




RESEARCH ARTICLE

Taiwanese DNA versus Chinese DNA: Genetic science and identity politics across the Taiwan Straits

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Abstract

The article analyses how population genetics has impacted on nationalist discourses across the Taiwan Straits and affected the relationship between Taiwan and China since the 1990s. In Taiwan this cutting-edge science has helped to construct a native-based and Taiwan-centred national identity through promoting indigenous peoples' rights, rejecting a blood-based, cross-Straits nationalism, and founding a pan-Pacific indigenous peoples' community through genetic links and cultural affinity. In China, after subverting the nationalist myth of Peking Man (a *Homo erectus* group believed to be the common ancestor of the Chinese) by analysing genetic data, the same group of Chinese genetic scientists have constructed another nationalist myth of a genetically homogenous nationhood. Such a discourse not only valorizes Chinese nationalism through claiming a DNA-based Chineseness across ethnic distinctions but also asserts genetic links between China and Taiwan, therefore providing a 'scientific' basis for China's nationalism in the new century.

Keywords: DNA; China and Taiwan; national identity; ethnic minority; science; nationalism

Introduction

Since the late 1990s, population genetics and inheritance-related biotech have received substantial endorsement from the state and met with sustained commitment from scientific communities as well as profound interest across society on both sides of the Taiwan Straits. The engagement with this late twentieth-century scientific breakthrough started in China when the country joined the Human Genome Project (HGP) and the Human Genome Diversity Project (HGDP) in the late 1990s. These two internationally collaborative projects were designed to draw a map of early human migration on a global scale. In Taiwan it started with the island nation establishing the Taiwan Biobank and its efforts to fight SARS in the early 2000s. These early projects have led to state entrepreneurialism, treating the science as a key strategic project to

ensure both nations' competitiveness in twenty-first century global science.¹ Taiwan has stressed the genomic uniqueness of its indigenous and minority groups 'as a niche in the competitive global biomedical market' and so has Chinese official propaganda.²

However, since this scientific breakthrough engages with the origin and evolution of different human groups, it has had an immediate and enduring impact on our perceptions of the individual, the group, as well as national identities, often simplified as 'DNA and identity politics' in non-scientific discussions. The fast-growing popularity of genetic science in Taiwan and China is a case in point. Knowledge produced through rewriting population history provides a scientific ground for political discourses of an independent (Taiwan) and an integral (China) nationhood respectively, provoking enduring public and cross-Straits discussions and debates by engaging 'scientific facts' to challenge each other's nationalist claims.

This article analyses how DNA-related nationalist politics have evolved in Taiwan and China since the 1990s. In Taiwan, scientific research has given rise to a discourse of an indigenous Taiwanese identity that denies a blood-based, cross-Straits Taiwanese nationalism held to be the case by Taiwan's then ruling Guomindang (GMD, Nationalist Party). The discourse also created a genetic link between the indigenous peoples of Taiwan and various Southeast Asians and Polynesians, seeking a pan-Pacific genetic affinity. Domestically, this discourse buttressed an indigenous nationalism that necessitated de-Sinicization; internationally, it helped to pursue the goal of garnering foreign sympathy for Taiwan as an independent nation-state.

In China, the scientists who joined the two international genome projects subverted the nationalist myth of Peking Man, a 700,000-year-old *Homo erectus* group deemed to be the common ancestor of the Chinese, by analysing genomic data collected in China. But after debunking this nationalist myth, the same group of scientists have constructed another nationalist myth of a genetically homogenous Chinese (*Zhonghua*) nationhood. Propagated through popular science, this discourse not only valorizes Chinese nationalism through claiming a DNA-based Chineseness, or a national family, across ethnic distinctions, but also claims to have found genetic traits shared by Chinese and Taiwanese, therefore rejecting a genetically independent 'Taiwaneseness'.³

¹For relatively recent reviews of the biotech and DNA-based industry in Taiwan and China, see Jean-François Tremblay, 'Taiwan's biotech industry stands at a crossroads', published online 11 June 2018, available at <https://cen.acs.org/pharmaceuticals/Taiwans-biotech-industry-stands-crossroads/96/i24>, [accessed 15 December 2022]; Nikkei Henny Sender, 'China's great leap forward in biotech', *Nikkei Asia*, published online 3 October 2018, available at <https://asia.nikkei.com/Spotlight/The-Big-Story/China-s-great-leap-forward-in-biotech>, [accessed 15 December 2022].

²For Taiwan, quoted from Tsai Yu-Yueh and Wan Ju Lee, 'An imagined future community: Taiwan Biobank, Taiwanese genome, and nation-building', *BioSocieties*, published online 3 January 2020, available at https://www.researchgate.net/publication/338373773_An_imagined_future_community_Taiwan_Bio_bank_Taiwanese_genome_and_nation-building, [accessed 15 December 2022]. For China, see 'The creation of the world's largest genome center for ethnic minorities', *世界最大少数民族基因库建成* *Guangming Daily*, published online 10 November 2004, available at https://www.gmw.cn/01gmrb/2004-11/10/content_129186.htm, [accessed 15 December 2022]. This article draws on materials using both Traditional (Taiwan) and Simplified (China) Chinese characters. In each case, the source refers to its original characters.

³Important academic works include Tsai Yu-yueh, 'Genetic Science and Identity Politics: Indigenous DNA, the Origin of the Taiwanese, and the Emergence of Bio-multiculturalism', *Taiwanese Sociology*

Taiwanese DNA versus Chinese DNA: Identity politics in Taiwan

Four stages of identity politics

This article divides the development of identity politics in Taiwan into four stages. It started with Japanese colonial policy (1895–1945) which differentiated population groups based on race and ethnicity. It was then developed through *shengji* (省籍 provincial origin in mainland China) identity constructed under the GMD. At the turn of the century, the rise of a discourse of ‘Taiwanese’ through an enquiry into biomedical science marked the third stage. The last and current one is that of a consensus reached of a ‘Taiwanese’ with more diverse and mixed genetic origins. This also interprets the island’s demographic composition in a pan-Asian-Pacific context of early human migration. From a national identity politics perspective, the last two stages are essentially a process of de-Sinicization and localization.

Taiwan was ceded to Japan by Qing China after the first Sino-Japanese War (1894–1895). The Japanese colonial administration’s modern anthropological methods applied racial categories to establish group differentiations among Taiwanese people. Through population surveys, Taiwan residents were grouped into three categories. The first was *neidiren* (內地人, the inlanders), referring to Japanese colonizers and Korean immigrants, so named from a Japan-centred imperial spatial concept. The second was *bengdaoren* (本島人, the islanders), an inclusive but assorted demographic concept. It divided Taiwan islanders into *hanren* (漢人, Han residents, with Fujian-origin people and Guangdong-origin people as two subgroups) and *fanren* (番人, ‘barbarian’, or indigenous people). *Fanren* was further divided into *shoufan* (熟番 ‘cooked barbarians’, meaning more civilized) and *shengfan* (生番 ‘uncooked or less civilized/completely primitive barbarians’). All *fan* terms derived from traditional Han Chinese terms for non-Han, and often frontier, peoples. During the 1930s, Japanese authorities replaced the category *shoufan* with *pingpu* (平埔, ‘plains people’, defined as an independent category for descendants of female indigenous peoples and male Han migrants) and *shengfan* with *gaosha* (高砂族 indigenous people who had lived in the mountains and therefore had been much less civilized, often a result of their resolve to resist ‘civilization’), thus in theory removing the old terms’ explicitly derogatory connotation. The third group comprised foreigners, mainly mainland China immigrants who had not lived long enough in Taiwan to be identified with *bengdaoren*. The Japanese government also used a pejorative term—also found in mainland China—*zhinaren* (支那人, similar to ‘Chinaman’ in the North American context) to refer to the last group.⁴

no. 28, December 2014, pp. 1–58. 蔡友月 ‘基因科學與認同政治: 原住民 DNA, 臺灣人起源與生物多元文化主義的興起’, *臺灣社會學* 第 28 期, pp. 1–58; Jennifer Liu, ‘Postcolonial Biotech: Taiwanese Conundrums and Subimperial Desires’, *East Asia Science Technology: An International Journal* vol. 11, no. 4, 2017, pp. 563–588; and J. Liu, ‘Making Taiwanese (Stem Cells): Identity, Genetics, and Hybridity’, in *Asian Bionation*, (eds) Aihwa Ong and Nancy N. Chen (Durham: Duke University Press, 2010), pp. 239–262. For mainland China, see Wen-Ching Sung, ‘Chinese DNA: Genomics and Bionation’, in *Asian Bionation*, (eds) Ong and Chen, pp. 263–292; Yinghong Cheng, ‘“Is Peking Man Still Our Ancestor?”: Genetics, Anthropology and Politics of Racial Nationalism in China’, *The Journal of Asian Studies* vol. 76, no. 3 August 2017, pp. 575–602.

⁴Wong Fucang, ‘From Chinese Original Domicile to Taiwanese Ethnicity: An Analysis of Census Category Transformation in Taiwan’, *Taiwanese Sociology* no. 9, June 2005, pp. 59–117 (王甫昌 ‘由 “中國省籍” 到 “臺灣族群”: 戶口普查籍別類屬轉變之分析’ *臺灣社會學* 第九期).

The Japanese classification of various Taiwanese was a mix of exonyms of traditional Han-centric and Chinese imperial ideology with Yamato racism and Japanese colonial hierarchy, which placed Korea and Ryukyu above Taiwan and mainland China.⁵ It also showed the Japanese scientific community's attempt to investigate colonial subjects, a practice common among colonizers worldwide. Special attention was paid to the anthropological and racial characteristics of various indigenous peoples, reflected in the collection and categorization of group medical samples published in scientific periodicals.⁶ Despite its colonialist and racist orientation, the basic grouping categories of the Japanese system had an enduring influence on ethnic identification and population surveys after Japanese rule had ended.

After the Second World War, China restored its sovereignty over Taiwan and the GMD government retreated from the mainland to the island in 1949. Under the authoritative leadership of Chiang Kai-shek, the policy priority of the one-party GMD government was to continue to maintain its legality as the only legitimate 'Chinese state' and to build the island as a base for retaking the mainland from the Chinese communists. To this end, the GMD regime constructed an ethnonationalist history that claimed Taiwan as part of historical China and all Taiwanese as 'Chinese people'. Such a discourse suppressed Taiwanese native culture and ethnic consciousness: anything 'Taiwanese' had to be addressed or incorporated into the official 'China' narrative, or otherwise ignored and excluded. This mainland China-oriented nationalism dictated Taiwan's ethnic politics. One of the GMD regime's major policies was to create new categories for both population surveys and individual identity, which was implemented through a *shengji* (省籍 provincial origin) identity system. The system identified Taiwanese who had retreated to the island around 1949 through their paternal genealogy (their birthplaces or that of their forefathers) in provinces of mainland China.⁷ A person who was born, or whose father/grandfather was born, in Hunan Province, for example, was identified as Hunan *ji* (籍, Hunan origin). For Taiwanese whose ancestors migrated to the island from Fujian and Guangdong provinces much earlier and who constituted the island's largest demographic, the system registered them as Fujian Taiwanese, Guangdong Taiwanese, and Hakka⁸ Taiwanese, clearly indicating their mainland-bound and gendered genealogy.⁹ Furthermore, the system even required everyone to trace their paternal roots to the county or township level.

Inheriting classification categories from the Japanese, the *shengji* system labelled various indigenous groups as *gaoshan* (高山, originally 高砂 under the Japanese system, meaning mountain people), or *shanbao* (山胞, fellow countrymen living in the mountains) and *pingpu* (平埔, indigenous people of the plains). Yet, a noticeable change happened in the mid-1950s when the category of *pingpu* was eliminated by the state

⁵J. Bruce Jacobs, 'Taiwan's Colonial Experiences and the Development of Ethnic Identities: Some Hypotheses', *Taiwan in Comparative Perspectives* vol. 5, July 2014, pp. 47–59.

⁶Tsai, 'Genetic Science and Identity Politics', p. 21.

⁷The official translation of *shengjie* was 'original domicile', which has been questioned by Taiwanese scholars. See Wong Fucang, 'From Chinese Original Domicile to Taiwanese Ethnicity', pp. 63–64.

⁸The Hakka were mainland China migrant labourers from the south who became subsumed within this category in the Ming-Qing period.

⁹Tsai, 'Genetic Science and Identity Politics', p. 21.

and its members were transferred into other, largely mainland-rooted, groups.¹⁰ The removal of *pingpu* went uncontested at the time, but decades later, when the indigenous peoples' rights movement emerged to challenge official ethnic policies, the 'disappearance of *pingpu*' became a subject of heated debate, especially after genetic evidence showed the existence of such a group as a biological fact.

From the 1950s to the 1980s the *shengji* system underwent some complex alterations, but the fundamental principles remained the same. The system established at an individual level a direct link between the majority Taiwanese, no matter how long they had lived in Taiwan, and the provinces in the mainland as their places of origin to create or reinforce a 'Chinese' instead of 'Taiwanese' identity. At a national level, such a link constructed an imagined national territory based on provinces in the mainland to legitimize the Taiwan-based GMD government's claim to represent the Chinese nation in the world. In domestic politics, the system privileged politicians and officers who had been evacuated from the mainland, ensuring them almost permanent seats in the government's legislative branch: each province under the *shengji* system was entitled to have a quota of representatives, while the majority of Taiwanese were assigned a quota of just one province. Yet, even among those 'Taiwanese representatives', a significant number were selected from those who had left the island for the mainland during Japanese rule, called *banshan* (半山 half mainlander) people.¹¹ In the meantime, martial law, enforced from 1949 in the name of preventing communist subversion, effectively suppressed any grievance from the majority of Taiwanese.

After the death of Chiang Kai-shek in 1975, political opposition began to emerge in Taiwan and developed into a full-fledged movement in less than two decades. As an outstanding case of the global 'third wave of democratization', Taiwan's transition, however, was also characterized by the increasing awareness of indigenous peoples' rights. This development echoed another emerging global trend of the time, marked in the World Council of Indigenous People's Declaration of Principles founded in 1984. Started as a political protest movement targeted at cultural revival by indigenous peoples, especially in the Pacific region to which Taiwan belongs, and to defend or reclaim their identity and tradition, the international movement empowered Taiwan's democratization with a native, moral resource: the GMD regime not only suppressed political opposition with a one-party ideology but also imposed a Han-centric ethnic nationalism that denied indigenous peoples' rights. Initiated and led by a group of intellectuals with an indigenous background, the Taiwan Association of the Rights of Indigenous Peoples (TARIP, 臺灣原住民族權利促進會) was established in 1983 and published the 'Declaration of the Rights of Taiwan Indigenous Peoples' (臺灣原住民族權利宣言) in 1988.¹² Just as the international movement targeted Western colonialism, so too did

¹⁰In 1954, the governor of Taiwan Province issued an executive order that eliminated *pingpu* as a population registration category. Two years later the category disappeared from official population surveys. For an official reference to that history, see the Taiwanese government's website: <https://law.moj.gov.tw/LawClass/LawAll.aspx?pcode=D0030006>, [accessed 15 December 2022].

¹¹For a detailed analysis of the political purpose and outcome of such a *shengji* system, see Wong Fucang, 'From Chinese Original Domicile to Taiwanese Ethnicity', p. 101.

¹²For a brief and official introduction to the movement, see the Government of Taiwan Taiyuan County, 'The origin and significance of the day for Taiwan indigenous peoples' (臺灣原住民族日之由來及意義):

the Taiwanese movement target China's rule over Taiwan. By adopting and popularizing 原住民 (*yuanzhumin*, 'indigenous peoples' in Chinese), the movement not only rejected all exonyms that deprived these peoples of their sovereign rights to the land and their identity, but also injected a strong sense of a shared historical experience to all non-Han natives. By so doing they created an ideological weapon for political activism.

This development helped to create an atmosphere conducive to the rise of the political opposition movement represented by the Taiwan Democratic Progressive Party (DPP, founded in 1986). Directly challenging the GMD's one-party regime, the DPP's political slogans and strategies were clearly aligned with the TARIP's agenda: to establish 'Taiwanese subjectivity' (the consciousness of Taiwan as an independent, national community), promote cultural and political de-Sinicization, and eventually march towards Taiwanese independence (臺獨 *taidu*).¹³ The DPP thus appropriated the indigenous peoples' rights movement to delegitimize the GMD regime: the experience of indigenous peoples under the GMD regime was a human-rights violation that needed to be redressed as part of the 'transitional justice' that ran parallel to the aim of democratization.¹⁴

Driven by this historical trend, since the early 1990s, Taiwanese governments, both the GMD and especially the DPP, have taken steps to settle the issue of indigenous peoples' rights. In 1992, the Legislative Yuan (the legislative branch of the government) amended the Household Registration Act to remove the *shengji* category and introduce 'place of birth' on personal identity documents, establishing not only a 'born-in-Taiwan' category, but also a gender-neutral status. However, indigenous peoples were identified by the specific names of their particular groups as a measure of cultural protection.¹⁵ In 1995, another amendment discontinued the use of *shanbao* and made 'indigenous peoples' the official name for all peoples of this sort. In 2005, the Legislative Yuan passed the Indigenous Peoples Basic Law, comprehensively defining and legalizing indigenous peoples' rights. Various cultural policies were also implemented to restore or reinforce ethnic consciousness, such as abandoning Sinicized names for individuals and localities, and restoring indigenous ones or adopting new ones. Another important change was made to the disappeared *pingpu* category. Using evidence of intermarriage between mainland immigrants and *pingpu* women from the sixteenth to the nineteenth centuries, activists of the indigenous peoples' rights movement questioned the political motivation behind 'the disappearance of *pingpu*'. Their efforts led to the term *pingpu* reappearing and being used as the name for a broad range of mainland Taiwanese and indigenous Taiwanese in public discussions, although the

<https://www.pingzhen-hro.tycg.gov.tw/home.jsp?id=276&parentpath=0,13,151,176>, [accessed 15 December 2022].

¹³For a more politically articulated Taiwanese subjectivity discourse, see Li Yung-chih et al., *Construction of Taiwan Subjectivity* (Taipei: Lee Teng-hui School, 2014). 李永熾等《臺灣主體性的建構》(臺北: 群策會李登輝學校2004).

¹⁴Lin Shuya, *The First Nation: Constitutional Implications of Taiwan Indigenous National Movement*. 林淑雅. 第一民族: 臺灣原住民族運動的憲法意義 (臺北: 前衛出版社 2000); also Jolan Hsieh, *Collective Rights of Indigenous Peoples: Identity-Based Movement of Plain Indigenous in Taiwan* (New York: Routledge 2010).

¹⁵For a reference, see the current Act's Articles 6 and 14-1, respectively: <https://law.moj.gov.tw/LawClass/LawAll.aspx?pcode=D0030006>, [accessed 15 December 2022].

term itself has never been legally established as a separate population or ethnic category. In sum, after more than three decades of ideological debate and political change, the previous mainland-based and Han-centred Taiwanese discourse, which implied either a 'purely Chinese' or an untainted indigenous identity, has been replaced by a more island-based, mixed and diverse, but integrated national population, which is profoundly reshaping Taiwanese nationalism and cross-Straits relations.

Taiwanese DNA versus Chinese DNA: Genetics and identity politics

Under the *shengji* system and martial law, academic discussions and scientific research related to ethnicity and Taiwanese history were either censored or banned. One such area was haematological research which inferred the genealogical origins of various groups of Taiwanese people. In the early 1990s, however, Taiwanese scientists began to be influenced by the global trend in genomic studies and biotechnology. Some of them complained about lingering government policies that were still politically sensitive about such science even after martial law had ended. They demanded that, as Taiwanese, conducting such research was an 'obligation'. Under these circumstances, scientific research on Taiwanese blood lineages began to impact on political discussions on ethnic issues. At conferences on indigenous peoples' culture, history, and identity, biological and medical scientists informed participants of the recent research on relevant subjects.¹⁶

The participation of scientists in such discussions significantly impacted on ethnic and national identity politics in Taiwan, leading to a debate on 'Taiwanese DNA versus Chinese DNA', which is the subject of this article. Starting from the early 1990s, and led by Dr Lin Marie (林媽利), Mackay Memorial Hospital in Taipei embarked on projects concerning the biological and genetic features of indigenous Taiwanese. One early such project was to establish a standardized procedure to secure the safety of blood tests and transfusions. Educated and trained in internationally standardized practices, Lin and her team came to realize that the haematological data collection and analyses needed to have standards and procedures for the blood types and antibodies of various Taiwanese people, especially indigenous groups. This led to the establishment of Manual Polybrene, a safety procedure to be used in blood tests and transfusion that was customized for Taiwanese. This was the only such policy in Asia at the time, as other Asian countries were using a system established in the West.¹⁷ Another important project they carried out was fighting the outbreak of SARS in 2003, which led the team to come to a hypothesis that, in terms of blood relationships, while the majority of Taiwanese people had an affinity with 'southern Asian populations' (such as Hong-Kong peoples, Vietnamese, Singaporeans), who were susceptible to the disease, indigenous Taiwanese experienced almost no cases of infection.¹⁸ This was evidence of different ancestral bloodlines among different groups of Taiwanese.

¹⁶Tsai, 'Genetic Science and Identity Politics', pp. 18–19.

¹⁷Ibid., pp. 24–25.

¹⁸Lin Marie, 'Association of HLA Class I with Severe Acute Respiratory Syndrome Coronavirus infection', *BMJ Medical Genetics* vol. 4, no. 9, 2003, available at: <https://bmcmolgenet.biomedcentral.com/articles/10.1186/1471-2350-4-9>, [accessed 15 December 2022].

In her article on the significance of the research conducted by Lin Marie and her team, Tsai Yu-yueh summarized four important aspects that deserve fuller explanations.¹⁹ The first is that ‘Taiwanese are not pure northern Chinese’, which challenged the long-established nationalist myth. Based on the analysis of HLA gene frequency, they concluded that southern Han people are different from northern Han, and Minnan and Hakka Taiwanese (the majority of Taiwanese) were descendants of *yuezu* (越族), a historical ethnonym referring to the people who had lived in the south-east Chinese coastal provinces. In today’s mainland China, *yue* is no longer recognized as an ethnic group and is not included in the official 56 ethnic categories. Lin and her team believed that some *yue* people migrated to Taiwan a long time ago, before the Hakka and Mingnan people, and that those remaining in the mainland were later absorbed by Han migrants coming from northern China. Unaware of the existence of this disappeared and assimilated group, they argued, in Taiwan, the descendants of this group were mistakenly identified as ‘Han Chinese’.

The second aspect of Lin’s theory is the multi-origin of indigenous Taiwanese and the genetic affinity between them and Southeast Asian Island peoples. DNA comparison showed haplotype similarities between indigenous Taiwanese and many Asian ethnic groups, including those in North, Northeast, and East Asia, but stronger links were found between Taiwanese indigenous peoples and Southeast Asian islanders. This data suggested that about 10,000 years ago (during the last Ice Age), Taiwan was a point of transfer on the route of human migration to the Asia Pacific. This DNA-based analysis thus further diluted the supposed ‘blood relationship’ between Taiwan and mainland China, as the GMD regime had emphasized.

The third aspect of the research was the rediscovery of *pingpu* people’s ethnic characteristics and re-establishment of their ethnic identity. An independent category under Japanese rule, the *pingpu* had been judged by the GMD regime to be completely assimilated into the mainland migrants, therefore the category was abandoned in the mid-1950s. This decision came under attack and was even called ‘genocide’ by radicals of the indigenous peoples’ movement and DPP politicians, because it strengthened Han ethnicity in Taiwan by expanding its numbers at the cost of indigenous and mixed-blood groups. Lin’s lab received many requests for DNA tests from individuals who believed they had indigenous peoples’ biological characteristics. Based on their testing results, Lin claimed the continued existence of *pingpu* people as a mixed type (or *hanhuafan*, 汉化番 in Chinese meaning ‘Sinicized indigenous people’, an old subcategory under Japanese rule). By projecting a mixed biological identity, this argument also helped to strengthen the discourse of Taiwan subjectivity.

The fourth aspect involved attempts to quantify this mixed type: roughly how many Taiwanese today carry the genetic features of indigenous peoples? In 1996, a doctor at Kaohsiung Medical University proposed a range between 20–60 per cent. In the mid-2000s, based on her team’s research, Lin came up with more specific statistics that increased the percentage from an original possibility of 13 per cent to 26 per cent to the eventual 85 per cent. The wide variation in the figures was the result

¹⁹Tsai, ‘Genetic Science and Identity Politics’.

of which medical or genetic analytical method was used in the data collection and interpretation, ranging from HLA to Mitochondrial DNA and to Y-chromosome.²⁰

Lin and her team's work became a focus in Taiwan's identity nationalist politics, especially during the first decade of the twenty-first century. The mass media closely followed her research activities and often covered them with sensationalized headlines and simplified interpretations. Such an interaction between science and the media, driven by the continuing trend towards developing a Taiwan subjectivity that emphasized a native-rooted and island-based nationhood, provoked controversies and debates across society. *Liberty Times* (自由時報) and the *United Daily News* (聯合報), two important Taiwanese non-government newspapers supporting a pro-Taiwanese nationalism and pro-Chinese nationalism (the latter comprising various people either institutionally or ideologically associated with the GMD, or culturally more attached to Han Chinese tradition), respectively, both promptly covered Lin's research. They both showed profound understanding of the political implications of the scientific evidence but often interpreted it differently and even engaged in debates with each other. One such debate occurred in November 2007. *Liberty Times* first published Lin's essay stating that 85 per cent of non-indigenous Taiwanese carry genes of indigenous peoples, and then ran an editorial entitled 'Most Taiwanese are different from Chinese in their blood', in which the Taiwanese desire for independence was portrayed as a 'spirit deeply rooted in their blood'. Two days later, the *United Daily News* published an editorial entitled 'A civilized society does not allow a "blood theory" to incite confrontational sentiment'.²¹

The discussions concerning or challenging the social impact of Lin's research revolved around three questions: whether Lin's methods of collecting and interpreting genomic data were scientifically grounded and methodologically consistent; whether the way she collected these samples from indigenous peoples was ethical; and whether her research was closely associated with, or even driven by, a political agenda supporting Taiwan independence through rejecting Taiwan's national identity as part of the Chinese nation and the Taiwanese as Chinese people.

Among Lin's critics, the anthropologist Chen Shu-Juo (陳叔倬) was the chief challenger. In 'Plains Indigenous Ancestors and Taiwan Blood Nationalism' (co-authored with Duan Hong-kuan, a scholar of indigenous origin) published in 2008, Chen focused on Lin's estimate that about 85 per cent of Taiwanese carried indigenous peoples' genetic features. For Chen, Lin's estimate was problematic, or even fundamentally flawed, for a number of reasons. He claimed that Lin had overestimated the role of northern Han people in forming the Chinese nation and had failed to consider the southern Han Chinese who migrated to Taiwan. Similarly, Lin took *yuezu* to be a biological human group, while the category is a historical and cultural concept unsuitable for scientific study. Chen called such a *yuezu* 'a historical imagery'. Lastly, Chen judged that Lin's research methods were not consistent, resulting in a dramatically increased

²⁰These four aspects are extracted from Tsai, 'Genetic Science and Identity Politics', pp. 25–29, which was based on the scientific publications of Lin and other researchers. Also see Lin Marie, *We Have Different Blood: The Mystery of Genealogy of Ethnic Groups in Taiwan* (Taipei: Avanguard Press, 2010) 我們流著不同的血液: 臺灣各族群身世之謎 (臺北: 前衛出版社).

²¹*Liberty Times*, 自由時報, 21 November 2007; *United Daily News*, 聯合, 23 November 2007.

percentage of indigenous DNA in the Taiwanese population. He therefore accused Lin of manipulating data to overlay the role of indigenous peoples' genetic samples in testing and analysis.²²

Scientific and scholarly critique paved the way for Chen to reveal and question the intent and social impact of Lin's research. For Chen, Lin's early estimates of the percentage of indigenous peoples' bloodline in the entire Taiwanese people's genetic pool (between 13 per cent and 26 per cent) were based on credible data representation and result assemblage. But he judged that her later and much higher estimates were either crafted or modified to accommodate a 'Taiwan blood nationalism' (臺灣國族血統論) by appealing to 'the myth of indigenous genes' (原住民血統神話). He argued that this nationalist ideology sought legitimacy more in a primordialist rather than a constructivist paradigm to explain the origins of a nation. For Chen, such an ideology, intentionally or not, followed precisely the same logic of its opponent. As Chen put it, the traditional perception of the Han/Chinese identity theory believed that 'the Han identity is basically a primordial one, meaning that as long as the father is Han, so is the son; this Han identity has historically never accepted the idea of mixed blood. Further, the Han identity highly overlaps [i.e. was equal to] Chinese identity, therefore, to claim a non-Han ancestry and a mixed-blood family history is the most direct method to cut off the link with Han and Chinese identity.'²³

Chen's critique was quickly refuted by Lin. Lin questioned Chen's qualifications to criticize her highly specialized scientific research. She argued that Chen had misread her conclusion regarding '85 per cent indigenous people's gene', as if she was saying that indigenous peoples had contributed 85 per cent of the genomic components to the entire genetic pool of Taiwanese people, while what she really demonstrated was that among 100 individual Taiwanese, 85 of them carried indigenous peoples' DNA, which could be tiny amounts. Responding to Chen's accusation of her research serving a pro-independence agenda, Lin raised the issue of Chen's collaboration with China. As she put it, 'for quite a long time and even today', Chen had been 'on the staff list of China's Fudan University's lab of modern anthropology, sponsored by China's Ministry of Education. Did he intentionally attack Taiwan's research to dance to the tune of China? Was there a political intent of "Han Chinese blood nationalism" [an ironic tit for tat to Chen's accusation of her "Taiwan blood nationalism"]?'²⁴

Chen's critique of Lin's research indeed implicated him regarding his collaboration with Chinese scholars, a sensitive subject in Taiwan's identity politics as the two sides of the Straits were engaging in more cultural and academic relations. In 2008, the same year that Lin came to the conclusion that 85 per cent of Taiwanese carried indigenous peoples' DNA, Chen co-authored a research paper with many mainland scholars and published it in an international journal. Using the Y-chromosome (instead of -Mitochondrial as used by Lin in Taiwan) as the test genome, the paper concluded that the Dai people in southern China were very likely the ancestors of

²²Chen Shu-juo and Duan Hong-kuan, 'Plains Indigenous Blood and Taiwan Blood Nationalism' (平浦血緣與臺灣國族血統論), *Taiwan: A Radical Quarterly in Social Studies* no. 72, December 2008, pp. 140–147.

²³*Ibid.*, p. 147.

²⁴Lin, *We Have Different Blood*, pp. 116–117.

all Western Austronesians, including the indigenous peoples of Taiwan.²⁵ Chen supported the research with 220 samples collected from Taiwanese indigenous peoples. The research was thus understandably regarded as pro-China by Taiwanese nationalists. The problem, though, was not just about its implications, but also about the way it identified the source of the DNA data collected in Taiwan as drawn from 'Taiwan, China'. When questioned by the media, Chen explained that he pointed to the problem after he saw the paper's copy-edited version. Now he felt 'very sorry for it'.²⁶ The paper also used 'Taiwan, China' as Chen's national identity.²⁷ 'Taiwan, China' was the standard term China uses officially to show its sovereignty over the island. Taiwan's official policy, however, was to use either 'Taiwan' or 'Republic of China'. This incident therefore prompted Taiwan's National Science Council to issue a new policy, not only reiterating the government's stance but also prohibiting any research results with similar cases of identity mishandling from being recognized by their home institutions.²⁸

The quarrel between Chen and Lin also involved research ethics, a particularly sensitive issue when researchers collect biological and living samples, especially from indigenous and native populations. One such of Lin's projects was derailed by Chen's intervention, or at least so Lin believed. In this instance, after Lin had collected saliva samples from the Kebalan (噶瑪蘭族, a *pingpu* group in Yilan county), Chen went to the village and discussed the issue of DNA collection with the residents. Afterwards, the village's chief asked Lin not to use the samples. Lin later received a letter from Taiwan's National Science Council warning her to follow appropriate procedures when conducting such sample collections.

This 'Kebalan saliva incident' (噶瑪蘭口水事件) was a setback for Lin's research, resulting in her cancellation of similar data collection projects. In defending herself Lin claimed that she had informed the local people of the nature of such a collection beforehand and openly suspected Chen's role in such an unfortunate outcome. In response, she raised ethical as well as legal questions regarding Chen's collection of indigenous peoples' DNA used in his collaboration with Chinese scientists. Lin questioned whether Chen's university had approved and examined his sample collection, whether the scientific analysis of such samples was conducted in Taiwan, and whether the exportation of such samples to China had been officially approved. Lin asked the government to investigate whether Chen had violated the Indigenous Peoples Basic Law.²⁹

Lin's engagement in Taiwan's genomic research led her to re-examine the role of indigenous peoples in the making of the Taiwanese population, which inevitably

²⁵H. Li et al., 'Paternal Genetic Affinity between Western Austronesians and Daic Population', *BMC Evolutionary Biology* vol. 8, no. 146, 2008, pp. 1–12.

²⁶Tsai, 'Genetic Science and Identity Politics', p. 34.

²⁷The full quote is 'Shu-Juo Chen. Graduate Institute of Anthropology, Tzu Chi University, Hualien, 970, Taiwan, China'.

²⁸Taiwan National Science Council, 'Regarding domestic scholars involving submission or co-authoring research articles with mainland scholars to be published in academic periodicals' (行政院國家科學委員會有關國內學者投稿或與大陸學者共同具名於學術期刊發表論文相關事宜案): <http://www.research.mmc.edu.tw/imgMmcEdu/20110914160825.pdf>, [accessed 15 December 2022].

²⁹Lin, *We Have Different Blood*, pp. 198–199.

involved her in Taiwan's nationalist and ethnic politics. In fact, the quarrel with Chen heightened her consciousness of a distinctive 'Taiwanese' detached from Chineseness and its ideological implications. As a result, in 2010 she published a book entitled *We Have Different Blood: The Mystery of Ethnic Groups in Taiwan*. The book was seen by Taiwan independence supporters as a powerful statement of Taiwanese subjectivity grounded in the knowledge produced by cutting-edge science.

The role of the discussions on these subjects prominently evolved in the Lin versus Chen debate was to help deconstruct and delegitimize the GMD's blood-based historical narrative and national identity. Both Lin and Chen publicly committed to such a principle when they were engaged in debate. In Chen's words, 'identity has nothing to do with ancestors, how you live your life is more important'. Lin, in response to Chen's accusation that she was constructing an indigenous blood-based Taiwanese identity, said that "'root-seeking" is only meaningful when it allows us to understand ourselves more; blood-based identity has nothing to do with ethnic identity; ethnic identity is cultural, a cultural identity'.³⁰ In *We Have Different Blood* she clarified her position: 'of course, blood relationship is not the basis of national identity, and so isn't political myth'.³¹ Regardless, they were both accusing each other of violating this principle. In Chen's opinion, Lin was appropriating DNA research to construct an indigenous and Taiwan-based biological identity, while Lin retorted that it was Chen who was imposing a Han and China-based biological identity on the Taiwanese people.

Under the influence of international academic discussions concerning nation, ethnicity, and identity, Taiwanese social scientists discussed a theory of collective and individual 'Taiwanese identity' just as genomic science began to challenge the official nationalist ideology. This new Taiwanese identity mainly based itself on a common historical experience shared by most Taiwanese; namely 400 years of non-Taiwanese governance—by the Qing, Dutch and Spanish colonialism for short periods, the Japanese, and the GMD—and built upon common people's closely connected everyday lives rather than an indoctrinated political ideology. This new concept of nationhood was inclusive of all ethnic groups while protective of their distinctive characteristics.³² As a result, Taiwan's Executive Yuan's webpage introducing the nation's population makeup makes no mention of concepts such as ancestry, bloodline, and biological lineage but just three big ethnic groups: the Han (not 'Chinese'), the Indigenous, and newly naturalized immigrants (including those recently arrived from the mainland, especially from cross-Straits marriage).³³

³⁰Tsai, 'Genetic Science and Identity Politics', p. 44.

³¹Lin, *We Have Different Blood*, back cover.

³²For an academic discussion on the subject, see Chuang Chia-Ying, 'Rewriting Nationalism—Rising Taiwanese Nationalism Based on On-Site and Everyday Life', *Taiwan International Studies Quarterly* vol. 2, no. 4, Winter 2006, pp. 169–201. 國族主義的再寫—崛起於每日實踐生活現場的臺灣 (人) 國族主義? 臺灣國際研究季刊 第二卷第四期169–201 2006 年/冬季. The author referred to authors such as Ernest Gellner, Eric J. Hobsbawm, Terence Ranger, John Hutchinson, Benedict Anderson, and Anthony Smith to show the connection between international discussions and Taiwanese development.

³³Taiwan Executive Yuan, 'Land and people' (國土與人民): <https://www.ey.gov.tw/state/99B2E89521FC31E1/2820610c-e97f-4d33-aa1e-e7b15222e45a>, [accessed 15 December 2022].

Nanxiang policy and indigenous genetics

As a scientific element in Taiwanese nationalism, genetics not only plays a role in domestic ethnic and national identity politics, but also facilitates the government's efforts to expand Taiwan's international influence and identify foreign alliances, two areas that had continued to diminish as China grew economically more powerful and stepped up its pressure to suppress Taiwan's international presence.

In the early 1990s, when the DPP replaced the GMD as Taiwan's ruling party they proposed a new foreign policy called *nanxiang* (南向, southward or going south). The goal of the policy was to improve Taiwan's international status by promoting investment and trade in Southeast Asian nations. The strategy achieved some success but was thwarted as China increased its efforts in the region and as the mainland market diverted foreign investment and trade from Taiwan. Since 2016, the DPP's Tsai Ing-wen administration has promoted a 'new *nanxiang*' policy, putting more emphasis on 'soft-power', 'cultural diplomacy', and 'civic diplomacy'.³⁴ It foregrounded, in particular, the kinship connection between indigenous Taiwanese and the indigenous peoples speaking Austronesian languages, who were spread out over a massive oceanic region 'as north as Taiwan, as south as New Zealand, as east as Easter Island, and as west as Madagascar'.³⁵ The basic link of this connection was genetic closeness or sameness between these indigenous peoples—an 'indigenous genetics' discourse, as some scholars claimed.³⁶

In elaborating on the basis of the *nanxiang* policy, the government's statements engaged in sophisticated anthropological, archaeological, and genetic knowledge and theories. 'Out of Taiwan', an anthropological hypothesis that prehistoric human groups used Taiwan as the stepping stone in their migration from the East Asian continent to the Pacific and Indian Ocean islands, was quoted on the basis of some evidence of highly similar genetic sequences found between indigenous Taiwanese such as Amis (阿美, an indigenous group living on Taiwan's east coast, facing the Pacific) and indigenous peoples in the Pacific, for example, the Maori in New Zealand. Both *pingpu* and indigenous Taiwanese groups were identified genetically and linguistically as part of the Austronesian family by the government.³⁷ This new discourse can be viewed as a continuation of the earlier indigenous peoples' rights movement (the 1980s–1990s) with a new, international framework. Overall, this discourse stresses that indigenous peoples lived on Taiwan for thousands of years before Han Chinese migrated

³⁴Foreign Affairs and Overseas Taiwanese Committee, Taiwan Control Yuan, 'The significance of Austronesian culture to the new *Nanxiang* Policy: the case investigation report 2017' (監察院外交及僑務委員會, '南島文化對新南向政策之意義通案性案件調查報告' 2017): https://www.cy.gov.tw/AP_Home/Op_Upload/eDoc/出版品/107/10700001710107000857p.pdf, [accessed 15 December 2022].

³⁵*Ibid.*, p. 67. Austronesian languages are called *nandao yuzu* (南島語族, southern island language groups) in Taiwan, a term inherited from Japanese colonial anthropology. According to *ibid.*, the group includes indigenous peoples in the Philippines, Indonesia, Malaysia, New Zealand, East Timor, Brunei, Micronesia, Polynesia, Hawaii, Babuyan Islands, and Madagascar. They are also scattered in Singapore, Vietnam, Thailand, and China's Hainan Island.

³⁶Liu, 'Postcolonial Biotech', pp. 563–588, p. 571.

³⁷Foreign Affairs and Overseas Taiwanese Committee, 'The significance of Austronesian culture to the new *nanxiang* policy', pp. 70–72.

to the island, and were part of a broader Austronesian indigenous kinship network. A southward and ocean-oriented anthropological and cultural origin thus reinforced the rejection of the westward and mainland-oriented framework. Taiwanese history in this discourse, therefore, can be narrated as an experience of colonization, with indigenous peoples the colonized and the Han the colonizers. The recent development of de-Sinicization was thus essentially a decolonization project, just as those other Austronesian peoples redress their similar historical experience with European colonialism and demand their rights as original inhabitants.

In international politics, Pacific island nations with large numbers of Austronesian peoples have become Taiwan's main diplomatic allies offering official relationships.³⁸ Taiwanese policymakers as well as practitioners have actively engaged them through the link of indigenous kinship culture—'Taiwan's most unique, precious and unreplaceable resource'—as some activists boast.³⁹ As a diplomatic but non-governmental approach, this effort also targets the nations without official relations with Taiwan. The Council of Indigenous Peoples, Taiwan's main government agency in charge of indigenous peoples' affairs, has sponsored a number of programmes in this regard. This includes the International Austronesian Conference (南島民族論壇), the Festival of Pacific Arts (太平洋藝術節), and the Global Indigenous Peoples Performing Arts Festival (世界原住民族樂舞節). These government-sponsored academic, cultural, educational, and tourist exchanges, and visiting programmes encourage indigenous peoples in Taiwan and those in Austronesian nations to develop more frequent and varied interactions.⁴⁰ Universities and cultural institutions in eastern Taiwan, a region deemed to be less influenced by Han culture and geographically closer to the 'South', carry out more missions to develop and strengthen ties with the Austronesian world.

In sum, since the 1990s, DNA-related sciences have transformed Taiwan's national identity politics. Dubbed as 'Taiwanese DNA versus Chinese DNA' in this article, the relevant discussions have helped deconstruct a Han-centred and China-oriented national identity and establish instead a notion of Taiwanese subjectivity that is tied to political democratization and the indigenous peoples' rights movement. However, after two decades of debate, a consensus in accordance with the international mainstream position regarding ethnic, racial, and national identities has been reached. Genetic science is now used to debunk China's biologically based discourse that serves their claim of its sovereignty over the island.

³⁸During the time of the *nanxiang* policy discussed in this article, they included the Solomon Islands, Marshall Islands, the Republic of Palau, Kiribati, Nauru, Tuvalu, the Independent State of Papua New Guinea, and Fiji.

³⁹Zhao Junxiang, 'New *nanxiang* policy should use more cultural linkages between Taiwan indigenous people and Austronesian peoples to market Taiwan' (趙俊雄, 新南向請善用臺灣原住民族與南島民族的文化鏈接, 行銷臺灣), published online 18 October 2016: <https://opinion.cw.com.tw/blog/profile/52/article/4937>, [last accessed 1 October 2021].

⁴⁰For example, the Council of Indigenous Peoples implemented 'Programs for promoting interactions between international indigenous peoples' (促進原住民族國際交流獎補助實施要點) <https://law.apc.gov.tw/LawContent.aspx?id=FL039119>, [last accessed 1 October 2021]. The Ministry of Education also sponsored 'The international academic research plan for Austronesian culture' (世界南島學術研究計劃).

From rejecting Peking Man as the national ancestor to constructing a Chinese DNA: Genetic analysis and identity politics in China
DNA challenge to Peking Man as ancestor of Zhonghua minzu

Unlike Taiwan's recent turn to indigeneity, in mainland China, the idea of a national ancestry theory existed long before the 1990s; namely, nationalist discourse used the discovery of Peking Man to argue for a national 'ancestor'. This was based on the discoveries in the late 1920s and the 1930s of the skulls and remains of 'Peking Man' and of its activities. It was assumed that Peking Man continued to evolve into the Neolithic era, becoming *Homo sapiens* and thus the direct ancestor of the modern human in China and even East Asia. During China's lingering national crisis after the Opium War (1840–42), which was significantly intensified by the Japanese invasion in the 1930s, such archaeological discoveries helped to boost nationalist confidence because they were interpreted by nationalist scholars, backed by the state, as evidence of the strength of the Chinese people.⁴¹ Moreover, at a time of nation-building and national identity formation, Peking Man's assumed status served the nationalist agenda in both temporal and spatial terms, suggesting a unique Chineseness in the context of an Asia-centric evolutionary process.⁴² After 1949, numerous archaeological and anthropological discoveries of fossils and cultural remains reinforced this national ancestry belief. 'Peking Man is our ancestor' was idiomatic of nationalist education and patriotic propaganda.⁴³

This national ancestry theory, however, came under attack in the late 1990s and the early 2000s. As in Taiwan, the challenge came from genome-based sciences. Sensing the strategic significance of such research, China joined the international HGP and contributed to the project with data collected in China, the most populous nation with rich sources of human genome diversity. A group of Chinese molecular anthropologists, represented by Jin Li, Chu Jiayou, and Li Hui, who at the time were affiliated mainly with China's Fudan University and were either degree-seekers or visiting scholars at American institutions, joined and even led the Sino-foreign collaboration of the HGP. Their projects quickly led to results, published in international periodicals before they became known in China, that supported the international mainstream anthropological theory which claimed a common ancestry of African-originated *Homo*

⁴¹Liu Chao, 'Archeological Discoveries and National Identity—Taking Examples from History Textbooks Published during the Republic Era' (刘超 '考古发现与民族认同——以民国时期中国历史教科书为中心'), *Fudan Journal, Social Science Edition* vol. 20163 (2016), pp. 23–31.

⁴²For more in-depth analysis in English, see James Leibold, 'Competing Narratives of Racial Unity in Republican China', *Modern China: An International Quarterly of History and Social Science* vol. 32, no. 2, 2006, pp. 181–220; James Leibold, 'Filling in the Nation: The Spatial and Temporal Trajectory of Pre-historical Archaeology in Twentieth-Century China', in *Transforming History: The Making of a Modern Academic Discipline in Twentieth-Century China*, (eds) Brian Moloughney and Peter Zarrow (Hong Kong: Chinese University of Hong Kong, 2012) pp. 333–371. H. P. Yen, 'Evolutionary Asia-centrism, Peking Man, and the Origins of Sinocentric Ethno-Nationalism', *Journal of the History of Biology* vol. 47, no. 4, 2015, pp. 585–625.

⁴³For an analysis, see Sigrid Schmalzer, *The People's Peking Man: Popular Science and Human Identity in Twentieth-Century China* (Chicago: University of Chicago Press, 2005). The book analyses the overall role of Peking Man in the PRC's ideological education and political socialization, to which Peking Man—a species believed to have used tools for work in its evolution—was used to elevate socialist work ethics and refute religious explanations of the origin of the human species.

sapiens for all peoples of the world—an ‘out of Africa’ story. Since China represented a significant population group in the world, the conclusion was deemed very important by the international scientific community. The first such report in 1998 claimed that ‘genetic evidence does not support an independent origin of Homo sapiens in China’.⁴⁴ A second, and more influential, article, titled ‘African Origin of Modern Humans in East Asia: A Tale of 12,000 Y Chromosomes’, was published in *Nature* in 2001. It identified a genome mutation found in all 12,000 chromosomes (male line) samples ‘which originated in Africa about 35,000 to 89,000 years ago’.⁴⁵ A DNA-based theory of African-originated Chinese (AOC) thus challenged the earlier fossil-based theory of China-originated Chinese (COC).

Like the discussion and controversies provoked by the discoveries by Taiwanese scientists in Taiwan, the research results of Chinese scientists were met with immediate responses from Chinese scientific communities, government agencies, and the public, despite an initial positive media frenzy over the fact that ‘Chinese scientists made a significant contribution to the world’. Chinese Paleolithic anthropologists, for example, mainly at the Institute of Vertebrate Paleontology and Paleoanthropology of the Chinese Academy of Sciences (IVPPCAS), had long been the theoreticians behind the COC and they now moved quickly to challenge this new idea. By interpreting a large amount of fossil and cultural remains found in China, they proposed a multi-regional origin theory for Homo sapiens against the single origin AOC theory. More specifically, they interpreted the seemingly morphological and anatomical similarities between groups of Homo erectus and Homo sapiens found in China as evidence of an evolutionary continuity. They argued that fossil evidence was more direct and convincing in interpreting evolutionary lineage than DNA statistics.

‘Is Peking Man still our ancestor?’ The question asked by Wu Xinzhi, a paleoanthropologist at IVPPCAS and the chief theoretician of the COC, heightened the nationalist implications of this debate. Moreover, the debate has drawn attention from the international China studies community, as reflected in two articles published in the *Journal of Asian Studies*. Barry Sautman’s 2001 article titled ‘Peking Man and the Politics of Paleoanthropological Nationalism in China’, a textual analysis of media reports, official propaganda, and Chinese paleoanthropologists’ discourses, was a very early and insightful observation of the phenomenon before it fully developed. For Sautman, the Chinese rejection of the internationally accepted Out-of-Africa theory regarding the monogenetic origin of modern humans and the Chinese insistence on a polygenetic origin were far from scientific in nature and served an official, nationalist agenda. Sautman also argued that such a biologically established national uniqueness discourse was a form of racial nationalism, since it promoted an essentialized national character. Sixteen years later, in 2017, this author published an article with the title ‘Is Peking Man Still Our Ancestor?’ Genetics, Anthropology, and Politics of Racial Nationalism in China’ to re-examine the phenomenon and expand the argument made by Sautman. In 2019 this author also published a book, *Discourses of Race and Rising China*, which contained a chapter significantly expanding the content and the argument of

⁴⁴J. Y. Chu et al., ‘Genetic Relationship of Populations in China’, *Proceedings of the National Academy of Science* vol. 95, no. 20, 1998, pp. 11763–11768.

⁴⁵Y. Ke et al. ‘African Origin of Modern Humans in East Asia: A Tale of 12,000 Y Chromosomes’, *Science* vol. 292, no. 5519 (2001), pp. 1151–1153.

the article.⁴⁶ Drawing on large amounts of material regarding developments since the early 2000s and covering official, academic, and popular responses, especially online discussions showing the debate's impact on society, this work revealed how these debates continued to shape popular and academic discussions.

Indeed, as I showed, molecular anthropologists were keenly aware of the political sensitivity of the issues under discussion, even admitting that they were interested in the research especially because they were Chinese and wanted to know whether the Chinese really did have something 'different' from the peoples of the world. But when they saw the results of their research, they had to accept it.⁴⁷ The paleoanthropologists, however, were more keen on the idea of a unique Chineseness, so much so that in 2010, an annual research review of the IVPPCA claimed to have identified 'continuity and stability in behavior and technology' in East Asia's Paleolithic era that continued into the Neolithic era. This East Asian distinctiveness 'developed a pattern of unique and gradual evolution with a characteristic of inheritance over innovation, and there had not been any replacement and interruption'. Further, this localized evolution process harmonized human activities with the natural environment and absorbed outside elements that occasionally entered the region.⁴⁸

As I argued, the official Chinese attitude towards the debate was pragmatic and ambiguous. On the one hand, the Party has never openly rejected the AOC and has been supporting technologies and industries promoted through the HGP for which the AOC was an important conclusion. But in its propaganda the Party has continued to exploit the COC to boost patriotic sentiment. Examples are numerous. The Peking Man Site at Zhoukoudian, the archaeological museum of Peking Man, has been on the list of officially designated 'One-Hundred Bases for Patriotic Education' since 1997, along with places such as The Site of the First National Congress of the Chinese Communist Party and The Exhibition of the Nanjing Massacre (the historical exhibition of atrocities committed by the Japanese Army during the Second World War). Chinese history textbooks open with descriptions of Peking Man under subtitles such as 'the earliest human species in China', describing its ingenuity in using tools and fire, believed to be the 'earliest one' in the world. Although the term 'ancestor' is often avoided today, such presentations were meant to create an impression that Peking Man marks the beginning of 'Chinese civilization', especially in the absence of a debate between AOC and COC. In fact, Peking Man's presumed capability of creating fire has been ritualized by CCP propaganda as the symbol of the vitality and ingenuity of the ancestor of the Chinese people since the 1990s in a number of national and international events, including the opening ceremony of the 2008 Olympic Games. In these events, torches ignited by a wood-drilling method in the caves of Zhoukoudian, sometimes by senior COC anthropologists surrounded by cavemen-costumed young people, were carried by relay runners to reach a mass rally at Tiananmen Square presided over by top CCP

⁴⁶Yinghong Cheng, *Discourses of Race and Rising China* (New York: Palgrave Macmillan, 2019).

⁴⁷Media interviews with Jin: A. Roberts, 2009 BBC documentary: 'The Incredible Human Journey', Episode 2 (Asia); with Chu, Huang Weiwen, 'From Where Did the Chinese Come?' (黄慰文 '中国人从哪里来?' 国家历史杂志), *National History*, October 2008.

⁴⁸Gao Xin, 'The new developments in the research on the origins of the Chinese people' (高星 '中国人起源研究的新进展'): <http://www.kaogu.net.cn/cn/kaoguyuandi/kaogusuibibi/2013/1025/34931.html>, [accessed 15 December 2022].

leaders. Given such an official attitude, it is fair to say that in today's China, for many people, Peking Man is still 'our ancestor', despite the publicity of the AOC as a scientific challenge or even subversion of it.⁴⁹

A DNA-based Chineseness replaces the Peking Man ancestry myth

In the meantime, however, an opposite trend has developed among Chinese molecular anthropologists. My previous research ignored this trend and may have led to an impression among some readers that the Chinese molecular anthropologists were not nationalistic, or that they were universalists, based on their support of AOC theory, and thus it has been assumed that genomic studies have undermined the official nationalist rhetoric. As a matter of fact, however, the development has been far more complicated. While using the AOC to reject the myth of a unique national ancestor, many molecular anthropologists have used the same scientific tools (population genetics or genome) to invent a 'Chinese DNA'—a concept of a genetically harmonious and unified Chinese nationhood.⁵⁰ Paradoxically, this 'Chinese DNA' has created a new and more essentialized 'Chineseness' than that which 'Peking Man' used to reify, thereby reinforcing the official nationalist ideology.

A simple way to understand this paradox is that the molecular anthropologists rejected a particular form of an essentialized and unique Chineseness for the sake of their scientific discipline when faced with evidence. But they never rejected the notion—or the belief—in the existence of Chineseness itself. Thus, while debunking a myth of a national genealogy descended from an evolutionary ancestor that was supported by fossil evidence, they proclaimed instead the existence of a bination as manifested in DNA lines that have bound various groups of 'Chinese people' together since the beginning of *Homo sapiens*. For both *Homo erectus* and *Homo sapiens* in the territory of today's China, they claim a common origin shared by all peoples of the world. But for the *Homo sapiens* era, especially for the *Homo sapiens sapiens* (modern humans), they claim the existence of a genome-based 'Chinese people'—for them, the Chinese nation is integral and indivisible at its roots.

The Chinese Government's initial funding programme for China's participation in the HGP was titled 'Research on Some Structures of Gene Loci in the Genome of the Chinese Nation',⁵¹ clearly showing that the concept of the 'Chinese nation'—a rather contemporary and political term for a purely natural historical and scientific project—would sway conclusions drawn from data collection and analysis. As such, genetic diversity, the subject of the research, was explored within the framework of 'different *minzu* within *Zhonghua minzu*'. Jin Li, the chief advocate of the AOC and a

⁴⁹For references and events discussed in this paragraph, see Cheng, *Discourses*, Chapter 3, pp. 99–103.

⁵⁰The term was invented by Sung Wen-Ching, 'Chinese DNA: Genomics and Bination', in *Asian Biotech*, (eds) Ong and Chen, pp. 263–292. Sung's chapter is basically a theoretical study situated within a global context but lacks empirical data and case studies in detailing the Chinese development.

⁵¹'Research results on some structures of gene loci in the genome of Chinese nation accepted', Research Proposal, National Natural Science Foundation of China, 1993: <https://www.nsf.gov.cn/csc/20345/20348/pdf/1998/中华民族基因组中若干位点基因结找的研究通过专家验收.pdf>, [accessed 15 December 2022].

leading figure of the project, said that the significance of the project was to ‘reveal the kinship relations’ among different regional and ethnic groups of *Zhonghua minzu* through investigating their ‘genetic structure and features’.⁵² The result of the investigation, as Jin concluded, demonstrated a significant exchange of DNA between Han and non-Han, both in North and South China, with a pattern of migrating Han blood mixing with local non-Han blood, bringing genetic structures of both sides closer to each other. Therefore, ‘Today, Han and non-Han peoples of our country are connected at roots (连根), and it is scientifically correct to name them together as *Zhonghua minzu*.’⁵³ Based on ‘net genetic distance’, measured by neighbour-joining and an unweighted pair group method with arithmetic mean, two methods connecting genome groups, Jin and his team drew a phylogenetic tree that assigned various ethnic groups in China to an appropriate branch that stems from the trunk—the Han Chinese, especially the northern Han people. According to them, this phylogenetic tree shows that the Tibetans are the closest siblings of the Han. In this way genetics has helped to construct a DNA-based Chineseness across multi-ethnic lines.⁵⁴

Such a ‘same root but diverse branches’ (同根多元) model is a genetic interpretation for the official definition of *Zhonghua minzu*, a ‘unified multi-ethnic nation’ (多元一体, originally phrased by Fei Xiaotong, a well-known anthropologist with official titles at the national level). Li Hui, a genetic scientist known for his very active and outspoken advocacy of the AOC, has acted with the same enthusiasm and articulation in propagating the concept of this genetic Chineseness. In a public lecture on the origin of the Chinese nation televised on a state TV network (a typical approach adopted by Chinese scientists to popularize scientific theories and engage with ordinary people), Li foregrounded the idea of ‘seeking roots of *Zhonghua minzu* through genetic studies’. He said that there were three factors through which human history is studied: gene, fossil, and culture. ‘Among them, if you want to conduct research on the origin of our nation, the most important one is genetics; you need to seek answers from the genome’, because ‘gene [analysis] enables you to study people-to-people relations, group-to-group relations, and relations between historical *minzu* and contemporary *minzu*’.

Li proposed an approach that used contemporary DNA similarities or closeness between Han and non-Han groups such as the Tibetans (藏 Zang) and the Miao (苗) to reinterpret mythological narratives of early Chinese history. Li chose the battle of Zhuolu (涿鹿之战) as an example. Believed to have occurred about 4,500 years ago somewhere in central China in which Huangdi (黄帝, the Yellow Emperor) and Yandi (炎帝, the Yan Emperor), leaders of two tribal groups related to the imagined ancestor of the Han Chinese, engaged with Chiyou (蚩尤), the leader of a more supposedly ‘primitive’ and ‘barbarian’ tribe. Yan and Huang defeated Chiyou, took control of the central plain (中原), and drove Chiyou into the then frontier regions. That legendary battle has been regarded as a critical moment in the mythical formation of ancient Chinese civilization that supposedly originated from a diffusive migration from central

⁵²Jin Li and Chu Jiaoyou, *Studies of Genetic Diversity of Chinese Nation* 中华民族遗传多样性研究 (上海: 上海科学技术出版社 2006), p. 141.

⁵³Ibid., p. 157.

⁵⁴Ibid., pp. 212–213.

China. Li therefore suggested that DNA evidence collected from many ethnic groups pointed to a convergence of genetic features that is likely to have happened during the time of this battle, concluding therefore the battle might actually have taken place. According to Li, cases like this proved that the 'genome of minority *minzu* are almost identical with that of the Han. Miao people have genetic elements of O3 γ and O3 β , and most genome type of Tibetan people show an overwhelming O3 β type, while Han people have all types of them... In conclusion, *Zhonghua minzu* sprang from the same gene, originated from plural [ethnic] sources, and is culturally very inclusive; therefore, *Zhonghua minzu* is a unified multi-ethnic [nation] with the same root but diverse branches. Such a splendid and long history is truly worth being proud of.'⁵⁵

A specific project in this regard was the Gene Bank of Chinese Minority Groups established in 2006. Sponsored by the state and set up at the Center for Human Genetics of Yunnan University, the bank started by collecting gene samples from all 25 minority groups in Yunnan Province. The province is known for being the most ethnically diverse of all Chinese provinces, with 25 out of 55 of the nation's ethnic minority groups and 15 of them found only in Yunnan. Because the province's topography made many of its areas nearly inaccessible, the genetic makeup of many ethnic groups is believed to have remained relatively 'pure'. Founded at the time of the debate between the AOC and the COC, the project was also expected to contribute to these discussions by connecting Yunnan's historical importance in human evolution with its current ethnic diversity. As the official announcement of the bank's establishment proclaimed, 'Yunnan is one of the birthplaces of the Chinese nation. Yuanmou Man [a *Homo erectus* group found in Yuanmou, Yunnan Province] is believed to have lived there about 1.7 million years ago.'⁵⁶

The Center's leading scientist highlighted the bank's value in this regard, as the data constituted part of the 'Chinese nation's gene pool', implying the existence of a 'national genetic unity'. Furthermore, 'as we know there are two hypotheses regarding human origin. One is African origin, namely all people around the world originate from Africa, and the other is multi-regional origin. The debate is ongoing, and no one has won it. Since Yuanmou Man was 1.7 million years old, I think the research conducted among Yunnan minority peoples will surely provide very helpful evidence and materials for the important subject in the studies of human world.'⁵⁷ As such, the project claimed to prove that Han and Zang people shared the same genetic roots (汉藏同根), using 'molecular genetic method to answer a hard question in social sciences'.

Unlike cultural and social characteristics that would change over time, the author continued, 'the only [human] trait that remains forever the same is genetic structures.

⁵⁵Li Hui, 'Seeking roots of *Zhonghua minzu* in genetic analysis' (在基因中寻寻中华民族之根), 网易公开课 (163.com open lecture): <https://open.163.com/newview/movie/free?mid=NDMIJUPCH&pid=NDMIJUPFM>, [accessed 15 December 2022]. 163.com is one of the most popular web search engines in China.

⁵⁶China Education and Research Network, 'Yunnan University sets up largest gene bank of Chinese minority ethnic groups': http://www.edu.cn/english/R_D/news/Life/200603/t20060323_157476.shtml, [last accessed 1 October 2021].

⁵⁷<http://www.cctv.com/overseas/chinareport/200101/23.html>, [last accessed 12 November 2021]. The webpage can no longer be opened.

Therefore, using genetic structures to study problems in sociology and the relationship problems between ethnic groups has a significant superiority [over social scientific methods]. The project collected data from Tibetans in China, as well as ethnic groups in northern India and Thailand, and used a molecular genetics method to compare them. 'We finally come out with a conclusion: there are many similarities between genetic types of Han and Tibetans, which could not be found among white or black peoples, and we reached a conclusion that Han and Tibetans share the same root.' The scientist emphasized that this 'Han-Tibet rooted together' hypothesis had been held for decades by scholars of the social sciences and humanities, but 'we for a long time have had difficulties to get direct evidence [to prove it until now]'.

Political discourse of Chinese DNA

The idea of *Zhonghua minzu* as a genetically extended national family connected at its root, bound by traceable bloodlines, and identifiable with measurable genetic distance has constituted a scientific argument that supports official nationalist discourse, especially at a time when China's ethnic policies are receiving more international attention. Official discourse directly transforms scientific jargon into political rhetoric. One article authored by Bao Lo, a well-known Tibetan scholar of Tibetology and China's ethnic policies, posted on the website of the Academy of Social Sciences of the Tibetan Autonomous Region, was entitled 'How to Reinforce the Education of *Zhonghua minzu* Identity at the Academic Level in Tibet'. The author said that facing the 'Dalai group's' separatist challenge, 'we must stand on the high ground of *Zhonghua minzu* identity and take an interdisciplinary approach to fight back at the academic level'. Academic theories will 'profoundly educate all ethnic peoples in Tibet to profoundly understand that Tibet has been an inseparable part of China and Tibetans are important members of the great *Zhonghua minzu* family'.

The author went on to elaborate how academic work could directly strengthen patriotic education by synthesizing research outcomes:

Yunnan University has discovered through genetic investigation that the genetic closeness between northern Han and northern minority peoples is greater than the one between northern Han and southern Han; genetic closeness between southern Han and southern minority peoples is greater than the one between southern Han and northern Han. This discovery tells us two points. The first is that blood lineages of peoples in our country are connected. The second is that, in history, the integration and mutual exchanges between Han people and ethnic minority peoples were more intensive than they were between southern and northern Han groups.

Further, 'Tibetans, Han and other *Minzu* in our country are all branches of Mongoloid East Asians and they are bound bone and flesh by the same ancestry.' The formation of Tibet proved that 'the unified multi-ethnic *Zhonghua minzu* is historically evolved. Today's Tibetan people carry bloodlines of many other ethnic groups and other *minzu* of our country also carry ancient Tibetan people's blood. This [genetic] closeness

is the result of [a combination of] the common bloodline, special geographic features and the same traditional culture.⁵⁸

The Chinese media has continued to interpret the results of China-related international genomic studies as evidence for the existence of a Han-centered multi-ethnic ‘Chinese people’ and a unified ‘Chinese nation’ since the time of *Homo sapiens*. Such appropriations even go as far as using scientific discussions to support China’s anti-separatist politics regarding Tibet, the case at hand. In early 2021, for example, *Nature* published a research report co-authored by Chinese and foreign scientists who had collected genetic samples from various individual humans in East Asia between 6000 BC and 1000 AD and compared them with samples of present-day groups in the same region to portray a picture of the formation of an East Asian population. As an internationally collaborated research project, the report demonstrated genomic relations between Han and Tibetan people as part of the research result, but the content and analysis were situated purely in a genomic and linguistic context, involving diverse sources and dynamics of early human migration which originated, flowed, mixed, and exchanged in broad continental and coastal regions. Shortly after its publication, an article, with the authorship identified as the Central Committee of China’s Communist Youth League, appeared in an online version of a major media group based in Shanghai known for its prompt responses to breaking news. With the title ‘Genomic Research has Proved Han and Zang Shared the Same Origin’, the article not only ignored the context and language of *Nature*’s report, it directly used it as evidence proving ‘Han and Zang belong to the same family’ by equalizing ancient biological categories to contemporary social and cultural groupings. After introducing and interpreting *Nature*’s report, it went on to attack the Dalai Lama and his followers, illustrated with many photos showing ‘brutal crimes’ of violent attacks, robberies, and vandalism they had allegedly committed in China. At the end of the article, as if to give it the aura of academic legitimacy, the author listed a number of references published by scholarly periodicals.⁵⁹

Chinese academic responses to the ‘Taiwanese DNA’ and Taiwan-related ethnic politics

This discourse about Chinese DNA also responded to challenges posed by Taiwanese genetic scientists. The official Chinese media has watched, rejected, and often ridiculed Taiwanese discussions provoked by Lin Marie and her team’s research as fake and politically driven—but compared with Chinese genetic scientists’ systematic efforts, such media campaign seems superficial and weak.⁶⁰ Chinese genetic scientists have

⁵⁸Bao lo, ‘How to reinforce the education of *Zhonghua minzu* identity at academic level in Tibet’, (保罗 ‘在西藏如何以学术层面加强‘中华民族认同’教育?’): <http://www.xzass.org/newsinfo.php?id=2150&pn=2> The article is no longer accessible, but its title is listed in the author’s official webpage: http://www.tibetology.ac.cn/2021-10/12/content_41697864.htm, [accessed 15 December 2022].

⁵⁹The Central Committee of China’s Communist Youth League, ‘*Nature* published a significant article, proving Han and Zang shared the same origin’ (‘*Nature*刊发重磅考古文章, 基因组学证实‘汉藏同源’): https://www.thepaper.cn/newsDetail_forward_11703961, [accessed 15 December 2022].

⁶⁰The most recent example was an article published on the overseas webpage of the *People’s Daily*, in response to Lin’s interview with a pro-independence Taiwanese TV show. ‘Taiwanese doctor said, “Taiwanese genes is different from that of the mainliner’s, even Taiwanese are laughing”’. ‘台医师说‘台

collaborated with the government to construct and propagate a discourse of a DNA-based relation between Taiwan and China to replace or supplement the ‘same ancestor’ discourse. In 2002, for example, when Lin Marie and her team’s research was raising awareness of ethnic politics in Taiwan, China’s Hainan Provincial Government held a Hainan-Taiwan ethnic minority cultural celebration. The event was planned to show that, as the two largest islands off the coast of China, Taiwan and Hainan demonstrated geographic, climatic, and cultural similarities. The celebration claimed that the Li minority (黎族 *Li zu*), the earliest and now the largest non-Han settlers of Hainan, and the Atayal (泰雅) and Amis (阿美), two of Taiwan’s main indigenous groups, were ‘brothers’. They were both ‘descendants of *Guyue* [another name for *yuezu*] people in the southeast coastal region of the Motherland’. An academic conference focusing on the origins of these minority peoples in China was organized as part of the celebrations. Li Hui and Song Xiufeng, both PhD candidates at Fudan University at the time and working for the HGP, participated in the conference. They introduced the 1998 fieldwork, conducted in Taiwan, of Jin Li and Du Ruopu, a Chinese molecular anthropologist known for his rejection of Lin Marie’s argument for a more natively based Taiwanese people. They collected blood samples of indigenous Atayal, Amis, Bunun, and Paiwan, and compared them with those collected from the Li minority. According to their interpretation, DNA analysis demonstrated ‘a completely identical Y Chromosome’ between these Taiwanese males and Hainan Li males. Media reports concluded that the Atayal and Amis delegates from Taiwan were originally doubtful about the genetic link between them and the Li, but, eventually, that changed their attitude and a feeling of a ‘family visit’ had developed by the end of the celebration.⁶¹

But as a matter of fact, Taiwanese indigenous peoples, or at least their political representatives, are more sensitive to China’s propaganda constructing and imposing the identity of a cross-Straits *Zhonghua minzu* than their fellow Taiwanese originating from the mainland (even if only remotely). When Xi Jinping, the Chinese leader since 2012, proposed his new Taiwan policy in 2019, claiming again that ‘fellow folks of both sides of the Taiwan Straits belong to the same family’, representatives of ten major indigenous peoples in Taiwan gathered at a joint news conference held in the Taiwan Legislative Yuan to respond. Using their individual indigenous languages, they read a joint statement to reject Xi’s policy and reiterated that such an idea of ‘the same blood, the same family’ had long been outdated in Taiwan as the result of the long political and cultural struggle. Dr Lin Marie’s participation in the conference refreshed the memory of the controversy and the debate she had provoked a decade earlier, since she claimed that Taiwan’s indigenous peoples had a history of more than 10,000 years and were therefore certainly not ‘ethnic minorities’ of China.⁶²

湾人和中国人基因不同，島内呵呵了’，published online 4 January 2019: <http://news.haiwainet.cn/n/2019/0114/c3541093-31479534.html?nojump=1>, [accessed 16 December 2022].

⁶¹*China Today Weekly*, ‘Taiwan ethnic minorities visiting relatives in Hainan’ (今日中国周刊 ‘台湾少数民族海南探亲’): <http://www.chinatoday.com.cn/china/20023/hainan.htm>, [accessed 16 December 2022].

⁶²Radio Free Asia, ‘Taiwanese indigenous peoples: “We are not Chinese.”’ ‘臺灣原住民: “我們不是中國人”’: <https://www.rfa.org/mandarin/yataibaodao/gangtai/hx1-01112019095606.html>, [accessed 16 December 2022].

Chinese historians joining the discussion were particularly sensitive to the politics of naming, thus rejecting the use of the term ‘indigenous peoples’ in Taiwan. Shi Shi, a senior historian known for his advocacy of rewriting Chinese history in line with strengthening nationalist confidence and reviving Chinese traditional culture as a panacea for contemporary global moral and social problems, co-authored a book with Huang Dashou, a pro-mainland Taiwanese historian, thus forming a cross-Straits, anti-independence Chinese nationalist alliance. Entitled *A History of Early Inhabitants of Taiwan* (《台湾先住民史》), the book was a systematic effort to construct a theory of a *Baiyue* (百越, another term for *yue*) origin for the earliest Taiwanese people, arguing that they migrated from the mainland about 6,000 years ago. Shi and Huang used the term *gaoshanzu* (高山族, mountain people), a term abandoned in Taiwan for its derogatory implications but commonly used in China to refer to Taiwan’s indigenous peoples.⁶³ They rejected the term ‘indigenous people’ in relation to Taiwan, arguing that it could only be used in the context of the colonized versus the colonizer, a typical relationship under Western colonial rule. Shi stated that the term ‘indigenous people’ in Taiwan implied a Han colonization of the island, therefore deliberately serving the political agenda of de-Sinicization of the Taiwanese independence movement. Instead of ‘indigenous people’, they proposed the term *xianzhumin* (先住民)—pioneers who settled in a non-inhabited place and were followed by members of their blood community, therefore putting the Taiwanese indigenous peoples and the mainlanders in the same category of ‘Chinese’. In an interview with a Xinhua News Agency reporter, who was also known for their ultra-nationalist rhetoric, Shi contended that ‘We cannot use this term [indigenous people] to name Taiwan’s *xianzhumin*, because we are all sons and daughters of *Zhonghua*, and the difference is just that they [*xianzhumin*] came to Taiwan much earlier than us. Therefore, their correct name should be Taiwan *xianzhumin*.’⁶⁴ As a guest speaker, Shi presented his thesis at the abovementioned Hainan-Taiwan ethnic minority cultural celebration to convince the representatives of indigenous peoples from Taiwan. Regardless, the fact of the matter is that the term ‘indigenous people’ is prohibited in China and the only ‘politically correct’ term in this regard is ‘ethnic minority’ (*shaoshu minzu* 少数民族). The term presumes *Zhonghua minzu*’s sovereignty, historically and in the present, over the land inhabited by non-Han peoples, regardless how long the latter had lived in the land of their ancestors before coming to contact with Han people.

Conclusion: Science, identity, and changing frontiers

Since the 1990s, genetic science and related technologies have received significant endorsement in both Taiwan and China with a stated or unstated agenda of national and ethnic identity politics. In both Taiwan and China, the discussion helped deconstruct old national identity narratives and supported new ones. However, in Taiwan, the relevant discussions have reached a society-wide consensus that, ultimately, what

⁶³Shi Shi and Huang Dashou, *A History of Early Inhabitants of Taiwan* (史式, 黄大受《台湾先住民史》北京九州2006).

⁶⁴Lin Zhibo, ‘Re-understanding *Zhonghua* culture: an interview with the famous historian Shi Shi’ (林治波‘访著名史学家史式: 重新认识中华文化’): <http://culture.people.com.cn/GB/27296/4260312.html>, [last accessed 10 November 2021].

determines ethnicity and nationality is not biology but social and political factors. In China, however, such a consensus has not been established and relevant notions are suppressed by nationalist rhetoric. This rhetoric openly proclaims a DNA-based Chineseness across the country's multi-ethnic lines, placing genetic data before history and culture, to be used as the most reliable and convincing evidence of the legitimacy of a modern-day nation-state. More specifically, in Taiwan, the concept of a 'national DNA' was debated and then rejected by genetic scientists and scholars familiar with the science, but in China it was constructed and propagated by people in the same occupations on behalf of a genetically homogenous nationhood.

In conclusion, this article first addresses a theoretical concern that can engage both Taiwan and China. Contemporary science and technology studies suggest a co-productionist framework to interpret the reciprocal relationship between science and society. It contends that the production of scientific knowledge is 'neither a simplest reflection of truth about the nature nor an epiphenomenon of social political interest'. Rather, 'knowledge making is incorporated into state making, or of governance more broadly, and, in reverse, how practice of governance influences the making and use of knowledge. States, we may say, are made of knowledge, just as knowledge is constituted by state.'⁶⁵ In both Taiwan and China, in the case of genomic science, knowledge making and state-making have been essentially incorporated into a single process since the 1990s as the science was institutionally established and the states were undergoing an identity transformation. Knowledge making intervened in identity politics, a key factor in state-making, and the state channelled the knowledge into its institutions and ideologies. As a result, we have witnessed the rise of a new science on both sides of the Taiwan Straits and new national identities have been formed by absorbing the results of the science. The science of cutting-edge genetics and the state-making of national identity under new circumstances became symbiotic.

Secondly, the article foregrounds the relationship between the science-state complex and the changing imaginations of national frontiers associated with new ethnic/national identities and relations. Taiwan's national identity has been transformed from Han-centred and mainland-oriented to all-inclusive, native-centred, and Taiwan-based. Furthermore, this new national identity and the consciousness of Taiwanese subjectivity have been found to have originated from and are still connected to a broad world of Austronesians. This sense of belonging and alliance is the moral source dearest to Taiwan's international status. The changing national identity and the finding of international kinship have certainly reconstructed Taiwan's imagination of its frontiers. Before, Taiwan constituted a part of China's frontier and the Han civilization's periphery. But now Taiwan stands by itself and sees itself as the centre of Austronesian civilizations. Mainland China, on the other hand, constitutes a frontier or foreign land, depending on the extent of the recognition of historical and cultural ties across the Straits held by different Taiwanese. But all of these transformations and new perspectives are, in their origins and evolutions, inseparable from the indigenous peoples' rights to reclaim their identities. That movement arose in the late 1980s and has continued to impact on Taiwan's ethnic and national politics, with ethnic population

⁶⁵Sheila Jasonoff, *States of Knowledge: The Co-production of Science and the Social Order* (New York: Routledge 2004), p. 3.

genetics working as the most local and effective instrument. Science, therefore, constitutes an initial and overarching link in the chain of the reconstruction/reimagination of ethnicity, national identity, and frontiers.

In China, genetic research has played a similar role in ethnic and national identity politics as well as the imagination of frontiers. If in Taiwan's national politics the science has played a role for independence or de-Sinicization, in China it has played the opposite role, one that strengthens the integration of *Zhonghua minzu* through scientifically reconstructing ethnic identity and ethnic relations. This reconstruction has led to a reimagination of national frontiers to bring non-Han ethnic groups closer to the centre of the Han-majority nation. For example, Yunnan used to be portrayed as a frontier province of the Chinese nation, but since the DNA bank project, it has also been proclaimed as 'one of the birthplaces of the Chinese nation'. Tibet used to be described as a remote region, dubbed the 'Roof of the World', but now Tibetans are said to be genetically the closest cousins of the Han people. The concept of *Baiyue* had been long out of use in discussions on ethnic identity and ethnic relations, but since the turn of the century it has returned to discussions on cross-Straits relations as a DNA-proven tie that binds Taiwan to China. *Baiyue* discourse, along with other discourses of re-Sinicization, is thus used to return Taiwan to the status of China's frontier province. A chain of reinterpretation and reconstruction of nation, ethnicity, and frontier in China is also initiated from, and substantiated, by the data of population genetics.

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