

**COMMENT ON VAZ'  
*RELATIVES, MOLECULES AND PARTICLES***

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Vaz's paper covers an enormous range of topics, many of which typically lie outside mathematical anthropology and kinship research. It asks new questions, uses new methods and forces kinship research into direct contact with mainstream research in the biological and physical sciences. Regardless of whether all of her answers are correct, this is a potentially important paper because of the questions it asks.

I am by no means fully qualified to evaluate Vaz's handling of all the major topics of this paper: viz, Dravidian kinship models, the helical model of DNA molecules, the supersymmetric (SUSY) model of elementary particles and the early universe, and mathematical relations among these social, biological and physical models. Therefore, I focus primarily – and briefly - on general issues and defer to specialists in the various disciplines to evaluate the technicalities.

The Introduction lays the foundation for her paper. Chapters 1 and 4 are detailed discussions of two aspects of kinship terminology among the Hill Madaia, Chapter 1 using a sociocentric approach to *terms of address* that represent kin categories, and Chapter 4 using an egocentric approach to *terms of reference* that represent kin types or types of genealogical connections. Chapters 2 and 5 are brief, moderately technical summaries of DNA and supersymmetry (SUSY) models in biology and particle physics. Chapters 3 and 6 are discussions of similarities and analogies between each kinship chapter and its associated biology or physics chapter. The final section, entitled Summary, Conclusion and Reflections, speculates that the parallels Vaz has identified in Chapters 3 and 6 may in fact be isomorphisms that are significantly stronger than mere similarities and analogies, and that those isomorphisms may serve as keys to a better understanding of Dravidian kinship on the basis of models in physics and biology, and to a better understanding of physics and biology on the basis of models of Dravidian kinship.

Historically, the study of kinship terminologies has not focused primarily on counting total numbers of reference terms, relatives, kin types, kin categories and so on, but that is precisely what Vaz finds to be especially interesting, for the numbers of kin types and kin terms that she finds show remarkable likenesses to the numbers associated with DNA and SUSY models – numbers such as 20, 37 and 64 that have about them some of the “magic” of 25 and 500 when applied to hunter-gatherer demography almost half a century ago. At the end of her paper, she speculates that these and other numbers reveal the isomorphisms that make the paper intriguing.

Vaz is well aware that kinship specialists may have limited knowledge of DNA and SUSY models, especially in the ways in which she wants her readers to understand them, so she makes sure that her presentations of those issues in Chapters 2, 3, 5 and 6 are very clear to nonspecialists. For that I commend her. She seems to be less sensitive to the arcane nature of her

presentations in Chapters 1 and 4 where she assumes that her large vocabulary of highly technical terms, sometimes used idiosyncratically, is immediately accessible to her readers. The counterintuitive result is that her discussions of DNA and SUSY sometimes are more readable than are her discussions of Hill Madia kinship.

Figure 2 displays a *kolam* pattern that seems to be entirely appropriate for this paper and I am pleased to see it there. However, I think it needs more explanation for those of us who are not familiar with the tradition. In addition to her reference to Ascher (2002), I suggest Waring (2013) who discusses some mathematical aspects of various *kolam* families including the loop *kolam* that Vaz uses. But knowing how to generate or classify a *kolam* pattern is not the same as understanding how using a *kolam* pattern can help us understand Dravidian kinship. I encourage Vaz to say more about this fascinating topic.

Figure 3 presents a minimally labeled 2-dimensional representation of a double helix that is, by definition, a 3-dimensional figure. This is a very weak visualization of what Vaz treats as a major theme in her paper, and stands in sharp contrast with the very strong visualizations of DNA helices in her Figures 4 and 8. I understand that much more is known about DNA helices than is known about kinship helices, but in fact kinship helices are not unknown and are increasingly well represented in the literature (see the bibliography at Denham 2013). If Vaz is to use the concept of a double helix in this context, I urge her to enhance Figure 3, making it robust enough to do the important job that she assigns to it.

Vaz was born into a Tamil-speaking community in South India's Tamil Nadu State, and has lived for much of her life among Gondi-speaking Hill Madia in Central India's Maharashtra State. As a well trained and astute observer of traditions within her own communities, and as a native speaker of the languages she examines here, her potential contributions to the analysis of Dravidian kinship terminologies are significant and are to be encouraged.

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