the similarities reflect a common origin, among other possibilities (Crawford and Workman[3] 1973)?

Regardless of my personal interests, by the time I entered graduate school the reputation of the science then called "physical anthropology" was well established. It was not based on genetics. Indeed some physical anthropologists perceived a conflict between their methods and those of geneticists regarding the identification of "races" (Strandskov and Washburn, 1951). The subdiscipline's reputation rested primarily on the study of morphology, which includes the study of hard tissue (bones and teeth) from the remains of the dead, including fossilized remains of ancestral species, as well as the study of the living body through anthropometry. The latter involves measurements of face and body dimensions, which with the addition of soft tissue features and pigmentation (skin-, hair-, and eye-color) typically complete external observations. The history of this branch of anthropology is relevant to understanding why Kenyeres, in his plenary address of 2019 quoted Mihály Babits's Hungarian-language comment, "Petőfi, … többet mond nekem erre nézve, mint az antropológusok minden koponyái," as follows: "Petőfi, who was not purely of Hungarian stock, says more to me in this respect than the gray matter of all the anthropologists combined" (Kenyeres 2019: 17). My literal translation of the latter portion of Babits's original sentence is "says more to me in this respect than all the skulls of the anthropologists." Admittedly Kenyeres's translation better evokes a tone of derision implicit in Babits's phraseology, but what engendered the latter's comment?

Without knowing the Hungarian context for Babits's remark, North American physical anthropologists of my generation could surmise that it was based on a criticism of past attempts to distinguish the varieties of humankind, including distinguishing the claimed "races" of Europe (Ripley 1899). The fact is that, my generation differed in a significant way from those trained before World War II regarding the research questions worth tackling. From 1951 onward, American physical anthropologists increasingly embraced evolutionary theory, recognizing that it was the only theory that united the various fields within this subdiscipline. The categories and

[3] For current methods of genomic analyses used for reconstruction of population history and relationship, see Kivisild (2018).

objects these scholars examined were different (e.g., humans or nonhuman primates, morphology or genetics) and the research tools they used could be different, but broadly, the issues researched should be those that inform understanding of how the evolutionary process works in humans, and how over time it has led to the emergence and the differentiation of *Homo sapiens*. The change in focus was proposed in 1951 by Sherwood Washburn and designated by the moniker "the New Physical Anthropology."

What was the problem with the old theory and approach? Let me describe four features of the new strategy (Washburn 1953) that also showed problems with the old approaches: "1) understanding process rather than merely classifying difference; 2) testing hypotheses arising from an underlying body of theory rather than regarding theory as neither essential nor desirable; 3) less emphasis on measurement and more emphasis on problem-specific techniques to obtain basic data and undertake their assessment; 4) interpreting the evidence arising from formal hypothesis-testing to determine what is fact and what is fancy about the course and process of human evolution" (Szathmáry 1991: 21).

My first course in physical anthropology thus stressed that the research approaches of the previous 175 years, which emphasized describing physical objects such as skulls and focused on finding immutable, heritable traits that divided one group of people from another (e.g., Africans vs. Europeans vs. Asians) ultimately led to a dead end. When problems arose with trait identification, many thought that improvement in measuring tools and measurements were required. For that reason, there had been an increasing emphasis on perfecting tools and measuring techniques. I still remember the example that illustrated this fixation: in the late nineteenth century, Aurél Török, an internationally prominent Hungarian physical anthropologist, took 5,371 measurements on a single skull (Massin 1996: 107) and decided that measurements were not useful to classify people. The example of this monumental measuring effort convinced most of us that we would not want to be involved in that sort of enterprise. At the same time, some of us assumed that usage of the "cephalic index" - which requires only two measurements and then the calculation of their ratio—had continued. We were wrong. This index had been widely used to classify people, among them European "races" (e.g., Ripley 1899), and its use did persist into the early twentieth century. However, in 1928 the anthropologist Franz Boas's massive study of European immigrants in the United States showed that the head shapes of children born in America differed from those of their European-born parents. The cephalic index was therefore useless for classifying "races" (Gravlee et al. 2003a, b), because head shape was not "fixed" and the cephalic index's ratio could change from one generation to the other.

Taxonomy, Human Classifications Worldwide and Within Europe

The scientific world became interested in human skulls in the mid-eighteenth century, and both Carl Linnaeus, a Swedish botanist and taxonomist, and Johann Friedrich Blumenbach, a German anatomist and physiologist who specialized in comparative anatomy, had important roles to play in the research that followed. In 1735 Linnaeus defied many centuries of convention by placing humans and animals together into a single classificatory system, based on anatomical criteria they had in common. He also named four varieties of humans, each type inhabiting the four continents then known to Europeans. In 1758, in the tenth edition of his treatise, *Systema Naturae*, Linnaeus elaborated on the features that marked his four varieties of humankind. To

physical characteristics such as skin, hair, and eye color, and hair and eye form, he added behavioral traits, among them personality traits, types of clothing, and even manner of government (Brøberg 1997).

In 1776 Johann Friedrich Blumenbach published his doctoral research, which, unlike Linnaeus's work was based on careful measurements. Blumenbach found that the sixty crania he had obtained from different parts of the world also displayed differences that indicated four varieties of humankind. However, because he based his categories on skull differences obtained by measurement, Blumenbach never added nonbiological criteria to characterize his varieties of humans. He named them Caucasian, American, Ethiopian, and Mongolian, respectively, and added a fifth human category (Malay) in 1781, based on crania of Pacific Islanders. Blumenbach stressed that when crania were compared over a sequence of geographic distances, biological changes were gradual rather than sharply distinct between continents, and from this he concluded, as had Linnaeus, that gradations were likely produced by environmental differences. Blumenbach refused to rank his five varieties of humankind, but he did think that the first humans were "white," and other skin colors represented a reversible "degeneration[4]" of the original color caused by sunlight. Near the end of the eighteenth century he also published a volume called *The Unity of Mankind*, in which he reasoned that the anatomical evidence from fossils and skeletons of modern humans showed a single origin for humanity (Gould 1994; Bhopal 2007).

There were other eighteenth-century Europeans who also classified humanity into what has become known as "races," but few had the influence of Linnaeus and Blumenbach. With the emphasis on cranial measurement as a way to categorize peoples in the past and present—the latter by measuring craniofacial dimensions of the living—most scientists followed Blumenbach, assuming that finding gradations, whereby one human variety blended into the next along geographic gradients, did not mean there were no absolute boundaries. They assumed that no one had yet identified specific cranial traits that unambiguously identified biological boundaries between peoples. For anatomists this represented a quest worth embarking on, and the hunt was on! At the same time, Linnaeus had a much greater scientific reputation than did Blumenbach, and many in the general public, not just anatomists, found the behavioral traits he attributed to his human varieties compelling. After all, Linnaeus's readers were mostly members of the group he called "*Europaeus*" of "white" skin color and "sanguine" temperament, and they accepted that "*Americanus"* was "red" and "choleric," "*Asiaticus"* was "yellow" and "melancholy," and "*Africanus"* was "black" and "phlegmatic" (Jablonski 2021: 438). Europeans had not yet recognized the role ethnocentric bias, subjectivity, and belief in untested assumptions played in their judgments.

Linked to the premise that skin color and personality traits went together were two background issues that preoccupied many scholars in the late eighteenth and much of the nineteenth century, especially in the United States: Would studies of human anatomy prove or disprove the story of

[4] The etymology of the word :"degeneration" in its original Latin usage meant change "without regard to whether the change was to perfect or to degrade," though now the word is used exclusively to mean loss of quality or properties (Gould 1994; On-line Etymology 2022)

creation in the Old Testament? In a socioeconomic climate in which 25 to 30 percent of the free American population favored slavery, would the increasing religious-political debate about the rights and wrongs of slavery make use of scientists' findings about the existence of human varieties?

For Linnaeus and Blumenbach, humankind had a common origin (monogenesis), but others wondered about multiple creations (polygenesis) fueled by questions dating back centuries—for example, how had Cain, the surviving son of Adam and Eve in the Old Testament, found a wife when his parents were the only people God created? The arguments that there were four to five continental varieties of humankind also fed notions of multiple creations. Not only could polygenesis account for how Cain found a wife, some believed it could also "justify" the eradication and/or enslavement of American Indians and Africans, respectively if they were other than human beings. Separate "racial" creations had the same implications, given the assumed superiority of the European "race." We condemn such ideas and the injustice that goes with them today, but these notions existed on both sides of the Atlantic and had "far-reaching implications for political and theological issues of the time" (Popkin 1978:205). This quagmire of nineteenth century biopolitics was shaken by the publication in 1859 of Charles Darwin's *On the Origin of Species*. Discussion of Darwin's ideas about evolution by natural selection led to enormous debate and dispute among the public, not just the cognoscenti. The idea that small changes in the biology of an organism, which aided its survival and reproduction in comparison with individuals that did not have those features, would accumulate over time and would lead to the emergence of new species, had merit, even though Darwin could not explain how traits were transmitted from one generation to the next (Desmond 2023). Natural selection, the mechanism of evolution, was even more persuasive to the public when the nonconformist sociologist and philosopher Herbert Spencer extended it to the evolution of human societies, to social classes, and to individual human beings. Spencer is the author of the phrase, "survival of the fittest," and social Darwinism, which is attributed to him, was used "as a philosophical rationalization for imperialist, colonialist, and racist policies, sustaining belief in Anglo-Saxon or Aryan cultural and biological superiority" (Britannica 2022).

By the end of the nineteenth century monogenism won out over polygenism, and though Darwin rejected typology himself (Mayr 2009), many on both sides of the Atlantic Ocean continued to believe that evolution had led to the formation of human "races," which could be distinguished by immutable, inherited characteristics. The differences among groups continued to be investigated, with attempts to identify human biological and behavioral differences within continents on the ascendancy. Among Europeans, for example, in 1899 Joseph Deniker, a French engineer and natural scientist, claimed Europeans were made up of six primary "races," and published maps showing where the Nordic, Oriental, Iberic, Dinaric, Littoral, and Occidental "races" were located. Deniker's classification was just one of several of such arrays (McMahon 2019). For example, the American, William Z. Ripley, identified only three European "races" - Teutons, Alpines, and Mediterraneans (Spiro 2009: 94). Ripley's work was very influential among prominent Americans, among them, Madison Grant, who came to equate "Teutons" with "Nordics" (or Aryans), and concluded that "Americans are 'Nordics.' And the Nordic race … is the classic European type, 'the *Homo europaeus*,' the white man par excellence" (Spiro 2009: 147).

How could such differences among people have been brought about? Europeans knew that the fall of the western Roman Empire occurred in the fifth century CE[5] and had been brought about by successive waves of migrating peoples from the north and the east. You would have heard about these "barbarian" peoples if you studied ancient history in high school, among them the Lombards and the Visigoths, who were speakers of related Germanic languages and had settled in Italy. The Goths and the Vandals, also speakers of extinct Germanic languages, had moved into Gaul, from where they went on to occupy the Iberian Peninsula. These and other invading peoples were identified in the Roman records by their names or by names the Romans had given them (Halsall 2007). Were these and other invaders believed to be responsible for the human varieties that were described in Europe? Today the answer is "no," but only by the end of the nineteenth century was it accepted that the origin of European "races" had a much greater antiquity than Roman civilization itself. That belief was given support by the confluence of ideas from archaeology, philology, and craniometry.

Archaeological sites containing items of material culture, called "antiquities," as well as skeletal remains, were known before the rise of scientific archaeology. The latter type of investigations began in Europe in the mid eighteenth century, at Pompeii. Excavations were subsequently launched in various countries at sites where the ancients had lived and buried their dead, and museums began to assemble collections. Thanks to a Danish archaeologist's insight about the implication of tools made from different materials, in 1820 the National Museum of Denmark began to display its Scandinavian collection in an organized array. Each display contained objects from sites with tools made of only one material: sites that contained tools made of stone only, the next showing material from sites with bronze tools, and the third, sites with only iron tools. The array comprised a temporal continuum, with the periods represented called the Stone Age, the Bronze Age and the Iron Age, respectively (Kaspersen 2022). The system was quickly adopted by museums elsewhere, and it facilitated distinguishing between historic sites left by the barbarian invaders, for example, and much more ancient prehistoric remains.

Historical linguistics, a branch of philology that had roots in the classical civilizations of Greece and Rome, was also useful in establishing relationships between disparate languages spoken in different geographic areas at different times (Bod 2015). This kind of research was resumed in Europe before the Reformation, and by the early nineteenth century some linguists were focusing their efforts on showing relationships between languages that could be grouped together in what was then called the "Aryan" languages (Thapar 1996). It was also widely assumed that a natural association existed between a group's language and the type of the people who spoke it (e.g., Tacitus on the Germans: "All have fierce blue eyes, red hair, huge frames.", Halsall 1998). Thus the notion that language was a reliable indicator of "race" grew and spread among many European nations throughout the nineteenth century (Jones 1997: 42).

The legitimacy of this idea, and that it had also existed in the prehistoric past, was promulgated by Anders Retzius, a Swedish anatomist, who in 1840 stated that the cephalic index reliably distinguished long-headed people (dolichocephalics) from round-headed people

[5] CE means "common era." Most North American archaeologists now use this time designation instead of Anno Domini (AD).

(brachycephalics). Furthermore, according to Retzius, when these cranial features were considered along with other anatomical features and geography, his "races" coincided with speakers of specific languages: "the Celts, the Germanics and the Slavs" (Kyllingstad 2014: 5). In Scandinavia this notion became a "grand theory claiming that a succession of different races had migrated to Europe in prehistoric times and had given rise to the various European nations" (Kyllingstad 2014: xix). These invaders were described as a Germanic "race" of tall, blond, blue-eyed people with an elongated head shape who were superior to the indigenous peoples they encountered. Following Retzius, many also looked for specific dental and skeletal traits to indicate the ethnic identity of the dead. Today we know that a few inherited traits can show population affinity and are therefore useful for forensic purposes, but we also know that problems arise when from biological evidence only, equivalence to culture or language is made (Kakaliouras 2010). The reverse is also true, when the "race" of the makers of artifacts is attributed solely on the basis of a material goods and geographic location of ancient archaeological deposits (Jones 1997). Even diagnosis of identity from a complete skeleton can go awry, as shown by the case of Kennewick Man. This ancient person, more than 8,000 years old and found in the state of Washington, was first identified skeletally as "Caucasian." Subsequent genetic analysis found that his Y-chromosome displayed the Q-M3 marker, and his Mitochondrial DNA (mtDNA)[6] type was X2a, both indicating Indigenous American ancestry in his male and female lineages. Furthermore, his genetic links were clearly with the Confederated Tribes of the Colville Reservation rather than with the other four Native American groups his DNA was compared with (Rasmussen et al. 2015). Kennewick Man was an Indigenous American! As for whether those invading Aryans and other prehistoric people moving into Europe were racially "pure"—they were most definitely, "not" (Gibbons 2017: 678).

A Hungarian Approach to Classification of Hungarians

The essentialism that János Kenyeres criticized in his 2019 presentation to AHEA—a belief that things have a set of characteristics which make them what they are, and that they can be discovered by scientific approaches—was entrenched in Europe and North America by the early twentieth century, not only in physical anthropology but also in law as well as the public imagination (Spiro 2009, Backhouse 2007). It does not surprise me in the least that Hungarian literature in the first half of the nineteenth century reflected nation-building, resistance/defiance after 1848, and national identity that emphasized difference from others, for certainly in their Uralic language Hungarians differed from the Europeans surrounding them. To me, it would have been surprising if notions of biological distinctiveness, derived from the assumed unique "Asian" biological identity of the conquering Hungarians of the tenth century, were not reflected in the teaching of Hungarian history and had not taken root in popular culture of the pre–World War II era.

[6] Mitochondrial DNA (mtDNA) differs from Y-DNA (the Y chromsome) in cellular location, abundance, and pattern of transmisson, which make these forms of DNA useful for studies of genetic ancestry. Women transmit mtDNA to all their offspring; men transmit Y-DNA to their sons only. Such uniparental transmission within populations yields multigenerational maternal and paternal lineages and can also identify variants contributed by outsiders.

And yet, Kenyeres stated that essentialism—the "idea that individuals or groups of individuals have a fixed, stable, and recognizable 'essence' by which they can be classified … was already rejected by Hungarian thinkers as early as 1939" (Kenyeres 2019: 14). Certainly the novelists and poets on whom Kenyeres focused were correct insofar as cultural identity is concerned, because "Hungarianness" is neither biologically transmitted nor biologically inherited. I cannot disagree either with the statement that "Hungarians have always been a mingling people ever since Saint Stephen, and surely had been even before" (Kenyeres 2019:15). However, I could find nothing in Kenyeres's paper confirming that the contributors to *Mi a* Magyar*?* volume had rejected the concept of "race" *per se*, nor the essentialism that accompanies it—just that "race" was irrelevant in the formation of Hungarian identity because of a millennium of intermixture. What were these claims based on? Admixture, through the process of gene flow across population boundaries, has biological relevance. The concept of "Hungarianness" has biological relevance only if this identity is a biological property of Hungarians.

Regarding admixture, Emese Lafferton (2007) noted a number of Hungarian scholars of the 1890–1910 era who shared the view that intermixture had been so extensive in Hungary for a millennium that it was not possible to find a "pure racial type" in the country (Lafferton 2007: 727). This conclusion was also reached by Aurél Török, whose judgment was based on craniometry. He had examined a set of skulls from the conqueror period and found dolichocephalic and brachycephalic crania among them, which, according to the standards of Retzius, meant that even the conquerors did not represent a "pure Magyar race" or "type." Before he began this research, large anthropometric and anthroposcopic surveys of Hungarian children and adults had already been undertaken, and there were other surveys thereafter, with the findings available for analysis. Regardless of the kind of study, the analyses reached the same conclusion: they could not identify a Hungarian "race" or "type," likely because of admixture over the past 1,000 years. This understanding, reached some forty years before *Mi a Magyar?* was published, was no doubt part of the understanding of the contributors to that volume also.

Regarding the possibility that Hungarian identity is biologically inherited, Kenyeres noted in his discussion of Babits, "Just like the other contributors to the 1939 *Mi a Magyar?* volume, Babits rejects the concept that Hungarianness can be identified as a racial or ethnic feture" (Kenyeres 2019: 17). However, one chapter in that volume questions whether all Hungarian thinkers had indeed rejected the concept of essentialism and biological "race" itself.

The physical anthropologist Lajos Bartucz contributed a chapter to *Mi a Magyar?* entitled "Magyar ember, típus, faj" (["Hungarian Man, Type, Race"] Bartucz[7] 1992: 169). He argued that the question posed by the book's title can be answered only by focusing on the "national body" ("nemzettest")—the collective—rather than its component parts (Bartucz 1992: 192). He concluded that this national body was formed by a uniquely Hungarian symbiosis of biological and cultural traits, and from the beginning involved a mixing of "races," a process whereby not only biological traits were transmitted from generation to generation, but cultural heritage

[7] Page numbers are taken from the pdf version of the 1992 reproduction of *Mi a Magyar?* (1939), published by Helikon, Budapest. In the original publication Bartucz's chapter begins on p. 137. In the pdf version it begins on p. 169. The translations are mine.

(spiritual, intellectual, psychological) was also transmitted and absorbed from the Hungarian milieu. Because the cultural context changes as Hungarian history changes with time, Bartucz left open the possibility that perhaps a portion of this cultural heritage was inherited (Bartucz 1992: 188). He also believed that Hungary's natural environment (climate, geography) led to an inherited modification of "racial" type, which makes "races" in Hungary differ slightly from their counterparts in Germany, or Switzerland, or Spain (Bartucz 1992: 191–192). It was this symbiosis of mixed biology and a transmitted, temporally changing culture that made the Magyar, not "race." Nevertheless, according to Bartucz, "races" were *identifiably present* (emphasis mine) in the Hungarian population in varying proportions. His classification listed the following eight "races": *Turanid* (Turanid)+ *Alföld* (Great Plain), *Keleteuropid* (Eastern European), *Dinári* (Dinaric), *Alpi* (Alpine), *Taurid* (Taurid), *Mongolid* (Mongoloid) group, *Nordicus* (Nordic), *Mediterrán* (Mediterranean) and other, in the proportions below.

1.Turanid + Great Plains: 25–30%
2. Eastern European: 20%
3. Dinaric: 20%
4. Alpine: 15%
5. Taurid: 4–5%
6. Mongoloid: 4–5%
7. Nordic: 4%
8. Mediterranean race and others: 1%"
(Bartucz 1992: 183)

It is this particular proportionate distribution of "racial" types in Hungary, blended with Hungarian cultural heritage, that in Bartucz's view made the Hungarian national body unique in Europe. With regard to biology only, in spite of Hungary's "racial" mixture, the composition of the population shows that "amelynek váza, fő anyaga ma is a honfoglaló magyarok által hozott örökséganyag" (["its base and main component is the inherited material brought by the conquering Hungarians"] Bartucz 1992: 192).

What did Bartucz mean by "race" in his essay? His exposition of that complex topic was published in 1940 in his 322-page volume *Fajkérdés, Fajkutatás* (*Race Question, Race Research*). Bartucz explicitly noted that the eight "races" in the proportions he identified in Hungary are not zoological subspecies, species, or "races," the last of these being an informal classification below the subspecies rank in Linnaean taxonomy. Rather, Bartucz considered his "races" to be like "'Thierry-féle történelmi faj" (["Thierry's historical races"]) Bartucz 1940: 316), national collections of people with shared lineage or language, social class and beliefs, as imagined by French historian Augustin Thierry (Seliger 1958). He was very clear that claims about the danger of race-crossings in Hungary in the 1940s were merely opinions lacking evidence (Bartucz 1940: 318), and that far too much subjectivity entered into such discussions. Unfortunately, his silence about the actual meaning he attributed to "race" ('rassz') in the volume *Mi a Magyar?* is subject to interpretation. This can suggest that he held essentialist views associated with the race concept while he simultaneously rejected the idea that there is a "Magyar race" on which Hungarianness depends. Bartucz's ambiguity may be a function of the political climate of his day, in which he sought to divert attention from the "race" of individual human beings by focusing it on the collective and the land it had occupied since the Hungarian conquest: "Az ezeréves magyar nemzettest, a magyar történet és a magyar haza a 'magyar

ember' alakjában oly szorosan összefortak, hogy egyiket másik nélkül el sem tudjuk képzelni. Ha e tényezők egyikét elvesszük, nem lesz teljes többé a fogalom, hogy 'magyar'" ["In the 1,000-year-old Hungarian national body, Hungarian history and Hungarian homeland have fused so closely in the form of the 'Hungarian man' that we cannot imagine one without the other. If one of these factors is removed, the concept of 'Hungarian' will no longer be complete"] Bartucz 1992: 192).

Nevertheless, it is a pity that Bartucz used the term "rassz" in his essay in *Mi a Magyar?* (see: Turda 2010), and did not heed the recommendation of his predecessor, Aurél Török. In 1896 as well as in 1906 Török expressed his considerable frustration that "people continued to speak lightheartedly of 'races'" despite the fact that the concept was scientifically dubious and the existence of human "so-called races" in a zoological sense has never been proved" (Massin 1996: 114). The scientific community, indeed the world, ignored Török's urging "that the word *race* be erased from the scientific vocabulary of physical anthropology" (Massin 1996: 114). Instead, it took on new importance under the concept of "race hygiene" and purification of the human species. The conceptualization of human variation has been a problem for laymen and scientists alike, some of whom have continued to use antiquated terms and labels in the twenty-first century notwithstanding that they "have qualitative implications" (Keita et al. 2004: S20). Today typological classification of human diversity is regarded as meaningless, because the physical phenotype neither defines nor is correlated with all other traits encoded in that individual's DNA. Evidence shows that "races" of the zoological or other kinds do not exist in the human species (Templeton 2016: 360).

Nonexistence of Human Races, but Commercial DNA Companies will Tell You Who You Are

My focus to this point in this essay has been on biological issues, especially how the rise of human classification had divided the human species into "races" with assumed fixed markers, and how "race" became incorporated in the ways people thought about others and themselves, both continentally and nationally. Beliefs that national identity is manifest biologically grew in the interwar years, and Marius Turda (2010), a medical historian focusing on eugenics has written extensively on how some physical anthropologists in Hungary and in Romania also fostered such beliefs. Scores of authors have shown how racial classification by physiognomy and anthropometry combined with cultural traits (e.g., religion of Jews, nomadism of Roma) increased in continental Europe between the two world wars, and as we all know, culminated in the atrocities of the Holocaust. And yet, essentialist thinking has not gone away, especially when thinking about the sources of national identity and belonging.

What we know now about the biology of human variation differs very much from what was thought in the beginning. There is now an extensive literature that shows with morphological and genetic evidence that the concept of human races as they were first conceived and lasted past the middle of the twentieth century just do not exist (Caspari 2018, Fuentes et al. 2019, Templeton 1998, Yudell et al. 2016). It took an analysis of decades of descriptive studies in blood group genetics to lead Frank Livingstone, a physical anthropologist at the University of Michigan, to state in 1962 that there are no races, only clines … those geographic gradients along which gene frequencies, not just skin color, shift, making impossible the identification of absolute boundaries set by objective criteria. Today, the concept that human races are socially constructed

rarely causes more than the blink of an eye among North American physical anthropologists, and those skeletal and genetic traits that are indeed biologically informative about ancestry are employed mainly in the area of forensic sciences. It is important to note that forensic skeletal and dental data can identify the continental origin of some of the ancestors of a deceased individual. However, data that point, for example, to some African ancestry will not disclose if the deceased was born and raised in America or is African-born, let alone a member of a specific African ethnic group (e.g., Yoruba, Ibo, Maasai, Zulu). In other words, forensically important biological data do not give cultural or linguistic information, though our conscious identities and behavior are formed culturally.

What should we make of the commercial companies that for a fee are willing to undertake the analysis of an individual's DNA, to identify the ethnic composition of that individual's ancestry? There are many things that limit the meaningful information that can be obtained from such ventures (Royal et al. 2010). For example, the ability to identify ancestral source populations depends very much on the size of the data bases, by geographic region, held by the given company. A region that is described by the frequencies of traits in samples collected from 1,000 people will have a much reduced ability to provide accurate results contrasted to a region that has samples from 1 million people to draw on to make client comparisons. Along with that, to my mind, is the problem that many users believe their identity is bound up in the source of their genes (Geary 2017). That latter concept has been put to use in TV advertisements that show a happy client proclaiming, "I thought I was German," as he struts in lederhosen, "but I am really Scottish," as the image shifts to his twirling in a kilt. Lederhosen and tartan kilts are products of specific cultures at specific times in their respective histories, and the cultural identities they signify are not codified in genes. In effect, many still believe that locating the geographic source of their genes will tell them who they are, because they believe that their ethnic identities are the product of their genes.

More sad than this are those televisions programs that tell participants in DNA studies that their genes are not from a single geographic region nor a single source population, as they believe based on what they look like. Rather, regardless of their appearance, their genes point to ancestral mixtures between peoples of differing geographic regions. On occasion participants have become emotionally upset on learning such facts, perhaps because they believe that the "purity" of one's lineage is a necessary underpinning of one's core identity. Some cultures still deem a "mixed" background undesirable. And yet anthropologists and geneticists are unanimous that there never have been "pure races," and the belief that they once existed is pure fantasy; the claimed human "races" are not the equivalent of dog breeds (Norton et al. 2019)!

Uses of Genetic and Genomic Data and Potential Clarification of Received History

This brings me to my final remarks, on the use of genetic and genomic data to clarify matters of national historical significance. Were the tales my father told his children—of seven ancient Hungarian tribes migrating from the eastern steppes to conquer the peoples of the Carpathian Basin—rooted in romantic exaggerations? What is the evidence that the tribes were comprised of "pure" Magyar stock—as he believed—and that the peoples already living in the Carpathian Basin were genetically different? Were my Székely ancestors truly descendants of the Huns, or is that too a matter of fanciful imagination, as Pál Hunfalvy asserted (see Lafferton 2007: 717),

much like the records of medieval Hungarian chroniclers who claimed that Huns and Magyars have shared ancestry?

The good thing is that, today, historiographic research on Hungarian prehistory is being revitalized through consideration of new sources and reinterpretation of information in existing ones (Zimonyi 2005). An increased archaeological focus on Hungarian prehistory (Türk 2012) combined with advances in laboratory and computing technology have significantly expanded and clarified aspects of Hungarian ethnogenesis. Today it is possible not only to extract DNA from ancient bone and examine one or two uniparental genomic markers—the nonrecombining portion of the Y chromosome transmitted by males to their sons only, and mitochondrial DNA (mtDNA) transmitted by females to their sons *and* daughters—but computing advances have also made possible analysis of entire genomic sequences contained in cell nuclei, regardless of whether the samples were obtained from the living or the dead (Kivisild 2018).

The first studies using uniparental markers proved surprising (Dreisziger 2011), because markers of Asian ancestry, or those found in high frequency among speakers of Uralic languages, were absent in the initial Hungarian samples that were examined. Subsequently, "a handful" of men with the marker (Dreisziger 2011:8) were found, all but one in Székelys from Transylvania. Their apparent scarcity raised questions. Why are those markers rare to absent from samples of Hungarians when they occur in their linguistic relatives? How could a Eurasian steppe ancestry be true if such markers do not exist in higher frequency among Hungarians?

It is not unusual for such questions to arise when research findings are inconsistent with expectations based on official national histories. Discrepancies can occur for a number of reasons, among them small sample sizes, inappropriate sampling designs, and limited capabilities in laboratory and/or computational techniques. When discrepancies accumulate in spite of improvements in methods the accuracy of the expectations can become challenged. These usually lead to associated queries about the validity of the original expectations.

For example, were the incoming Hungarian tribes "pure" Magyar genetically? They are believed to have intermarried or interbred with some of the conquered populations of the Carpathian Basin. Were these conquered peoples biologically similar to or different from the invaders, and did they differ from the conquerors in their languages, subsistence patterns (settled agrarian versus pastoral nomads), and social stratification (commoners versus elites)? Did the conquerors outnumber the indigenous peoples, and if not, is there a possibility that Avar peoples of the Carpathian Basin, who had conquered the area before the Hungarians, spoke a Uralic language? The latter question is rooted in the concept of a dual origin of Hungarians, which argued that the inhabitants of the Carpathian Basin were already of Magyar stock and therefore speakers of Hungarian when Árpád led the seven tribes across the Verecke Pass into the foothills and the plains below. That dual origin model never really caught on among the majority of historians (Dreisziger 2011), but could it be tested now?

It needs noting that some of the questions in the paragraph above have been addressed by skeletal biologists as well as by archaeologists, historiographers, and linguists, each as ancient sources and disciplinary analytic methods permit. Collectively these specialists have provided the evidence on which Hungarian history textbooks rely. The issue in the age of genomics is whether geneticists who probe biological history could improve what is already known and add

new information, including that which may alter received history. The short answer is "yes," but it must be remembered that new data require interpretation.

Genetic research on population samples of living Hungarians consistently show that they resemble the populations in the countries surrounding Hungary, and genes reflecting Asian heritage are of low frequency. New findings using newer analytic methods, however, add tantalizing observations when comparing traits of the living and the dead. For example, research on Székely populations in Transylvania by Borbély et al. (2023), who used next-generation sequencing methods, obtained complete coverage of mtDNA from 115 individuals, and Y-chromosome sequences from 92 males. Though the majority of the haplotypes of the male-transmitted and female-transmitted lineages reflected European ancestry, some male and female lineages showed Asian origins. Among the latter was one maternal lineage (A12a) that matched exactly the maternal lineage of a male Hungarian conqueror excavated from a tenth-century cemetery in Hungary and was also identical to a maternal lineage identified in human remains from the early-Hungarian cemetery of Bolshie Tigani in the Volga-Ural region (Borbély et al. 2023). The latter site is within the geographic area in which ancient Hungarians resided in the ninth and tenth centuries (Szeifert et al. 2022). It is astonishing to find such sharing of an mtDNA haplogroup between a living Székely, a tenth-century Hungarian conqueror, and an individual buried in the Volga-Ural region 1,100–1,200 years ago.

With regard to the view that the conquering Hungarians were of "pure" Magyar stock, several studies on Hungarian ethnogenesis in the early Middle Ages have shown genetic connections to linguistically related as well as linguistically unrelated populations in the Ural Mountains (Szeifert et al. 2022). Other studies that focused on Hungarians of the conquest period have documented that their male (Y-chromosome) and female-transmitted (mtDNA) lineages were heterogeneous, and were derived from Central-Inner Asian (Scythian, Hun) as well as European Pontic Steppe populations (Neparáczki et al. 2019). Fóthi et al.'s (2020) genomic findings in nineteen male conqueror remains were concordant with these geographic sources, and they also found an infusion of genes from Finno-Ugric-speaking peoples from the West Siberian-Southern Ural area. Specifically, five lineages displayed genetic markers of the Y-chromsome N3a4 branch, found in Ugric-speaking peoples of the Urals, and two were derived from the N3a2 branch, which is estimated to have diverged from ancestors of the Ugric-speaking peoples 6,800 years ago. Their finding confirms other studies which found that a much higher proportion of examined Hungarian conquerors carried Uralic, specifically Ugric haplotypes (37.5%) than living Hungarians, and very likely those conquerors were Hungarian speakers. Most importantly regarding the biological composition of Hungarians, all show that mixtures were certainly present from the beginning among the ancestors of modern Hungarians, and biological "purity" was nil.

Regarding the claims that the Y-chromosome haplogroup (N-Tat) and its branches are found among speakers of Uralic languages and almost never in living Hungarians, Pamjav et al. (2017) found otherwise. They opted to sample 147 unrelated males from twenty-four villages in the Bodrogköz, a triangular area of moorland in northeast Hungary demarcated by the Bodrog, Tisza, and Latorca Rivers. The international border with Slovakia cuts the Bodrogköz in half today (Borsos 2009), but prior to 1920 the entire region was part of historic Hungary. The area had served as a refuge during the devastating invasions of the Mongols and Ottomans in the thirteenth and sixteenth centuries, respectively, hence the decision to obtain samples from that

geographic area. Pamjav et al. found that 6.2 percent of their sample carried haplogroup N1c-Tat, "but most of it belonged to the N1c-V129 subgroup, which is more frequent among Balto-Slavic speaking than Finno-Ugric speaking peoples" (Pamjav et al. 2017: 885). They also found evidence for Turkic admixture, and based on their sample they estimated that at most only 10 percent of the population of Hungary in the tenth century were Ugric speakers.

Pamjav et al.'s (2017) and Fóthi et al.'s (2017) findings, based on data from the living versus data from ancient bone seem contradictory with respect to the proportion of putative Hungarian speakers among the conquerors of the tenth century. Resolution may be present in Pamjav et al.'s (2022) more recent findings on living Hungarians residing on the Magyar-Slovak periphery. They obtained 106 unrelated male samples from the Rétköz valley in Hungary and 48 from the Váh valley in Slovakia. Y-chromosome haplogroups that had been found in studies of Hungarian conquerors comprised 10 percent of the Rétköz sample, but none was found in the Váh sample. The latter were similar to those displayed by adjacent speakers of Indo-European languages. The other major difference in these sampling areas was in regard to their geographic locations: the Váh valley is closer to Western Europeans in the Hungarian-Slovak contact zone, while the Rétköz valley is at the eastern end of the zone. The authors make no conclusions about the reasons for the observed genetic differences, because a number of factors could be responsible. However, the study certainly shows that sampling design, including location, matters.

The findings that I have briefly highlighted in the preceding paragraphs demonstrate excellence in genetic and genomic research undertaken in Hungary, and with research partners in Russia and in other lands that ancient Hungarian speakers had once occupied. Hungary is rich in archaeological sites extending back through time to the Paleolithic period. Excavations of many sites have been undertaken, the ages at which their material and human remains were deposited have been determined, and Hungarian physical anthropologists have focused a great deal of attention on the skeletal biology of the people interred. Partnerships between them and geneticists have been established at a few centers to use genetic, and now genomic, methods to identify the genes carried within those excavated bones. In this area of research, geneticists at the University of Szeged are particularly active, and they are fortunate that the skeletal collection curated under the physical anthropologist Antonia Marcsik and her successors at the University of Szeged is large and well defined. A very strong research group is also located in Budapest, at Eötvös Loránd University (ELTE) and the Laboratory of Archaeogenetics of the Institute of Archeology in the Research Center for Humanities. Members of these groups often work with partners at Pázmány Péter Catholic University, in Piliscsaba, just twenty-five kilometers outside Budapest. Hungarian scholars and scientists are clearly well-positioned to undertake whole genome studies on the living population and their skeletal ancestors, not only to describe them genetically but also to test any number of hypotheses, as my brief survey has illustrated.

Though I am excited by the archaeogenetic findings, I must offer some caveats also. Confirmations, or rejections, or "maybes" of what is believed today are sure to come. Many recent studies have been done with uniparental markers only, and their findings may be supported or supplanted with studies based on whole genome analysis, which yield so much more information. In the past, studies on the genetics of Hungarians conducted without authors who are knowledgeable about Hungarian history and associated issues sometimes merited criticism for their ignorance (Dreisziger 2011). It is therefore worth knowing that these days such studies are typically undertaken by a consortium of researchers, which include an international

array of geneticists with expertise in different areas, physical anthropologists, archaeologists of the relevant period, historians, and museologists.

Two recent studies, one published in April 2022 and one in July 2022, are examples not only of collaborative authorship but also of great advances in knowledge about the peoples of the conquest period. The first—done by a consortium of Italian, Hungarian, Austrian, and Korean researchers—showed that elite members of Avar society were not only closely related genetically to an individual who was likely an Avar living in what is now Mongolia, but that the given individual also made the more than 7,000-kilometer journey from Mongolia to Hungary within a decade or two; that is, during his lifetime. The study provides evidence that the elite among the Pannonian Avars were indeed genetically related to the peoples of the Rouran Empire of Inner Asia. Genomic evidence also shows that Avar elites tended to marry among themselves, albeit not exclusively so. On the other hand, the commoners were not in the least inbred, and their DNA displayed genes typical of European populations, some genes that denoted Uralic ancestry, and still others that were linked to genomes of people believed to be Huns. In other words, rather than finding a genetically "pure" population in the Avar era, the researchers found a mixed population (Gnecchi-Ruscone et al. 2022).

The second paper—written by a consortium of Hungarian geneticists, historians, and physical anthropologists, as well as Turkish, Italian, Swedish, and Romanian contributors—was based on the genomes of 265 people and included nine Hun, 143 Avar, and 113 Hungarian conquest period samples. The study's purpose was to determine if the Huns, Avars, and Hungarians, who succeeded each other in the Carpathian Basin, could be genetically connected to "putative source-populations" in Asia (Maróti et al 2022: 2858). Among the study's key findings were that there were not only genetic links between the Huns found in Europe and Xiongnus of Asia, whom several historians have believed to be Asian Huns, but that the core of the European Avar sample was also linked to the Xiongnu. The conquest-period Hungarian sample's core showed a mixed population with ancestors derived from Mansis and Sarmatians first, and then Xiongnus. Some subsidiary findings included evidence that supports genetic and linguistic findings from earlier studies, and many Avar and Hungarian genetic "outliers" shared Hun-related ancestry. Finally, from each of the three periods examined, the local residents had genes derived from indigenous European ancestry.

Both studies acknowledge weaknesses in some of their data sets, but they are also confident in their major findings. Chinese sources were the first to point to the Xiongnu as ancestral Huns, though whether they were is still debated by historians. The mentioned Mansi were likely ancestrally related to living Mansi (Voguls), who are Uralic speakers, and to the Khanty (Ostyák), both of these peoples speaking languages that are linguistically closest to Magyar. The ancient Sarmatians were speakers of an Iranian language, and ancient Iranian loan words have been identified in Hungarian. All these matters point to a huge step in our understanding the genetic composition of peoples who are linked to Hungarians' own origins. The findings again reinforce the conclusion, expressed by Aurél Török, through many an anthropologist and geneticist, that there were never "pure" populations as believed in the nineteenth and early twentieth centuries. Both papers suggest that a great deal of clarification will be emerging about the genetic ancestry of Hungarians, perhaps enough to change the current, written history as well.

Conclusion

I am very lucky that in my seventy-ninth year, I can tell myself that I was wise to study genetics in an anthropological context. I am fortunate to have known the worlds of the Indigenous peoples of subarctic Canada forty years ago, when some families were still traveling by dogsled in the long, cold winters. I have lived long enough to have contributed to the exposition and understanding of Indigenous peoples' genetic histories, and elucidate the factors that influence their susceptibility to type 2 diabetes. But my greatest good fortune is that a combination of genetics and bioarchaeology investigations is yielding new information about the biohistory of my own Hungarian ancestry, with different interpretations than can be predicted from received history. I may not live long enough to know the end of that unfolding story, but you will. You will have a role in writing about that story unknown to so many in our English-speaking world, as you will inform that word of what the descendants of those ancient invaders and the peoples who were already there are now doing in Hungary and in the rest of the world. That exposition remains relevant to those who explore and contribute to Hungarian studies.

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