



# Contested domains of biological similarities and sociocultural diversity

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Scientists and social scientists often read the same text differently. They also construct categories having the same nomenclature independently. Many of us also work in isolated domains, rarely reading texts researched and documented by others. We conduct our research within the defined format of our disciplines. We engage with others only when contestations emerge and challenge some of the rooted paradigms of each other's disciplines. This paper reflects the reactions of a social scientist to texts on population genetics and attempts to arrive at the genetic theory of the origin of ethnological history of human populations in India. Inadvertently, most of these intensely researched and passionately documented DNA evidence present a serious challenge to the discourse of cultural pluralism and social diversity that the humanist perspective of science and social science takes pride in documenting. This paper is based on secondary resource materials and the methodology adopted is that of narrative research.

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The difference between 'human' and 'breakfast cereal' is not a matter of gene numbers, but the sophistication of gene networks. It is not what we have; it is how we use it. (Siddhartha Mukherjee 2016: 322)<sup>1</sup>

## 1. Preamble

My interest in sociocultural diversity goes back to the formative years of my training in the discipline of sociocultural anthropology.<sup>2</sup> My first field training as a third-year student was among the *Bhils* living in a small village in Mount Abu in Rajasthan. I have to stretch my memory to ask myself if I found them different, and if I did, how did I describe that difference? There is no written record of that fieldwork with me now to make a scientific recall.

For my master's fieldwork, we went to Pachmarhi in Madhya Pradesh and I wrote a small dissertation on

<sup>1</sup> To add to this equation, Mukherjee cites scientific evidence to suggest that while the human chromosome has 20,687 genes in total, it is only 1796 more than worms, 12,000 fewer than corn, and 25,000 genes fewer than that of rice or wheat (ibid: 322).

<sup>2</sup> I embark on this reconstruction as a reflexive recourse: to place before you that in the formative years of my training and in my nascent thoughts, I noticed plurality and diversity of populations and cultures.

Intercommunity Relations. I do not reminisce feeling uncomfortable while talking to any of my Hindu, Muslim or Christian respondents. I did not perceive them to be different. But there were differences, as I noted later, and wrote:

In spite of the spontaneous, harmonious picture presented by the members of the society, at the back of this explication stand not the 'real social structure' but as Leach puts it 'as if' structure of an 'ideal town society' (Mehta 1973: unpublished dissertation).

The text of the 1973 dissertation suggested that although the different communities in town presented a harmonious picture, there were significant intra- and inter-community boundaries that were protected with alacrity. *Bohara* Muslims were reluctant to accept food and water served by Sunni Muslims and *Harijans*, and a Brahmin schoolteacher refused to accept a glass of water served to him by a scheduled caste student.<sup>3</sup> I recorded hierarchies and normative cultural constructs. Words 'different' and 'diversity' entered my sociological lexicon sometime possibly at that time.

In the last 40 years of my academic journey, there is hardly any text that I penned in which the terms were not integral. Social constructs of 'other' and 'othering' entered

<sup>3</sup> Thinking loud: if I tell the same respondents that they are genetically similar, would they give up their cultural prejudices?

my academic vocabulary many years later. Interregnum, I experimented with the idea of accepting ethnic groups as ‘biological units’ having a distinct cultural, religious and social profile that enact as ‘ascriptive category maintaining distinctive boundaries’ – an idea that I borrowed from Fredrik Barth’s work on ‘ethnic boundaries’.<sup>4</sup>

By now, the idea of ‘constructed communities’, ethnic, religious, linguistic or cultural ‘being different’ had crystallized in my sociological thought process. But this acceptance also came with lot of unease as it brought with it an uncomfortable realization of the process of ‘othering’ that amplified these differences.

## 2. De-constructing diversity

I am now being told to believe that our genetic make-up emanates from a minuscule particle called gene and most of us living in this country of 1.30 billion people have commonalities that probably emanate from a known ancestor/ancestors. Hypothesizing on genetic evidence, we are being further told that ‘The collision that formed India’<sup>5</sup> is ‘composed of a large number of small populations’ (David Reich 2018), possibly because of the migration of three distinct populations from Africa, Iran and the south-eastern Steppes to form this highly complex and diverse nation. Reviewers and critics of this reconstruction of extremely complex historicity of human migration read it as ‘an extraordinary moment in the history of science – a potential political bombshell’ (Vir Sanghavi, 20th April 2018)

Levi Strauss said the ‘deep grammar’ of society originates in the mind that operates unconsciously (<https://en.wikipedia.org/wiki/Structuralanthropology>). It is this philosophy that guides social science and research in humanities; but science thrives on notions of experimentation and validation. Sometimes, evidence from science is not able to discern the ruptures and fractures that human social systems are fraught with and are often beyond repair. Scientific evidence generated through the human genome sequencing contends that ‘any two randomly drawn humans are genetically 99.9% identical – those studying genomic diversity are engaging themselves with a tiny fraction (about 0.1%) of the human genome, which some may consider as an insignificant endeavour’<sup>6</sup> (Majumdar and Balasubramanian 2009: 73).

This takes me back to the citation with which I started writing this text that proposes that it is not the gene numbers

<sup>4</sup> Barth (1969: 14) wrote: ‘when defined as an ascriptive and exclusive group the nature, of continuity of ethnic units is clear, its dependence on the maintenance of a boundary, the cultural features that signal the boundary may change, and the cultural characteristics of the members may likewise be transformed.’

<sup>5</sup> This is the title of the India Chapter in David Reich’s (2018) recent book titled *Who we are and How we got here*.

<sup>6</sup> This question is best answered by a population geneticist but my query is, will this be able to avert cultural and social mayhem and, as Vir Sanghavi asked, ‘political bombshell’?

that are important but ‘gene networks’. ‘It is not what we have; it is how we use it’. In the same vein, one would ask ‘not how we came to be’, but ‘how, what we have become’?<sup>7</sup>

Empirical evidence documents that India, Bharat or Hindustan is not only the world’s largest democracy, but it is also home to the most known religions in the world that include 79.80% Hindus; 14.23% Muslims, 2.30% Christians, 1.72% Sikhs and 0.70% Buddhists. It has the largest Hindu, Sikh, Jain, Zoroastrian and Baha’i population in the world. Each of these socioreligious constructs encompasses within its fold many cults, sects and sub-divisions that are often fissured.

Then comes linguistic diversity. The Census of India (2011) recorded ‘121 languages that included 22 scheduled and 99 non-scheduled languages. It also reports that there are 270 identifiable mother tongues which have returned more than 10,000 or more speakers each at the all-India level, comprising 123 mother tongues grouped under the scheduled Languages (part A) and 147 mother tongues grouped under the Non-Scheduled Languages (Part B)’. It further documents ‘1369 rationalized mother tongues and 1474 names which were treated as “unclassified” and relegated to other mother tongue category’ (<http://censusindia.gov.in/>). Four major language families exist: Indo-Aryan (INA) is spoken by nearly 73% of its population and 20% speak Dravidian, and the rest are identified as belonging to Tibeto-Burman (0.73%) and Austro-Asiatic (spoken by 6.19 million people) families.<sup>8</sup> But there is a distinct geographical segregation that defines India’s linguistic map.<sup>9</sup>

To add to this diversity map, 8.6% of India’s population comprises *adivasis* (tribals), consisting of 705 diverse communities clubbed under Article 342 of the Constitution<sup>10</sup> and described as ‘scheduled tribes’. There are 75 of these groups identified as ‘particularly vulnerable tribal groups’<sup>11</sup>

<sup>7</sup> This is the crux of this debate! The theme of the volume is to explore dialogical possibilities that break communication barriers of structured methodologies and validation strategies.

<sup>8</sup> According to the website [mhrd.gov.in](http://mhrd.gov.in), there are 574 languages belonging to the Indo-Aryan family, 153 languages in the Dravidian category, 226 to Sino-Tibetan and 65 belonging to the Austro-Asiatic family. When we equate these with genetic identity and endogamy, how do we account for these language variations?

<sup>9</sup> Kawoosa (30.08.2018, *Hindustan Times*), in the disaggregated analysis of the linguistic diversity in 640 districts of India, reports that there are only 21 districts in the country, where the effective number of languages spoken is greater than or equal to four. In 428 districts, effective number of languages spoken is less than or equal to 1.5. The report also acknowledges that when dialects are taken into consideration than for some states, the number goes up to even 7.7.

<sup>10</sup> Article 366(25) of the constitution of India refers to Scheduled Tribes as those communities, who are scheduled in accordance with Article 342 of the constitution.

<sup>11</sup> It is these vulnerable groups in the Andaman Nicobar Islands that are particularly targeted for the genome studies projects. It is of concern as the population of the groups inhabiting these islands has declined significantly (Only 380 Jarwa, 101 Onge, 44 Great Andamanese, 229 Shom Pen and 15 Sentineles were recorded in the 2011 Census).

and some of these are on the verge of extinction. These communities are dispersed across 30 states and union territories. However, most *adivasi* groups are concentrated in two geographic pockets, mainly in central India and the northeast. Mizoram has the highest percentage of *adivasi* population (94.3%), while the most populated state of the country, UP, has the lowest (0.57%) ratio to the total population. These communities are often classified by anthropologists on the basis of linguistic and racial characteristics (for details, see Guha 1941; Rakshit 1965; Bowels 1977)

To add to this diversity cauldron is the institutionalized practises of the caste system. According to Srinivas (1966: 3):

Caste is undoubtedly an all-India phenomenon in the sense that these are everywhere hereditary, endogamous groups, which form a hierarchy, and that each of these groups has a traditional association with one or two occupations.

The enigma of caste has intrigued not only Western scholarship but also every student of Indian society. For centuries, various theories have been propounded. One of these is the racial theory given by Risley that argued that ‘whatever its origin, each caste constitutes more or less perfectly a demographically isolated unit’ (1891).<sup>12</sup>

In contrast to these propositions, Stevenson (1961) takes a more cogent position and reasons that caste is not a real group, and stated, ‘it is characterized by a certain arrangement of groups distinguished analytically by the sociologists and considered real: endogamous group, consensual group, etc.’... *what emanates is* (italics mine) ‘a complicated description in which the stress is transferred from the indigenous categories to those of the observer, with no hope of synthesis’ (cf. Dumont 1980: 350).

There is also an overlapping and contradictory categorization between the caste system and the varna hierarchy. Srinivas (1966: 3) clarifies that ‘there are only four Varnas, or, if the Harijans, who are literally “beyond the pale” of caste are included, five’, but there are thousands of castes and sub-castes. In the absence of any authenticated caste census data,<sup>13</sup> it is difficult to ascertain or assign exact numbers, although some studies have contended that there are more than 3000 castes and nearly 25,000 sub-castes.

Independent India has avoided conducting any caste-based census except the identification of scheduled castes that constitute nearly 16.2% of the country’s population (2011 census). Former Prime Minister Manmohan Singh ordered a caste-based socio-economic survey (SECC) but its

results are only partially shared by the successive governments.<sup>14</sup> Even if we go by some preliminary but unconfirmed reports that suggest the presence of nearly 46,73,034<sup>15</sup> categories of caste,<sup>16</sup> sub-castes, synonyms, different surnames and *gotras*, it only substantiates the position that the caste diversity cauldron is far more complex than has ever been speculated.

India’s diversity has posed a challenge to researchers for over a century, if one goes by the available documented records. Watson and William made first attempts to make a photographic record of the Indian people (1868–1875) at the behest of the Governor General Lord Canning. However, it was with the publication of *The People of India* by Risley (1908) that systematic documentation using anthropometric and ethnographic data was condensed.<sup>17</sup> It was India’s linguistic and ethnic diversification that became an integral component of every survey that followed.

In 1992, the Anthropological Survey of India under the supervision of its former Director General KS Singh made another attempt to document People of India.<sup>18</sup> The difference was that instead of using traditional categories and methodology of anthropometric measurements and documenting populations above 2000, it used the mapping of every segregated group above 200 and used blood groups for categorization.

On the basis of some findings of this project, an article titled *Exploring cultural diversity of India* authored by Joshi *et al.*<sup>19</sup> was published in 1993. It contended that there are ‘2753 communities distributed over 32 states/Union territories’ and these communities are: ‘Essentially endogamous Caste groups – these form a smaller number of culturally homogenous clusters’, and added: ‘These 2753 communities identified under the ‘people of India’ make up for 4653 elements when a community population in each state/union territory is counted as a separate element’ (Joshi *et al.* 1993:

<sup>14</sup> Releasing economic data of the survey in 2015, the finance minister said ‘the name of the report indicates (caste) but caste is not reflected in our data’ (cf. *Hindustan Times*, 3rd July 2015 hindustantimes.com accessed on 4th January 2018).

<sup>15</sup> But these reported figures were loaded with anomalies and when states were asked to cross-verify it, there were more than 8 lakh errors found in the data as reported in the *Deccan Herald*, 17 July 2015.

<sup>16</sup> Munshi and Rosenzweig (2005) believe that one reason for the formation of new castes was geographical mobility (<https://economics.yale.edu/sites/default/files/files/Workshops-Seminars/Labor-Public/rosenzweig-050916.pdf>).

<sup>17</sup> This is not the place to comment about the quality or objectivity of the data or interpretations made by Risley that was called by the critics as ‘the apotheosis of pseudo-scientific racism’ (Bates 1995: 237; Schwartz 2010: 68).

<sup>18</sup> The fieldwork for the project was started in October 1985 and lasted until 1994. In all 43 volumes are published (11 are national series and 32 are state series data).

<sup>19</sup> KS Singh Festschrift volume *People of India: Bio-cultural dimensions* (1993).

<sup>12</sup> This view finds prominence in the works of anthropologists GS Ghurye in *Caste and race in India* (1931) and DN Majumdar *Races and cultures of India*.

<sup>13</sup> In 1931, when the colonial administration tried to collect it, the Congress protested and the exercise was abandoned (for details refer: *The politics of data: 1931 and 2015* by Dipankar De Sarkar livemint.com accessed on 4th January 2019).

363–364).<sup>20</sup> It then gives a very interesting numerical and statistical variation index of diversity that maps homogeneity and heterogeneity between various communities using the ecological and geographical spread of the populations across the country.

I am a hard-core qualitative researcher having immense limitations with numbers. I am also of the firm opinion that diversity is a far more complex and nuanced subject that is not really quantifiable. Social structures, in contrast to historical arguments, are not bounded units, and reducing these to quantifiable numbers is travesty of its internal diversity.<sup>21</sup> But some observations from the study are critical to develop a narrative on this ‘diversity cauldron’. One of these suggests:

Sikhs, Hindus, Muslims and Buddhists exhibit, in that order increasing levels of trait dissimilarity. (ibid: 369)

It then adds:

The trends amongst occupational categories are less clear, nomadic pastorals exhibit the highest level of trait dissimilarity and agriculturists the lowest with business/trade communities occupying an immediate position. (ibid: 369)

These inferences are confusing as occupation and religion are overarching and also overlapping categories. To reduce these to bounded endogamous structural categories is scientifically not sustainable. Hindus, Muslims, Sikhs or Jains may have similar occupations while following a broad inclusivity of a belief system. The assumption that each of these religious groups is a homogeneous, monolithic category is a misnomer. There are deep structural divisions and in-built hierarchies<sup>22</sup> (Imitaz Ahmad 1973; Louis Dumont 1980).

The authors of this paper do acknowledge the possibilities of oversimplification (ibid: 372):

Beyond measuring diversity, one may look for patterns in the distribution of diversity in terms of geography as well as social and economic stratification. The simplest geographical hypothesis may be that the set of traits held by groups of communities diverges with distance between them. Thus while neighbouring Bihar and

Orissa share 63% of traits with each other, both share only 54% of traits with distant Gujarat. **But further exploration reveals this hypothesis to be overly simplistic.** [And add] Thus while Himachal Pradesh shares 55% of traits with neighbouring Jammu and Kashmir, it shares 56% with distant Assam—.

In conducting a correlational analysis of this kind, what they want to attain is beyond my limited understanding. Once social and cultural diversity is acknowledged, why look for hypothetical similarities? It brings back notions of unity in diversity that remained the hallmark of binding India in a ‘melting pot’ in the first few decades of India having become an independent nation.<sup>23</sup> The acceptance of multi-culturalism and pluralism, as it exists, has added strength to the notion of the political nation–state<sup>24</sup> that is so diverse.

### 3. Reconstructing genetic affinity

I now learn from recent genome studies that we are not as different biologically as some social scientist assumed earlier.<sup>25</sup> We are now being told that:

‘...Mitochondrial DNA haplotypes based on RFLP are strikingly similar across ethnic groups of India, consistent with the hypothesis that a small number of females entered India during the initial process of the peopling of India’ (Majumder 2001: 532).

Another study published in Nature (2009)<sup>26</sup> poses some controversial arguments and raises several questions:

The first question:

#### **Does India harbour more substructure than Europe?**

My counter question as a lay reader is: Why comparisons with Europe? This acquires significance as it raises debates about vested interests and is questioned for being another way for ‘Western civilization to downsize Indian civilization’.

The second question:

#### **‘Has endogamy been long-standing in Indian groups?’**

<sup>23</sup> One of the criticisms of the People of India project (1992) was that it was a part of the nationalistic agenda. Commenting on both the projects (1908, 1992) Laura Jenkins (2003: 1144) writes ‘The people of India projects colonial and postcolonial, and the varied identity claims made about them, in them and through them demonstrate the intertwined nature of social identities and state identification’.

<sup>24</sup> Anderson (1991) calls nation–state: ‘imagined community’.

<sup>25</sup> ‘The dominant feature of India’s social history is the incursion from age to age into a single enormous land of different races possessing different standards of culture’ (Mukherjee 1937).

<sup>26</sup> David Reich of the Broad Institute in Cambridge, Massachusetts, and Lalji Singh of the Centre for Cellular and Molecular Biology in Hyderabad, India have probed more than 560,000 SNPs across the genome of 132 Indian individuals from 25 diverse ethnic groups across India. Reich’s (2018) book referred to earlier has further added to this controversy.

<sup>20</sup> In the same volume Biman Kumar Das Gupta (1993) in his article titled *People of India and Anthropological Survey of India* informs us: ‘project data on 4635 communities have been collected from as many as 3581 villages, and 1011 towns and cities of 421 districts of India. A complete draft list of the communities was made by various regional offices on the basis of lists of Scheduled castes and Scheduled Tribes and other communities obtained from the Ministry of Home and also names collected from Census reports and gazetteers’ (ibid: 358–359).

<sup>21</sup> I do recollect having expressed similar apprehensions on this account to KS Singh (architect of this massive People of India project), on several occasions.

<sup>22</sup> Dumont (1980: 205) writes ‘great separations of the caste system survived conversion’.

A simple answer to this would be ‘yes’ but this would imply an oversimplistic interpretation of the complex character of endogamy. It also raises another counter-question asking if endogamy is exclusive to Indian populations or is witnessed in several other parts of the world too. If so, what is so special or different about Indian endogamy?

The third question:

**Do nearly all Indians descend from a mixture of populations?**

Some critics read this as a deliberate attempt to deny the presence of autochthones or indigenous populations in India.

The fourth question:

**Is the ancestry of tribal groups systematically different from that of castes?**

Ethnographic evidence would endorse that the social and cultural practises of diverse *adivasi* communities are distinctive from far more ritualistic and normative concerns among different caste groups. Geographically isolated *adivasi* groups also have different ethnic affiliations and most of them not only have unique cultural identities but also social and ritual customs. There is also a theoretical position that *adivasis* are the original inhabitants. Although there are several *adivasi* groups, particularly those living in central and north-east India have chronicled histories of intermingling with other groups that includes several caste groups living in the plains.

And finally the fifth question:

**What is the origin of the indigenous islander?**

Some would read it as raising doubts over the genesis of some of the most isolated communities in India that have for centuries remained inaccessible.

But I am particularly intrigued by their observations on pages 490–491:

**Some historians have argued that ‘caste’ in modern India is an ‘invention of colonialism’ in the sense that it became more rigid under colonial rule.** They make these observations citing studies by Boivin (2007) and Dirks (2001). This is a misleading statement. The concept of caste is briefly discussed in the first section and to reiterate that position, let it be asserted once again that caste is a social construct and its historicity is far more complex than simple interpretations of endogamy and hierarchy controlling its structure and functionality. Caste historians and anthropologists of repute have never contended about its propagation during the colonial rule.<sup>27</sup> They have always acknowledged that varna hierarchies existed in ancient India. They also recognize that inequity is inherent in the system although the rules for it were defined later in texts like the Manusankrita (for details, refer to Dube 2001). Another important sociological fact is that ‘Tribes, Castes rural communities, and families, though making up an interwoven compact structure

which is ancient and solid, are plastic, bending to economic forces’ (Mukherjee 1937: 378).

There is no denying that ‘current distinctions among groups are ancient’ and *there is a distinct possibility*<sup>28</sup> (italics mine) that endogamy along with the custom of preferential alliances sustained group boundaries resulting in the commonality of gene pool. I neither have the necessary expertises nor scientific acumen to infer these reports but the sample used by Reich and Lalji is rather small for making such profound claims (132 individuals from 25 diverse ethnic groups across India make it roughly between 5 and 6 individuals from each community).

A later study by Moorjani *et al.* (2013: 425) tried to establish linkages between genetic evidence with migration histories using a sample of 571 individuals from South Asia (71 from Indian and 2 from Pakistani groups). They traced linguistic affinities and agricultural innovations. The study also asserts that the genealogical mapping used dates back to 500 generations:

...nearly all groups experienced major mixture in the last few thousand years, including tribal groups like Bhil, Chamar<sup>29</sup> and Kalar that might be expected to be more isolated. Second, the date estimates are typically more recent in Indo-European (average of 72 generations) as compared to Dravidians (108 generations) – several thousand years ago, we were already admixed (Moorjani *et al.* 2013: 429).

Migration is a fact of human dispersion history although there is no consensus or general theory on how and why migration occurs or what are the causes and consequences of it (Zelinsky 1971; Massey *et al.* 1998). Theorists have argued using factors ranging from economic (Ravenstein 1885, 1889; Castles and Miller 2003); ecological; distance and population densities (Skeldon 1997: 19) to various other ‘push-pull’ (Passaris 1989) factors. Some scholars believe that ‘migrations’ seems to go on *ad infinitum* (Massey *et al.* 1998: 48). If one views it as an ongoing process, then admixing of populations is a continuous process. Some groups or households may have become static at some time. But to view them as ‘admixed endogamous groups’ that remained rooted in a bounded social and geographical space remains a circumspect proposition. It is considered banal to

<sup>28</sup> The caveat of distinct possibility implies prevalence of alliances outside the institution of marriage and these were not necessarily endogamous. Material evidence to trace prehistoric practices of marriage as an institution to my knowledge is rather scant.

<sup>29</sup> Chamar is not a scheduled tribe but scheduled caste and mostly live in northern India. They are socially isolated in small hamlets occupying the same geographical zone. Authors also do not specify which genealogical mapping was used to trace 500 generations. Bhil *adivasis* living in different parts of the country have historically mixed with other populations in their respective regions.

<sup>27</sup> Nonetheless, many academicians in India do concur that the British were in a substantive way responsible not only for the colonization of *Adivasi* but also for pushing them into the vagaries of caste hierarchies.

look for ‘true origins’ or ‘actual ancestors’ in chronicles of perpetual migration movements.<sup>30</sup>

What intrigues a lay reader like me is the caveat inserted by some of these researchers that calls for caution in reading models in population genetics:

While they provide an important framework for testing historical hypotheses, they are oversimplifications. *But then add* (italics mine) For example, the true ancestral populations of India were probably not homogenous as we assume in our model but instead were likely to have been formed by clusters of related groups that mixed at different times. However modelling them as homogenous fits the data and appears to capture meaningful features of history (Reich *et al.* 2009: 491).

This in my opinion is tantamount to fitting data in a preconceived model and fails to meet the standards set by objectivity and ethics in research. These observations also raise questions over precepts of scientific validation and create doubts about the ubiquity of such research.

The debates and contestations that surfaced from some studies and observations made in some of these publications are also reported on the official website of the Department of Biotechnology (Ministry of Science and Technology, India). On citing results of a study by Basu *et al.*, it is reported that:

...four ancestral lineages are identifiable with four language families spoken in India, namely Indo-European (north India), Dravidian (South India), Tibeto-Burman (North east India) and Austro-Asiatic (highly fragmented language family spoken exclusively by tribal groups inhabiting East and Central India).

The study then draws attention to the sociocultural process in Indian society marked by widespread admixture which ended abruptly 70 generations ago coinciding with the Gupta rule.<sup>31</sup> Once again, focus returns on endogamy extending the argument that it was established by the decree of rulers, in

<sup>30</sup> Migration systems theory propounded by Mabogunje (1970) argues that it comprises a ‘set of places linked by flows and counterflows of people, goods, services, and information which tend to facilitate further exchange’ (cf. De Haas (2007) *Migration and development: A theoretical perspective* (Bielefeld: COMCAD-Working papers-Centre on Migration, Citizenship and Development): 29).

<sup>31</sup> It is for historians to establish if freezing of communities in closed endogamous groups started during the Gupta period but how researchers arrived at the destination of 70 generations remains ambiguous to me. In a reply to this article Vadeivelu, Murali K (PNS 19 April 2016 113 (16) accessed on 8.01-19) says that endogamy in India was actually a result of foreign invasion and did not freeze in the Gupta period.

This study was based on 367 individuals out of which 331 are drawn from 18 mainland populations and 2 island populations of Jarwa and Onge from Andaman and Nicobar and has taken into cognizance linguistic, ethnic and geographic diversity. It concluded that Islanders and Mainlanders have distinct ancestry.

upper caste populations of geographical regions, ‘during the reign (319–550 CE) of the ancient Hindu Gupta rulers’.

The cited text further infers:

This study corrects inadequacies of population sampling, such as non-inclusion of tribal groups considered by anthropologists to be indigenous populations that was a major constraint in some earlier reports. The new study provides a more robust explanation of the genomic diversities and affinities among extant populations of the Indian Subcontinent (Dbtindia.nic.in retrieved on 8.09.18).

Citing from the original study, it concluded:

Our inferences inform that (i) four ancestral populations arrived in India with the ANI major populations probably using the NW corridor and the ATB major populations using the NE corridor, (ii) after their arrival there was considerable admixture among them, (iii) endogamy was abruptly established about 1600 years ago, and (iv) the presence of endogamy has been strictly followed resulting in strong ethnic sub-structuring that is evident even to this day (Basu *et al.* 2016: 29).

Google search also introduced me to a more recent study that is published online and is in the public domain for comments and review (Vagheesh *et al.* 2018). This study is the result of a collaboration of 92 scientists from different parts of the world including India. It is based on a sample size of the ancient DNA of 612 individuals, 362 reported for the first time. The data was then analysed and compared with genome-wide data from contemporary populations – 1789 of them from 246 ethnographically distinct groups.

As a naïve reader, scanning through these scientific texts brought several abbreviations to my vocabulary that tried to establish evolutionary theories of human migrations in the Indian subcontinent.

Basu *et al.* (2003: 2280, 2281) argued:

Our findings strongly support the hypothesis that AA (*Austro-Asiatic speaking tribal*-italics mine) are the earliest inhabitants of India. —the AA tribal show the highest value of the estimated time-55,000 years, which is –15,000 years larger than the estimates for the other groups.

David Reich *et al.* (2009: 494) tells us:

The 18 Indian cline group all have between 39% and 77% ANI ancestry based in  $f_3$  Ancestry estimates—. ANI ancestry is significantly higher in Indo-European than Dravidian speakers—suggesting that the ancestral ASI may have spoken a Dravidian language before mixing with the ANI.

One of the extrapolations of the most recent study (Vagheesh *et al.* 2018) is: pastoralists from the south-eastern Steppe migrated towards the southern central Asian regions of present day Turkmenistan, Uzbekistan and Tajikistan between 1500 BCE and then towards South Asia throughout the second millennium BCE (2000 to 1000 BCE). They mixed with the Indus Valley population, giving birth to Ancestral North Indians (ANI).

ANI can now be seen as a mixture of Iranian agriculturists, South Asian hunter-gatherers (termed in this study for the first time as Ancient Ancestral South Indians or AASI). Ancestral South Indians (ASIs) can be seen as a mixture of Iranian agriculturists and South Asian hunter-gatherers. Both ASI and ANI were fully formed in the second millennium (2000–1000 BCE). We are being informed that in addition to ASI and ANI, another group of Steppe pastoralists, possibly the ancestors of ‘Aryans’ exist. It also tries to place the Indus Valley civilization amidst these groups. The report addresses these as Indus Valley periphery individuals:

A parsimonious hypothesis is that as the steppe groups moved south and mixed with the Indus periphery-related groups at the end of the Indus valley civilization to form ANI, another Indus periphery related group moved further south and east to mix with AASI groups in Peninsular India to form ASI. This is consistent with suggestions that the spread of the Indus Valley civilization was responsible for dispersing Dravidian languages, although scenarios in which Dravidian languages, drive from pre-Indus languages of Peninsular India are also entirely plausible as ASI ancestry is mostly derived from AASI (Vagheesh *et al.* 2018 cited from <https://www.thequint.com/voices/opinion/genomic-study-vedic-aryan-migration-dravidian-languages-sanskrit>).

Reich (2018) in his recent book *The Collision That Formed India* parallels it to the formation of European populations. He even claims:

In both cases, a mass migration of farmers from the neareast after nine thousand years ago mixed with previously established hunter-gatherers, and then a second mass migration from the Eurasian Steppe after five thousand years ago brought a different kind of ancestry and probably Indo-European languages as well’ (cf. books.google.co.in accessed on 6.01.19).

Some of these researchers also bring in elements of caste hierarchies that they believe are manifested in these genetic configurations.

We also find significantly more ANI ancestry in traditionally upper than lower or middle caste groups—, and find that traditional caste level is significantly correlated to ANI ancestry even after controlling for language —, suggesting a relationship between the

history of caste formation in India and ANI-ASI mixture (David Reich *et al.* 2009: 494).

Moorjani *et al.* (2013: 428) also arrive at similar inferences.

We find that the Indian groups consistent with simple ANI-ASI mixture are most often from tribal and traditionally lower caste groups. Middle and upper Caste groups tend to have more complex histories.

A reference to caste hierarchy is also made by Vagheesh *et al.* (2018):

The strongest signals of elevated Steppe ancestry were in two groups that were traditionally priestly status who were expected to be custodians of texts written in Sanskrit. Most Indian Populations are a genetic admixture of two ancient genetically divergent groups, —one which is genetically similar to Middle Eastern, Central Asian and European populations (higher representation in the upper caste groups) and other lineage which is common to inhabitants of Andaman Islands’.

Once again such interpretations leave me perplexed. I learnt from Srinivas (1966) that there is an all India varna hierarchy but caste hierarchies across the country are very different. Dumont (1980: 67) tells us: ‘the hierarchy of the Varnas can be seen not as linear order, but as a series of successive dichotomies of or inclusions’. He defines hierarchy:

*As the principle by which elements of a whole are ranked in relation to the whole, and that the ranking will thus be religious, it being understood that in the majority of societies it is religion which provides the view of the whole and, and that ranking will thus be religious in nature (ibid: 66).*

It is amply clear from these interpretations that varna is a religious order and ordained functional hierarchy that had association with principles of purity and pollution. It became a structural arrangement much later. The equivalent of caste was jati and it was associated with birth and not function. Most of these DNA studies apparently confuse varna hierarchy with caste. There is no all-India hierarchy for an individual caste. Each caste may have a different position within the varna hierarchy in different parts of the country.

Another important point that is worth considering in this debate is what Dumont notes:

We must not forget, first and foremost, that whilst it looks (*caste*) in general self-sufficient for its reproduction, yet the caste is strictly dependent upon other castes from the hierarchical point of view and in virtue of the division of labour. It would be surprising if nothing in the caste’s internal organization, in

particular marriage, reflected these external features (ibid: 113).

#### 4. Paradoxes propound

The question emanates thus: how did this scientifically expanded ‘genomic similarity’ result in the massive social and cultural diversity that is enunciated in the first section of the present paper? Reading the cited excerpts also troubles me as to why population geneticists want to reduce what they assume was the intermingling of heterogeneous small groups into a ‘homogeneous scientific model’. Their reasoning brought back social science ideas of a ‘global village’ that emanated in the West and overemphasized the process of globalization that was likely to subsume all diversity. In less than 10 years, that myth stands completely battered as the world becomes more polarized evoking primordial identities of ethnicity, religion and languages.

A model that divides now nearly 130 billion people of India into categories of ANI (related to West Eurasian) and ASI (unique to the Andaman Archipelago) or even into five ancestries (Basu *et al.* 2016) is hugely problematic. It provides a fertile ground for divisive politics and is socially unsustainable. Possibilities of eruption of conflict and further polarization of the communities are some of the *unintended consequences* of these researches.

There is also an overemphasis on ‘endogamy’ without going into its structural and functional limitations as pointed out in the previous section. This theory of origins is based on the premise that India’s overpopulation amounting to billions was genetically admixed at the outset and then it was fragmented:

Into small isolated ethnic groups which were then kept distinct for thousands of year because of limited marriage — endogamy and hypothetical evidence is generated to suggest: ‘There are populations that have lived in the same town and village for thousands of years without exchanging genes’ (cf. Elie Dolgin: Indian ancestry revealed <https://www.nature.com/news/2009/090922/full/news.2009.935.html>).

Anthropological insights in scrutinizing diversity dilemmas have often found recourse in the construct of cultural determinism (Schiffman 1996). Biology tells us that scientific evidence is not able to explain the social divergence that India experiences. Endogamy comes across as a negative argument that would endorse homogeneity and not fragmentation that populations across generations have experienced. Contention is that if they shared ecological spaces and gene pool, then why have they become socially so fragmented over generations? Was it a consequence of different gene networks?

One of the serious lacunae of these studies is that there is so much talk about caste hierarchies and endogamy, but not

a word about patriarchy. Even in genome research, gender is a neglected domain. There were only three research articles that I could access that discuss the place of women in these migration histories, and two of these were Basu *et al.* (2003, 2016) and Sharma *et al.* (2018). It thus implies that these studies are not as holistic as they claim to represent. Sharma *et al.* reminds: ‘the migrations post Pleistocene was not strictly paternal!’ (2018). It gets further impetus from Basu *et al.* (2016: 29) as they tell us ‘sex bias in ancestry contribution was evaluated by selecting only female’.

#### 5. Interpretations

Marriott (1955, cf. Singer 1964) talked about ‘attributional analysis’ that makes ‘mythological generalizations about the social structure’. These genomic studies are apparently doing that, presumably based on scientific evidence drawn from a miniscule sample that certainly is not representative of the social and cultural diversity, and in my opinion this makes it a tenuous exercise. Historically, in academic writings, the social structures of different communities/ethnic groups were mapped through the prism of fixed categories of adivasi, castes, linguistic and religious affiliations and physical characteristics (race). Many of these configurations have solidified and many others have diluted but there is a perpetual process of reconstruction of these sociological categories. Solidified categories were and continue to be problematic in social science research narratives. Attempts to give scientific validation to two or five ancestries would only add to this academic chaos.

I am also weary of arriving at conclusions as these come with the temptation of certitude. It is well established that researches neither in science nor social science have perfect answers. We all know that there is no conclusion that is beyond questioning. Migration is a fact of civilizational history. Who migrated when, where, how and why is a contested domain. Researchers tracing these histories through genetic evidence, archaeological remains and linguistic routes or from their individual mythological imaginations have to exercise caution about ‘othering’. As I scanned through various research narratives, my initial fear came home that although scientifically very important, these studies give some legitimacy to the process of fragmentation and ‘othering’. They strengthen existing ruptures and provide momentum to power contestations.

Criticality for caution enhances when these results are placed in the public domain. Headlines that some of these reports put across are alarming. Take, for instance, headlines in the English weekly *India Today* (10.09.2018) on reporting the unpublished findings of Rakhigarhi fossils, it evokes:

The Explosive truth: DNA analysis of 4500-years-old skulls like this one found in Haryana produce politically inconvenient revelations on the origins of Indian civilization.



An article written by Kai (2018) titled ‘An Inconvenient truth’ begins by saying:

The findings of a highly anticipated study of ancient DNA from the Graveyard of the historic Indian Town of Rakhigarhi reveal evidence that will unsettle many Hindutva nationalists.

It then highlights, and in my opinion undermines, the value of scientific research stating:

The skeleton’s DNA showed that the people of ancient Rakhigarhi were a mix of ‘Ancient ancestral South Indian’ and ‘Iranian agriculturist populations’,

but then strokes the controversy writing:

The close match of Rakhigarhi DNA with South Indian Tribal populations also suggests that the Indus valley culture spoke an early Dravidian language. While this may be fodder for South Indian political parties, it would be much harder to digest for the popular North Indian Hindutva narrative of ancient national harmony.

When the results of these studies are published in scientific journals and outreach remains limited, then research confines itself to the pursuit of scientific enquiry. But when these results are exploited as potential political instrumentalities, then it is left to the conscience of the researchers to explore the possibilities of pursuing these enquiries while keeping them politically neutral!

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